HISTORIC DAM CONTEXT

AVERY, WATAUGA, AND WILKES COUNTIES

North Carolina
NCSHPO ER 20-0338

PREPARED FOR:

Blue Ridge Resource Conservation and Development Council, Inc.
31 Cross Street, Suite 215
Spruce Pine, North Carolina 28777

November 2021; Revised February 2022

RGA Technical Report #2021-008NC

RICHARD
GRUBB &
ASSOCIATES

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MANAGEMENT SUMMARY

Richard Grubb & Associates, Inc. (RGA) completed this Historic Dam Survey of Avery, Watauga and Wilkes counties in North Carolina on behalf of the Blue Ridge Resource Conservation and Development Council, Inc. This survey mitigates adverse effects to the B.O. Ward House and Mill Complex (WT0358; 443 Old Watauga River Road, Watauga County) caused by the removal of the 1964 Ward Mill Dam, which is a contributing resource to the B.O. Ward House and Mill Complex, a property eligible for listing in the National Register of Historic Places (NRHP).

The Blue Ridge Resource Conservation and Development Council, Inc. is removing the Ward Mill Dam across the Watauga River (the undertaking) to reestablish the river's natural flow and to encourage habitat for the threatened hellbender salamander. The dam removal requires a permit from the United States Army Corps of Engineers (USACE), and therefore is subject to Section 106 of the National Historic Preservation Act, as amended. In November 2020, the USACE, the North Carolina State Historic Preservation Office (HPO), American Rivers, Blue Ridge Resource Conservation and Development Council, Inc., and Mountain True executed a Memorandum of Agreement (MOA) to mitigate the adverse effects of the undertaking to the B.O. Ward House and Mill Complex. The MOA stipulated, in part, the scope of this Historic Dam Survey.

In March 2021, RGA architectural historians recorded 12 mill and/or dam sites in Avery, Watauga, and Wilkes counties. Additional tasks completed as part of the Historic Dam Survey and pursuant to the MOA were: the creation of survey file entries in the HPO's access database of historic properties; the development of a historical background essay and context for mills and dams in the three counties; and NRHP eligibility guidelines for any mill and dam resources in this area of North Carolina.

As a result of this Historic Dam Survey of Avery, Watauga, and Wilkes counties, guidelines for NRHP eligibility were developed, 12 resources were assessed, and seven of these were recommended potentially eligible for listing in the NRHP. Additional study and full NRHP evaluations are recommended for these seven resources.

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1.0 PROJECT DESCRIPTION

Richard Grubb & Associates, Inc. (RGA) completed this Historic Dam Survey of Avery, Watauga, and Wilkes counties in North Carolina on behalf of the Blue Ridge Resource Conservation and Development Council, Inc. This survey satisfies Stipulation I.A of a Memorandum of Agreement (MOA) between the United States Army Corps of Engineers (USACE), the North Carolina State Historic Preservation Office (HPO), and a partnership of non-profit organizations made up of American Rivers, Blue Ridge Resource Conservation and Development Council, Inc., and Mountain True (the Partnership) (Appendix A). The MOA mitigates the adverse effects to the B.O. Ward House and Mill Complex (WT0358), a property eligible for the National Register of Historic Places (NRHP), caused by the removal of the 1964 Ward Mill Dam, a contributing resource to the historic property.

1.1 Project Background

This Historic Dam Survey of Avery, Watauga, and Wilkes counties was the result of the Partnership's effort to remove the Ward Mill Dam on the Watauga River (the undertaking). The purpose of the dam removal was to restore the river's flow and its surrounding natural habitat. The dam removal will reconnect 140 miles of stream along the Watauga River and adjacent tributaries and is part of larger regional effort to restore damaged rivers. The undertaking requires a permit from the USACE and was therefore subject to Section 106 of the National Historic Preservation Act, as amended. To comply with Section 106, on behalf of the Partnership, RGA previously completed a Historic Structures Survey Report (HSSR) for the proposed Ward Mill Dam removal (Turco and Harpe 2020). The HSSR documented the B.O. Ward House and Mill Complex and evaluated the property for listing in the NRHP. The HPO concurred with RGA's recommendation that the B.O. Ward House and Mill Complex was eligible for the NRHP under Criteria A and C (Appendix B.) The USACE determined the removal of the dam would constitute an adverse effect on the B.O. Ward House and Mill Complex. The USACE, the HPO, and the Partnership worked together to develop an MOA to mitigate the adverse effects caused by the dam's removal. Stipulation I.A of the MOA requires completion of a historical dam context for Avery, Watauga, and Wilkes counties in northwestern North Carolina.

1.2 Survey Area

The Ward Mill Dam is located on the Watauga River in western Watauga County, 8.5 miles west of the county seat of Boone. Avery, Watauga, and Wilkes counties were selected by the USACE and the HPO as an appropriate survey area that would provide sufficient resources for the historical context to inform the continued work of waterway restoration in western North Carolina. Discussions between RGA and the HPO staff led to a decision to include only the western half of Wilkes County, west of the county seat of Wilkesboro, as this area embodies characteristics more in keeping with the topography of the Blue Ridge Mountains. East of Wilkesboro, the land is characterized by gently rolling foothills in the state's Piedmont Region (Figure 1.1).

1.3 Methodology/Developing List of Survey Targets

RGA consulted several resources to devise the list of potential dam and mill survey targets in Avery, Watauga, and Wilkes counties. First, a baseline search was conducted using HPOWeb, the HPO's web mapping application, using the search terms "mill" and "dam." Two additional online sources were consulted: the Southeast Aquatic Barrier Prioritization Tool (SABPT) and an interactive map maintained by the Society for the Preservation of Old Mills (SPOOM). The SABPT is a list of aquatic barriers such as dams, culverts, and road crossings, in the Southeast United States that are prioritized for removal based their potential to reduce

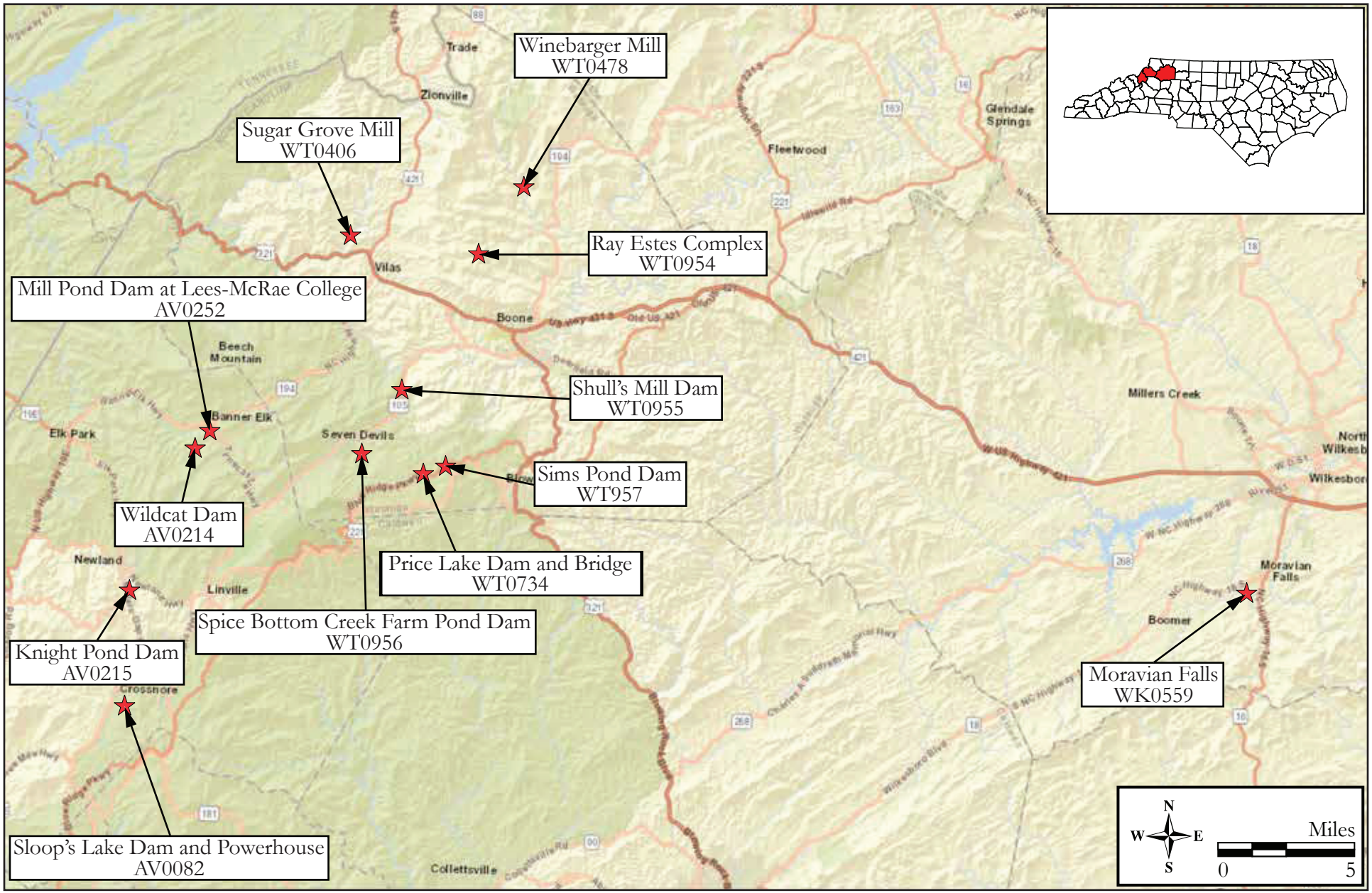

Figure 1.1: Road map showing locations of properties documented in this report (World Street Map, ESRI 2013).

aquatic fragmentation and to have positive impacts to the overall aquatic network. The SABPT was used to locate a number of dams, although the tool has limited historical information and is not comprehensive. The SPOOM catalog contains a survey of historical dams with an assessment of their condition. Historical sources reviewed included the Branson's *North Carolina Business Directory* from the years 1890 and 1896. Topographical maps from the 1880s through the 1960s were studied for dam and mill locations. Soils maps from the three counties were examined but only the Wilkes County Soil Map from 1918 shows locations of mills. Lastly, *An Inventory of Historic Engineering and Industrial Sites* by the North Carolina Division of Archives and History and the Historic American Engineering Record and *North Carolina: An Economic and Social Profile* by S. Huntington Hobbs, Jr. were consulted.

After compiling a list of survey targets, aerial and satellite imagery from Google Earth and Google Maps was examined to determine the probability of extant buildings or dams. The presence of dense tree coverage and lack of street views available on Google Maps for some of these rural areas, made confirmation of the presence of the dams on this list challenging.

An initial review of the sources and aerial imagery resulted in a list of 62 potential survey targets (Appendix C). In consultation with the HPO, RGA ranked the survey targets as "required by MOA," "high potential," and "low potential." The rankings were based on dam type, construction date (prior to the mid-twentieth century), integrity (if known), and prioritization for removal. Those dams that were built for water supply or recreation, as opposed to small-scale manufacturing, were given lower priority. It was observed during the survey that many dams served multiple purposes throughout their lifespans.

1.4 Field Methods

Fieldwork was conducted in Avery, Watauga, and Wilkes counties March 4 through 8, 2021. The surveyors planned to visit most of the 31 dams that remained in the "required by MOA," and "high potential" categories after RGA and the HPO had cooperatively reduced the initial list (see Appendix C). A number of dams could not be located or were found to be demolished. Ward Mill Dam, Sugar Grove, and Winebarger Mill were recently documented for the B.O. Ward House and Mill Complex HSSR and were not visited during the March 2021 fieldwork. Survey Site Numbers were provided by the HPO, and previously unrecorded resources were assigned numbers in the field. Each resource was visually inspected, photographed, and documented on HPO's Historic Property Field Data Forms. The field data was then entered into the HPO's Access-based Survey Database.

1.5 Summary of Results

Water-powered resources lie adjacent to moving water, and therefore are at high-risk for destruction from the water's force that they utilize. Obsolescence, flood control measures, storms, and catastrophic floods are factors that jeopardize the resources' long-term survival. Many of the survey targets identified during the scoping phase of the project were not located during the field survey, and are presumed to have been lost, either by intentional removal or by natural events (see Appendix C). Often the surveyors would visit a location to discover that only vestiges of a site remained, such as a breached dam or remnant spillway. For example, the concrete arch dam at Shull Mill survives, but no vestige of its associated mill building is evident. There is no obvious evidence on the landscape of many of the dam sites depicted on historical maps, although it is important to note that there could be archaeological evidence of historical uses at these locations. This survey establishes that intact dam and mill complexes are exceedingly rare within the survey area. The B.O. Ward House and Mill Complex was the only property that was found to retain a milling building and dam,[1] and the dam is scheduled for removal. When this action is completed, no known intact historical dam and mill complexes will remain in the survey area.

1 The Ray Estes Complex (WT0954) retains its historic dam and mill buildings constructed during the third quarter of the twentieth century, but these buildings appear to have had little practical function and were instead a whimsical recreational pursuit of the owner. Therefore, they are not counted as operable mill-and-dam complexes akin to those used for commercial purposes.

Due to the survey area's dearth of surviving water-powered mill dams, the types of resources documented during the fieldwork phase was expanded to include surviving dam types observed such as those built for largescale electrical generation, agriculture, recreation and tourism, and hobby milling. The historical background essay and context was broadened beyond the original scope outlined in the MOA to address these types of dams.

As a result of this Historic Dam Survey of Avery, Watauga, and Wilkes counties, guidelines for NRHP eligibility were developed (see Section 15.0), 12 resources were assessed, and seven of these were recommended potentially eligible for listing in the NRHP. Additional study and full NRHP evaluations are recommended for these seven resources (see Table 1.1).

The results of this Historic Dam Survey of Avery, Watauga, and Wilkes counties are presented in the following sections of this report: Section 2.0 provides a broad historic context for small, water-powered industry, and mills and dams in Avery, Watauga, and Wilkes counties; Sections 3.0 through 14.0 describe each resource documented on HPO's Historic Property Field Data Forms and within the Access-based Survey Database. Guidelines for National Register Eligibility for dam and mill property types are provided in Section 15.0. Table 1.1 lists the 12 resources that were documented herein and identifies those resources that appear to be eligible for listing in the NRHP under one or more of the following criteria: Criterion A in the areas of industry or entertainment/recreation; and/or Criterion C in the areas of architecture or engineering; and/or Criterion D both as architectural properties and/or archaeological sites.

This report was authored by Ellen Turco, Philip Hayden, Jason Harpe, and Annie McDonald. Ms. Turco served as the Principal Investigator; Mr. Hayden developed the historic context, and Ms. McDonald and Mr. Harpe made contributions throughout the report. Ms. McDonald reviewed and edited the report. All RGA staff assigned to this report meet the professional qualifications standards of 36 CFR 61 set forth by the National Park Service (Appendix D). Catherine Smyrski served as technical editor and formatted the report.

Table 1.1: Resources documented and their NRHP recommendation.

Survey Site #	Name	Location	Type	Preliminary NRHP Assessment
AV0082	Sloop's Lake Dam and Powerhouse	Crossnore vicinity	Electrical power generation	Eligible, A and D
AV0214	Wildcat Dam	Banner Elk vicinity	Recreation	Unevaluated
AV0215	Knight Pond Dam	Newland vicinity	Recreation	Unevaluated
AV0252	Mill Pond and Dam at Lees-McRae College	Banner Elk	Electrical power generation	SL* 1986, Contributing to the Lees-McRae College Historic District
WK0559	Moravian Falls	Moravian Falls	Grist, electrical	Eligible, D
WT0406	Sugar Grove Mill	Sugar Grove	Grist	Not eligible
WT0478	Winebarger Mill	Meat Camp	Grist	SL* 2003, DOE 2004, Eligible, A and C
WT0734	Price Lake Dam and Bridge	Blue Ridge Parkway	Recreation	Contributing to the Blue Ridge Parkway Historic District; individual eligibility unevaluated
WT957	Sims Pond Dam	Blue Ridge Parkway	Recreation	Contributing to the Blue Ridge Parkway Historic District; individual eligibility unevaluated
WT0954	Ray Estes Complex	Meat Camp	Grist, hobby	Eligible, C and D
WT0955	Shull's Mill Dam	Valle Crucis vicinity	Electrical power generation	Not eligible
WT0956	Spice Bottom Creek Farm Pond Dam	Foscoe vicinity	Agriculture	Unevaluated

*State Study List
DOE – Determination of Eligibility
NRHP – National Register of Historic Places

2.0 BACKGROUND HISTORY AND HISTORIC CONTEXT

Within the evolving context of rural western North Carolina, small, localized water-powered industries are hard to define historically. Waterpower was utilized for processing materials both for individuals and for large commercial purposes. The size of a single operation changed over time, evolving from small operations into larger establishments with diversified production, and then sometimes back again for specialized uses. The advent of electric power added still another dimension: small water-powered plants added dynamos that replaced mechanical power with electrical power. This additional power could satisfy the company's own demands or could be transmitted to local households or industries located farther afield. The relatively common evolutionary transition of water-powered plants from the service of small industries into larger hydroelectric generating stations can easily mask or destroy earlier operations in the material record, as can flooding caused by nature and manmade impoundments.

By the turn of the twentieth century, when statisticians began measuring existing and potential waterpower in western North Carolina, they did so in terms of horsepower. Facilities producing under 1,000 horsepower of energy generally fell into the category of small-scale production. Other ranges, between 10 and 500 horsepower, seemed to reflect the average for individual facilities typical of a farmer or small operator (News Letter [NL], 10 November 1915: 1; Dunn Dispatch 19 February 1920: 6). Without complete records, however, identifying small water-powered industries based solely on their recorded horsepower is not practical. Similarly, recognizing small water-powered plants according to their material remains is equally problematic in light of the evolution of most sites. In all cases, the required infrastructure for water-powered industries produced the same basic elements: an impoundment, a sluice, and a wheel house. Beyond that, the scale of the attached industry was subject to wide-ranging factors, including available water flow, site conditions, capital, labor, the basic market forces of supply and demand, and technological change. Ultimately, the siting and operation of small-scale water-powered industries was influenced by environment, culture, economy, and technology (Hunter 1999).

Physiographic Influences and Watersheds

Topography shaped settlement, transportation, and the industrial development of western North Carolina. Early movement followed natural trails formed by watercourses, giving rise to the present pattern of communities, farms, and small manufacturing establishments originally dependent on waterpower. The counties of Avery, Watauga, and Wilkes fall within North Carolina's northwestern section of the Mountain physiographic region (Figure 2.1). Only the modern boundaries of Wilkes County border the more rolling topography of the Piedmont Region, with the portion of the county east of Wilkesboro characterized by gently rolling foothills and the western part dominated by the slopes of the Blue Ridge Mountains. Modern Avery and Watauga counties, in contrast, sit squarely in the highlands bordering Tennessee. Rising sharply from the foothills, the Mountain region is characterized by rugged, forested slopes, deep valleys, projecting spurs, and numerous steep drainages with high falls, while almost every valley contains fertile bottomlands (Edwards 1916: 81).

The drainage of Avery, Watauga, and Wilkes counties straddles the divide between the Atlantic and Gulf watersheds along the Eastern Continental Divide (Figure 2.2). The Yadkin-Pee Dee River basin rises on the eastern slopes of the Mountain region and drains the whole of Wilkes County and the eastern portion of Watauga County. The Catawba-Santee River basin drains the southeastern potion of Avery County down through South Carolina. On the western side of the Divide, the Watauga River and French Broad River basin drains parts of Avery and Watauga counties through Tennessee, while the northern central portion of Watauga County drains northward into Virginia and West Virginia via the New River and the Kanawha River basin out to the Gulf of Mexico (Table 2.1). As conduits for the movement of people and goods, the region's drainage systems determined early settlement patterns. They also dictated the supply of available water emptying into different streams and rivers. The western North Carolina watershed received exceptional rainfall on an annual basis. In 1913, the mean annual

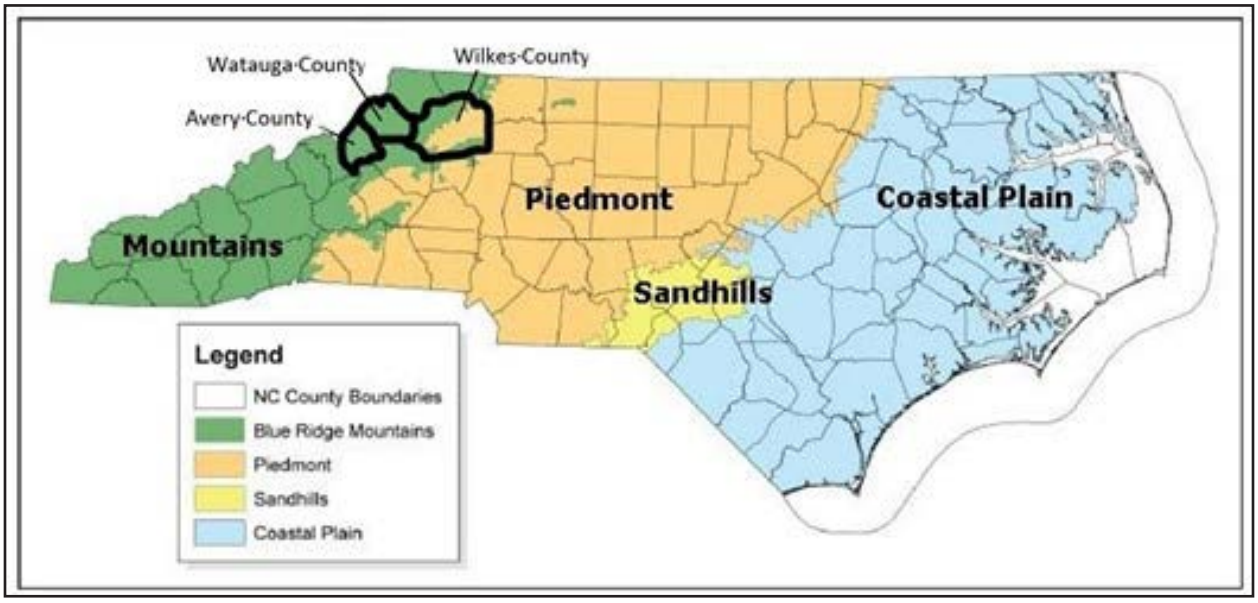

Figure 2.1: North Carolina Physiographic Provinces map, showing Avery, Watauga, and Wilkes counties outlined in black
(North Carolina Wildlife Resources Commission, 2021).

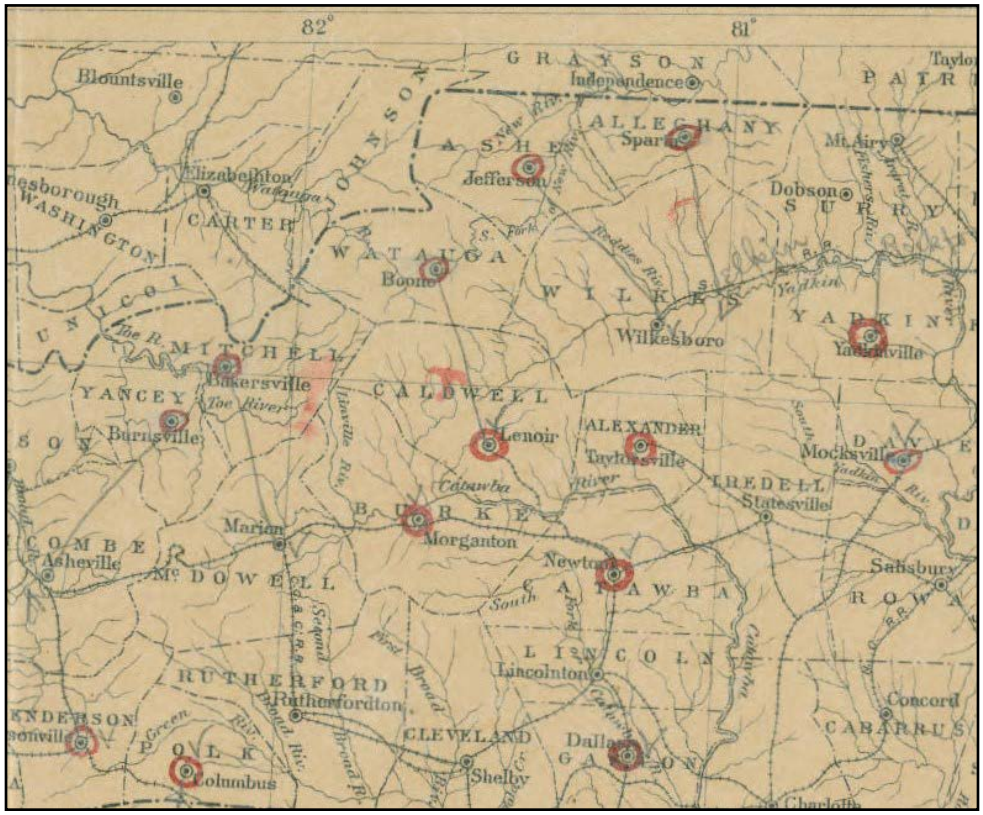

Figure 2.2: River drainages of Avery, Watauga, and Wilkes counties.
This map predates the formation of Avery County in 1911
(Based on J.A. Holmes, *A Hydrographic Map of North Carolina*, 1889).

rainfall in Avery, Watauga, Wilkes, and neighboring counties ranged between 60 and 70 inches of water (Flinn, Weston, and Bogert 1918: 7). This relatively dependable supply of run-off formed the basis for assessing both water supply and the potential for water-powered industries.

Table 2.1: Watersheds by county.

County	Tributary/Creek	River Basin	Drainage
Avery	- Linville River	Catawba-Santee River Basin	Atlantic
	- Watauga River - North Toe River	French Broad River Basin	Gulf of Mexico
Watauga	- Stony Fork Creek - Elk Creek	Yadkin River -Pee Dee River Basin	Atlantic
	- Watauga River	French Broad River Basin	Gulf of Mexico
	- New River - South Fork of New River	Kanawha River Basin	Gulf of Mexico
Wilkes	- Mulberry River - Roaring River - Little Elkin River - Elkin River - Reddies River	Yadkin River -Pee Dee River Basin	Atlantic

Waterpower Development and Management

Dam Design and Construction

Water-powered industries left recognizable imprints on the landscape. A reliable impoundment of water was the most important and costly part of any water-powered development. Topography, soil conditions, and available materials determined both the location and form of the dam employed (Craik 1877: 156). Accordingly, no specific design prevailed, and local conditions determined the most economical and safest approach to dam building. Because the dam was often the single most expensive investment in the milling industry, as an example, the type of structure reflected either the temporary or permanent nature with which the builders viewed the facility.

Dams were typically located near a natural fall line and along established transportation routes. This was especially true in the mountain counties, where the terrain provided ample locations for impounding water to a sufficient height to capture the energy desired. While dam and mill construction was usually the province of skilled specialists with long experience, the second half of the nineteenth century produced an assortment of instructional guides and periodical articles to help novice landowners harness waterpower (Evans 1860; James Leffel and Company 1874, 1881; Craik 1877) (Figure 2.3). Success or failure of small water-powered developments could hinge on the competence of the builder, with high-investment facilities outlasting small, informal, or under-funded operations.

In the mountain region, abundant construction materials in the form of timber, stone, and well-eroded rocky streambanks made for strong foundations, abutments, and embankments. Log or frame construction proved most expedient, with the straight lines of the timber often dictating linear structures of modest length with relatively low impoundments (J. Leffell & Company 1874: 13). The design of such structures took many forms, all of which required sturdy banks capable of supporting the dam abutments and resisting erosion. For the structure itself, a common arrangement used notched logs stacked perpendicular to the channel and tied back with closely set logs laid parallel and upstream to the channel. When complete, the face of the dam resembled a stack of logs similar to a log house, while the upstream side formed a shallow ramp of overlapping logs. In conditions of sand and mud, the bed of the stream required extensive planking to form an apron at the downstream base. This armoring helped absorb the fall of water and avoid undermining. Sometimes proper underpinning required pilings driven deep into the stream base across the whole width of the channel. Other designs utilized box-shaped log or framed cribs of the notched or morticed-and-tenoned variety that were

then filled with stones to provide weight and resistance against the impoundment. The remains of a bridge abutment off Vannoy Road in the vicinity of Royal Mills in Wilkes County reveals a profile of rubble stone surrounding the exposed side of a notched log crib at the heart of the structure, very similar in design to a dam (Plate 2.1). Generally, log construction was best used in unfailing streams where the water and surrounding soils kept the wood saturated and free from the decaying forces caused by exposure to air (Craik 1877: 159).

Masonry dams, built on bedrock, could be formed easily with materials at hand. Typically designed with a slope of two inches to the foot, these structures often required log or plank armoring to prevent infiltration and washouts (Craik 1877: 163). Stone dams required significant hauling of materials, making them more costly an investment but frequently more permanent. Their weight also helped them resist the pressure from larger impoundments with higher falls in the water level. The larger the impoundment, the greater the available supply of energy for milling. The most common of type of stone dams were fashioned with courses of deposited rubble, creating rough stone obstructions across the stream but allowing the water to pass over without significant decay. An example of a substantial arched rock masonry structure is the Sloops Dam and Powerhouse (AV0082) in Avery County, which was built for electric power generation in 1915 (Figure 2.4 and 2.5). Stone and later concrete dams were often fashioned in an arc, with the convex side facing upstream against the flow of water. The design replicated the principles of the arch, in which the weight of the impoundment pressing against the bowed structure was transferred through the stonework to the dam abutments at each streambank (James Leffel and Company 1881: 6).

The introduction of reinforced concrete in dam construction at the turn of the twentieth century coincided with the adaptation of many old mill sites to hydroelectric facilities. Together with municipal water supplies, electric generation became increasingly part of the region's essential infrastructure. Versatile, easy to form, and strong, concrete promised both durability and reliability for facilities in which continuous operation was critical. The large reinforced concrete dam built in 1917 at Lees-McRae College (AV0217) represented such a dam, founded on a stone streambed with substantial stone banks to form the dam's abutments (Plate 2.2). The surviving dam at Shulls Mill (WT0995) in Watauga County exemplifies a concrete dam utilizing the arc design, founded on a stream base with abutments of bedrock (Flinn, Weston, and Bogert 1918: 115-216) (Plate 2.3).

Spillways, Raceways, and Waterwheels

Dams were only as useful as their ability to withstand water. Temporary structures with limited life expectancy could be erected quickly with little concern for future loss. Timber structures, in particular, were well suited to quick installation and replacement, especially where wood was plentiful. Structures representing more substantial investment, such as cribbed, framed, or stone dams, required greater thought to withstand the erosive effects of water, decay, freeze-thaw cycles, and freshets. Early dams were designed and built to relieve water pressure by either allowing the water to overtop the structure or by channeling it through armored spillways. The former required durable materials at the dam crest, such as stone or logs, as well as protective aproning at the structure's base to secure its footings from undermining by the falling water. For structures with spillways, these could be cut through adjoining native rock and at a size large enough to draw away rising water before it could overtop the dam. Spillways were especially important for earthen or rubble stone dams, where a flood could quickly overwhelm the barrier and carry off material.

The counter to the spillway, the drain, was rarely incorporated into early dam design. Drains, however, provided the only means of de-watering a pond for maintenance. In later dam construction, particularly after 1900, many were designed with valves and culvert drains at their base. When opened, the impounded water emptied through the outlet, exposing the normally submerged structure for inspection and repairs.

The method for delivering water to a waterwheel depended on the fall of the water involved, the type of waterwheel employed, and the distance between the impoundment and the wheel. The channel carrying water from the pond to the mill, called the headrace, could consist of anything from an

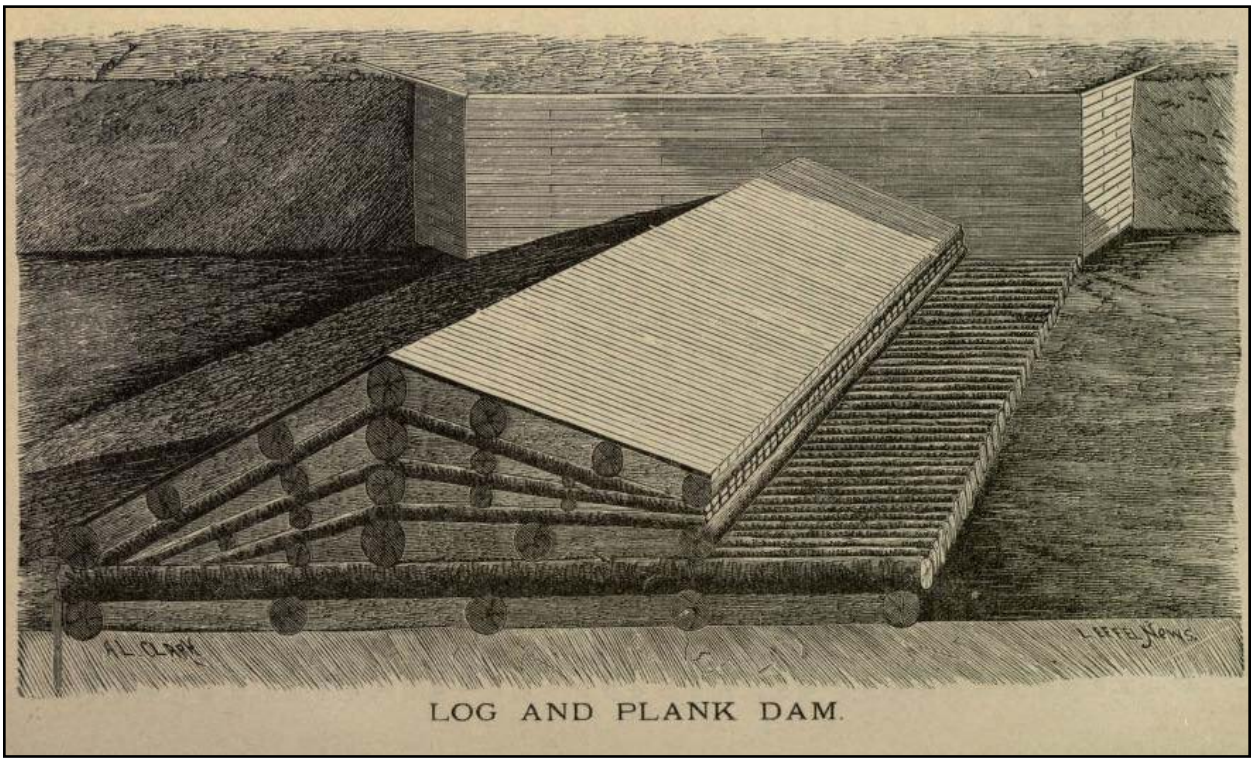

Figure 2.3: Log and plank dam
(from *The Construction of Mill Dams*, James Leffel and Company, 1874).

Plate 2.1: Hayes Dam remnant.

Photo view: East

Photographer: Jason Harpe

Date: March 5, 2021

Figure 2.4: "Dr. Sloops's Dam, 1938"
(Digital NC).

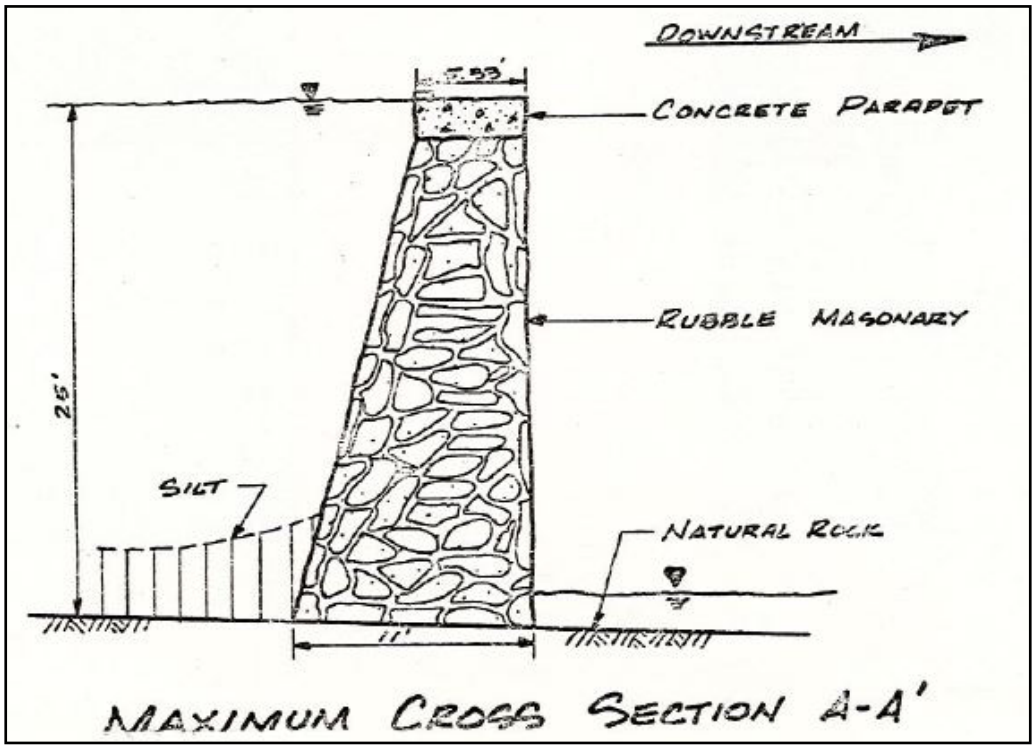

Figure 2.5: Sloop's Dam cross section
(from AV0082 HPO survey file, drawn by Golder and Associates, 1980).

Plate 2.2: Lees-McRae College Dam.

Photo view: North

Photographer: Jason Harpe

Date: March 5, 2021

Plate 2.3: Shulls Mill Dam.

Photo view: East

Photographer: Jason Harpe

Date: March 4, 2021

open canal or a buried pipe to a simple plank flume, and it could extend from as short as a few feet to several hundred feet in length. In cases of gently sloping streams, the impoundment might be located hundreds of feet upstream. From there, the water would be carried by either a level channel cut into the stream bank or by a wooden structure downstream as far as required to obtain the needed fall, then dropped through the waterwheel and discharged back into the stream. Longer headraces provided opportunities to divert water into multiple mill sites lining the stream bank. The water could be delivered directly to the wheel or it could be collected in a forebay and released by the opening and closing of a sluice gate. The greater the opening, the stronger the force of water delivered to the wheel. Once expended, the water was discharged through a tailrace and delivered back into the stream's main channel.

Both the available fall of water and the type of mill involved determined the kind of water wheel employed in early mills. Undershot wheels, in which a raised sluice gate at the bottom of a forebay delivered water at high velocity to the base of a drum-shaped wheel, turned the wheel shaft in a counter-clockwise motion to produce rapid revolutions. This type of wheel was especially well suited to low-fall streams while its velocity worked well for sawmills.

Overshot vertical wheels, in which the fall of water was high enough to deliver it to the top of the wheel, turned in a clockwise rotation. Built-in buckets or compartments catch the water, and gravity rotates the wheel around its axis. This type of wheel, which produced a slower motion, was favored for the steady grinding of grains (Chatley 1907: 38). Although neither is original to the site, there are two metal overshot waterwheels at the Ray Estes Compound (WT0954) near Meat Camp in Watauga County (Plates 2.4 and 2.5). Both water wheels were used to power grain grinding equipment for milling hobbyist Ray Estes beginning in the 1950s.

Experimentation and circumstance produced numerous variations of these two types of wheels. The most significant innovation in waterpower came in the nineteenth century with the development of the turbine (Plate 2.6). Whether oriented horizontally or vertically, the turbine consisted of a self-contained chamber with an internal propeller. Water piped through a nozzle in one end of the turbine forced the propeller to spin at high velocity, converting the kinetic energy of the water into mechanical energy. Numerous improvements made the turbines increasingly efficient and portable, helping to improve and expand existing facilities and to place simple waterpower within reach of individual farmers.

Common Mill Types

Mill types in the mountain regions responded to the nature of the raw materials to be processed. Sawmills for converting timber into usable lumber were essential for processing the region's rich forest products and for aiding in the clearing of arable land. Early small-scale sawmills utilized a vertical blade fixed within a wooden sash and linked to the waterwheel by a crankshaft. The horizontal rotational force of the revolving wheel was converted by way of a linkage to reciprocating vertical force to drive the blade up and down. The term "sash saw" was not needed prior to the advent and then widespread use of circular and band saws in the middle of the nineteenth century. All early sawmills were sash-type, so they were simply called sawmills. Wood sawmills drew upon nearby timber stands and satisfied mostly local needs. Some centralized mills, located on larger rivers at key population centers and established transportation networks, evolved into large commercial operations (Starnes 2006). There, logs could be floated downstream to mills and produced easily for a regional market. Communities like Wilkesboro, Lenoir, and Watauga Falls emerged as important early centers for the lumber industry.

The continued success of sawmills depended on timber supplies and technological innovations. The thickness of early water-powered sash saw blades consumed as much as 50 percent of every log in the form of sawdust. Sawdust as a by-product also created problems of disposal. Most of the material was left to wash downstream, where it impeded flow and choked other mills. The circular saw, introduced to North Carolina from England in the 1830s, improved efficiency and speed (Figure 2.6). By the early 1870s half the sawmills in North Carolina were equipped with sash saws. Within a decade, virtually all

Plate 2.4: Ray Estes Complex (WT0954), large overshot water wheel.

Photo view: West

Photographer: Jason Harpe

Date: March 4, 2021

Plate 2.5: Ray Estes Complex (WT0954), small overshot water wheel.

Photo view: Northeast

Photographer: Jason Harpe

Date: March 4, 2021

Plate 2.6: View of the 26-inch turbine at the B.O. Ward Mill (WT0358).

Photo view: Northeast

Photographer: Jason Harpe

Date: May 21, 2020

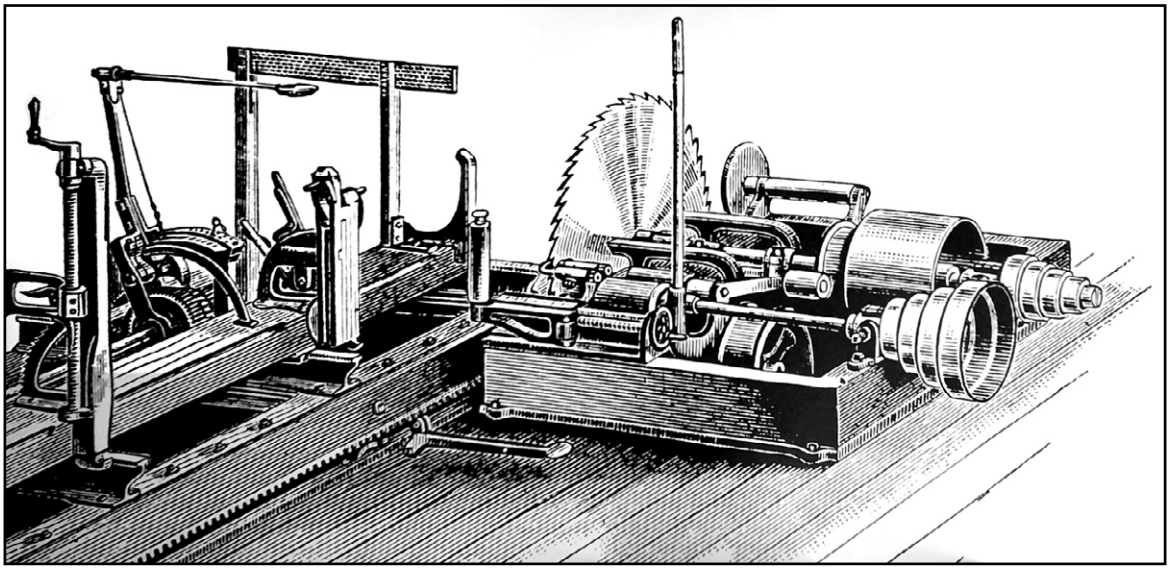

Figure 2.6: Circular saw schematic
(from Vernon W. Roelofs, *100 Years: Paine Lumber Co., Ltd.*).

had been replaced with circular blades (Bishir et al. 1990: 206). It was not until the patenting of the thin band saw around 1910 that milling could maximize the yield from every log (Western Sentinel [WS], 29 March 1910: 7).

Grist mills for grinding flour were essential to early agriculture and to subsistence farming in the mountain regions. Two dressed stones, one fixed and the other rotating, ground grain with the combined action of weight and abrasion. Mitered (beveled) gears converted the horizontal rotational action of the waterwheel to vertical rotation used to turn the grinding stone. The caliber of the meal depended on the cut of the stone, which consisted of ridged grooves tooled into the grinding surface. Like sawmills, the success of community grist mills depended in large part on their location relative to established population centers and transportation routes as much as to the supply of water. Like sawmills, grist mills were also subject to changing technology. The most significant shift came with the introduction of the roller mill, developed in 1876. These drum-shaped grinders produced a more uniform flour, reduced waste, and eliminated the need for constant maintenance and dressing of the traditional millstone (Powell and Popovic 2006). The roller mill rapidly replaced stone-ground mills as the dominate mill type across the nation.

Less common in the mountain regions were fulling mills used to clean and process raw wool. Such establishments thrived mainly in regions of regular sheep raising. They harnessed the rotational force from the waterwheel and converted it to swinging motion with the use of cams and trip hammers. With every revolution of the waterwheel shaft, the cam would lift and release a hammer, which swung free to pound the raw wool. The action loosened dirt, oils, and debris while it matted fibers together for added strength.

While most early mills were developed for a single function, they frequently evolved into a combined operation. A single water source, depending on its rate of flow, could furnish power to one waterwheel operating multiple milling machines or to multiple wheels fed by separate headraces tapping the same water source. In a variation of this system, some mills located in particularly steep terrain could capture the spent water from one wheel and harness it for a second wheel located further downhill (Powell and Popovic 2006).

Laws and Regulations

Water-powered mills were an essential part of communities. As such, the colonial and later state governments of North Carolina enacted laws designed to encourage mill construction and establish the principal of government regulation over mills, as well as the common rights to water (Powell & Popovic 2006). These laws drew heavily on English common law. Small landholders and farmers could create private water-powered sawmills, threshers, and grinding mills, often on small streams of a private character and use. Other individuals and corporate entities erected mill dams across larger watercourses of a public character used for the purposes of fishing and transportation. Building a dam and mill on such waterways required approval from the government and often with conditions to provide a public benefit. Thus, a license to dam a stream and establish a mill on the larger waterways typically included provisions for milling grain for the public at set rates. Colonial-era acts in 1715 and 1758 encouraged the building of mills by granting condemnation rights for establishing mills for public benefit and establishing set rates for grinding (Connor 1919: 122). These laws helped solidify the distinction between public mills on public waterways and private mills located entirely on the property of an individual mill owner.

The question of ownership of small creek and stream beds was, in North Carolina, vested in the property owner(s) of the two adjoining banks. However, the use of the water running through the stream, and of the fish that might inhabit it, belonged to all abutting owners alike, up and down the watercourse. This led the North Carolina General Assembly in the early nineteenth century to enact a number of laws to prohibit obstructions to the passage of fish in almost every river and creek of any size and for the creation of fish passages around dams (North Carolina General Assembly 1828: 80). Throughout the Antebellum Period, the General Assembly continued to pass special and general laws targeting navigation, fishing, and mill and dam building in an effort to balance private property interests and the public good with demands for waterpower (Dunaway 2013).

Reconstruction-era laws included an act of 1869 codifying special procedures for erecting water mills and the process for condemnation of lands for that purpose. It also established protections for abutting property owners by prohibiting impacts to houses, gardens, orchards, or other mill buildings, and by prohibiting mill operators from creating a public nuisance, and it provided procedures for remedy (North Carolina General Assembly 1869: 377). Part of the impact of such a law was to focus waterpower improvements on existing facilities. A subsequent act to regulate proceedings against mill dam owners for injuries caused by them was passed by the General Assembly in 1877. It clarified the process by which the aggrieved could sue for damages and provided a mechanism for having a dam declared a nuisance, and subject to removal (North Carolina General Assembly 1877: 390).

The North Carolina Drainage Act of 1909, known simply as the Drainage Law, permitted the creation of county drainage commissions to support reclamation of swamps and overflowed lands through ditching and removing of obstructions, including mill dams (Farmer and Mechanic 1909: 26 October, 10). In Forsyth County around Winston-Salem, Mr. L.H. Sides was compelled to defend himself against calls for destruction of his dam under the Drainage Law. The structure, he contended, "was only 6 ½ feet high and two feet lower than formerly and that as good crops were grown on these bottoms years ago when the dam was higher, that could hardly be the reason for the trouble at present for it has been a mill site for 150 years and was not only valuable but a convenience to the neighborhood" (Union Republican, 8 July 1909: 7). An amendment to the Drainage Law on March 4, 1911, granted county drainage commissions the right to clear obstructions causing flooding upstream or creating health concerns. This included mill dams, "upon the grounds that its existence and continuation is a nuisance and injurious to the lands and health of the community" (North Carolina General Assembly 1911: Chapter Law 583, 989). While the original law applied statewide, its provisions were geared mostly to the eastern lowlands and piedmont regions. Nevertheless, some western counties created their own drainage districts.

A number of similar laws called for specific protections to individual communities and river drainages. For example, a bill to improve the drainage of Lower Creek in Caldwell and Burke counties made it unlawful to choke the stream, or any of its tributaries, with sawdust or rubbish, and it made it unlawful for any individual or corporation to construct any bridge, roadway, fence or flood gate, mill dam, or fish trap "in such a way as to injure or obstruct the improvements and water flow of said stream" (North Carolina General Assembly 1911: Chapter Law 46, 33).

Ultimately, the location, size, and utility of many water-powered industries depended as much on evolving legal controls as it did on need and physiography.

Settlement and Early Mill Building in Avery, Watauga, and Wilkes Counties

European settlement of the Mountain region, inhabited originally by the Cherokee and Tutelo, a Siouan tribe, began in the mid-1700s following mainly existing transportation corridors, including river drainages (Peña 2008: 24). The Yadkin River, a principal waterway, was not navigable in this region except by shallow raft and canoe, and the early roads were poor and difficult to traverse (Mattson 1994:13). As a result, early settlement and growth lagged behind other more accessible areas. A number of settlers originated in North Carolina's Piedmont region, and were of English, Scotch-Irish, and German extraction, but others of similar descent moved to the region from the Middle Atlantic area comprising New Jersey, eastern Pennsylvania, and Maryland by traveling along the foot of the mountains through Virginia into western North Carolina and eastern Tennessee (Glassie 1968: 36-39; Kniffen 1986: 10-13; Holland 2006). This migration between circa 1790 and 1850 manifested itself in common cultural traits. Among these were patterns of agriculture, housing, and barn types, but also in community structures and language (Kniffen 1986: 11, 19-21). Farmers within this Middle Atlantic cultural diffusion overwhelmingly established small, traditionally independent operations in the areas they occupied: a region sometimes referred to as the Upland South (Glassie 1968: 35-39). Fertile bottomlands supported diversified farming while steeper environs became home to mainly subsistence farms with small patches for raising grain (Kniffen 1986: 22-23). Cultural diffusion may also have played a role in the preferred types of mills used in each region. According to one source, while northern regions favored water-powered grist mills, the southern miller tended to prefer horse power (Kniffen 1986: 20).

The settlement at Moravian Falls exemplified the pattern of cultural diffusion and settlement flowing out of the Middle Atlantic region. One of its earliest settlers, William P. Waugh of Pennsylvania who arrived in 1803, established a seat near the large natural waterfalls of the Moravian Creek at what was then called "Forks of the Road," southwest of Wilkesboro (Laws 1936: 3). One of these roads served as the main stage route between Wilkesboro and Morganton. The site's proximity to waterpower and an established road network made its location attractive for water-powered development, and Waugh is credited by some as the first in Wilkes County to erect a water-powered flour mill using grinding stones (Laws 1936: 3). This was followed by additional mills for corn meal, linseed oil, and wool carding. All utilized the same common source of water. Waugh's successor, Prichard N. Hix, acquired the tract in 1849, enlarging the operation with the addition of a vertically mounted sash sawmill. Thus, by the early nineteenth century, Moravian Falls represented a cross-section of the region's small water-powered industry.

The region remained rugged and sparsely populated throughout the nineteenth century and subsistence agriculture dominated the area's economy (Miller 1916: 84; Peña 2008:41). Traditional cultivated crops included corn, barley, rye, oats, wheat, tobacco, fruits, vegetables, and hay (Mattson 1994:16). Livestock production was limited mainly to small, self-sufficient farmstead holdings. General improvements in road networks allowed farmers to move produce and livestock to market, encouraged development, increased travel and communication, and attracted new residents and visitors. The population of Wilkes County, for example, climbed from 7,247 in 1800 to 12,099 in 1850 and to 19,181 by 1880. Region-wide, however, the population of the 17 counties comprising the Highlands by 1916 totaled only 240,000, with just 37,000 settled in larger towns (Edwards 1916: 81; Miller 1916: 84). As the population increased, larger counties were divided into smaller jurisdictions to ease travel to court, simplify civil administration, and rebalance representation in the state legislature. The civil organization and boundaries of the three counties fluctuated throughout this period. Wilkes County was formed out of Surry County in 1777. Watauga County was consolidated out of parts of Ashe, Wilkes, Caldwell, and Yancey counties in 1849, taking its name from the Watauga River (Mattson 1994:12). Avery County was created in 1911 from parts of Mitchell, Caldwell, and Watauga counties.

Few statistics record the number of water-powered mills present in North Carolina prior to the Civil War. In 1850, the U.S. Census documented four flour mills and one linseed oil mill in Caldwell County. Wilkes County featured one linseed oil mill, while Watauga reported zero mills in the census, although documentary evidence indicates that at least three mills operated there prior to mid-century (Van Winkle 2003: E-13). The pre-Civil War counties from which Mitchell and later Avery County were formed—Yancey, Burke, and McDowell—included five sawmills and eight grist mills between them (Dunaway 2013: 85).

After 1865, many of the mills destroyed during the Civil War were rebuilt using coal and steam as their power source, while new establishments also adopted this alternate technology. Manufacturers were no longer tied to a water source for their energy needs, freeing industries to locate in more advantageous places. Smaller operations and individual farmers adopted newly available portable steam engines to supply power for a number of needs. Sawmills, in particular, were quick to embrace the boiler as the main source of power (Hall 1909: 560). Partly because of the competing technology, the number of water-powered facilities in North Carolina increased only marginally statewide from 26,211 horsepower in 1870 to 30,063 horsepower in 1880 (Hall 1909: 560-561). The increase was due mainly to enlargements to existing facilities rather than to the construction of new dams and water wheels.

Little consistent information exists on the number, type, and size of late nineteenth- and early twentieth-century water-powered industries operating in Wilkes, Watauga, and the counties of Caldwell and Mitchell from which Avery County was eventually created. Mills were recorded based on a combination of geographic region, civil organization, and drainage, making it difficult to link listed mills with specific sites. At the same time, inconsistent reporting created undercounts in some areas, while changes in proprietorship made it difficult to distinguish one operation from another over time. In all cases, the size of the industry, whether small or large, went unrecorded. In 1880,

the U.S. Census recorded 12 flour and grist mills, two sawmills, one woolen mill, and one cotton factory operating under waterpower in Wilkes and Caldwell counties (Table 2.2). Branson's *North Carolina Business Directory* for 1883 listed 22 grist and flour mills, eight sawmills, and one woolen mill in Watauga County and 26 grist and flour mills and 12 sawmills in Wilkes County (Branson 1884). As with the Branson directory, a more detailed list of industries complied in 1905 provided identifying information but did not distinguish between water-powered operations and those using other sources of energy (Table 2.3).

Table 2.2: Water-powered mills within the Yadkin River drainage in Wilkes and Caldwell counties in 1880.

County	Stream	River Drainage	Kind of Mill	Number of Mills	Total Fall Utilized	Total Horsepower Utilized
Wilkes	Other Tributary	Yadkin	Flour & Grist	12	140.0	102
Wilkes	Other Tributary	Yadkin	Saw	2	12.0	14
Wilkes	Other Tributary	Yadkin	Woolen	1	Unreported	Unreported
Caldwell	Yadkin	Yadkin	Cotton Factory	1	25.0	50

Source: US Census 1880: North Carolina Water Power

Waterpower and Logging

Of the 60 industries listed in Caldwell, Mitchell, Wilkes, and Watauga counties in 1905, over half (55 percent) could be clearly linked to wood processing. Logging and forest products represented the single most abundant natural resource available in the Mountain region throughout the nineteenth and early twentieth centuries. Stone and mineral deposits attracted some attention, but their development never reached the same level of importance as wood. A single water-powered iron smelter operated for a brief time on Moravian Creek in the 1790s (Laws 1936: 3). The discovery of gold in Burke and Rutherford counties in the 1820s and 1830s encouraged further interest in mineral development across the Mountain region, but mineral extractive industries remained a relatively minor part of the overall economy. In 1905, only one stone quarry, one mica mill, two ore processing facilities, and one foundry were reported.

Sawmills, mainly for local production and consumption, represented a large percentage of water-powered operations in Wilkes, Watauga, and surrounding counties. Poor transportation, however, limited lumbering on an industrial scale until the introduction of railroads. Plans for Wilkes County's first railroad line began in the 1880s to help tap vast timber reserves and the agricultural resources of the upper Yadkin River Valley (Mattson 1994:16; Phillips 2002:8-19). The North Western North Carolina Railroad, a subsidiary of the Richmond & Danville Railroad, reached Wilkesboro in August 1890. It was quickly subsumed into the Southern Railway System in 1894. Smaller narrow gauge railroads, mainly for logging purposes, reached across Watauga County and present-day Avery County. They included the East Tennessee & Western North Carolina Railroad running from Johnson City, Tennessee to Cranberry, North Carolina in 1882, and its extension by the Linville River Railway in the 1890s and again in 1918 (Bisher and Southern 1996). With the introduction of the railroads, the community of North Wilkesboro emerged as the region's principal shipping point for agricultural and forest products, including oak and poplar timber, roots and herbs, green apples, chickens, eggs, dried fruit, country bacon, and leather, which was more than any other town in the state (Mattson 1994:18).

Out-of-state timber interests acquired large tracts and cleared lumber for use mainly in North Carolina's growing furniture industry. The relatively low cost of stumpage (timber on the stump) in the 1890s allowed big lumber operators with available capital to invest in large clearing and milling operations (News and Observer [NAO], 21 June 1917: 7). Smaller producers continued to manufacture rough lumber for local markets or produce finished wooden products such as telephone pole pins, window sash and blinds, and other architectural elements. After the turn of the twentieth century, North Carolina lumber also secured an increasing share of the paper pulp market. The largest of the

Table 2.3: List of recorded mills by name and type operating in Caldwell, Mitchell, Watauga, and Wilkes counties in 1905.

County[1]	Mill Name	Post Office	Type of Mill
Caldwell	Gwyn Harper Manufacturing Co.	Patterson	Cotton
Caldwell	Hudson Cotton Manufacturing Co.	Lenoir	Cotton
Caldwell	Granite Manufacturing Co.	Granite Falls	Cotton
Caldwell	Rhodhiss Manufacturing Co.	Rhodhiss	Cotton
Caldwell	Lenoir Mills	Lenoir	Cotton
Caldwell	J. M. Bernhardt Mills	Lenoir	Lumber
Caldwell	Dudley Lumber Co.	Granite Falls	Lumber
Caldwell	Warlick & Whisnant	Granite Falls	Sticks & excelsior
Caldwell	Collettsville Lumber Co	Collettsville	Lumber
Caldwell	Lenoir Lumber Co.	Lenoir	Rough Lumber
Caldwell	Harper Furniture Co	Lenoir	Furniture
Caldwell	Lenoir Mills	Lenoir	Unidentified
Caldwell	Gilley Brook Cannery	Granite Falls	Canned Vegetables
Caldwell	The Alleghany Co	Scranton	Lumber
Caldwell	Mountain View Cannery	Cora	Canned Food
Caldwell	Gunpower Roller Mills	Lenoir	[Grain?]
Caldwell	Builders' Supply Co	Lenoir	Lumber
Caldwell	Wilson Lumber & Milling Company	Lenoir	Lumber
Caldwell	Penn-Cardan Lumber and Manufacturing Co.	Lenoir	Lumber
Caldwell	Dudley Milling Co.	Lenoir	Unidentified
Mitchell	D. R. Smalling	Poplar	Lumber
Mitchell	Cranberry Mines	Cranberry	Ore
Mitchell	W. M. Ritter Lumber Co.	Saginaw	Lumber
Mitchell	Mica Mill	Plum Tree	Mica
Mitchell	Iron Mines and Lumber Plant	Cranberry	Lumber and Iron Ore
Watauga	Mast & Bingham Roller Mills	Sugar Grove	[Grain?]
Watauga	John H. Dyer	St. Jude	Vehicles
Watauga	Tripplett Locust Pin Factory	Tripplett	Pins
Watauga	Call & Smith Locust Pin Factory	Stony Fork	Pins
Watauga	Carinder & Son's Saw Mill	Matney	Saw
Watauga	W. C. Romminger Saw Mill	Watauga Falls	Saw
Watauga	Yates & Oliver	Watauga Falls	Lumber
Watauga	G. F. Bingham & Bro Pin Factory	Mable	Pins
Watauga	W. V. Caloway Saw Mill	Shull's Mills	Saw
Watauga	Green & Co. Saw Mill	Sweetwater	Saw
Watauga	S. H. Banner Saw Mill	Banner's Elk	Saw
Watauga	C. D. Taylor Saw Mill	Valle Crusis	Saw
Watauga	Henson & Son's Saw Mill	Amantha	Saw
Watauga	Bingham & Shell Pin Factory	Meat Camp	Pins
Wilkes	Clarence Call	North Wilkesboro	Unidentified
Wilkes	Call Milling Co.	North Wilkesboro	Grain
Wilkes	Turner-White Coffin Co	North Wilkesboro	Caskets, Coffins, & Cases
Wilkes	R. A. Spainhour & Co	Wilkesboro	Unidentified
Wilkes	Forest Furniture Co.	North Wilkesboro	Furniture
Wilkes	Church Lumber Co.	Roaring River	Lumber
Wilkes	W. M. Absher Co.	Wilkesboro	Arms, pins, brackets
Wilkes	C. C. Smoot & Sons Co.	North Wilkesboro	Tannery
Wilkes	W. C. Meadows & Sons	Poor's Knob	Unidentified

Table 2.3; cont.

County[1]	Mill Name	Post Office	Type of Mill
Wilkes	Oak Furniture Co.	North Wilkesboro	Furniture
Wilkes	W. C. Winkler & Co.	Wilkesboro	Insulator pins and spools
Wilkes	North Wilkesboro Iron Works	North Wilkesboro	Foundry
Wilkes	J. L. Turner Coffin Co.	North Wilkesboro	Coffins
Wilkes	Call & Combs	Wilkesboro	Pins
Wilkes	J. L. Webster	Wilkesboro	Vehicles
Wilkes	J. V. Wallace Foundry	North Wilkesboro	Foundry
Wilkes	Hackett Bros. Flour Mill	North Wilkesboro	Flour
Wilkes	Moravian Falls Manufacturing Co.	Moravian Falls	Unidentified
Wilkes	Roaring River Manufacturing Co.	Roaring River	Unidentified
Wilkes	Quarry Milling Co	Quarry	Stone Quarry
Wilkes	Stanton Tanning Co.	Stanton	Tannery

[1] Avery County formed in 1911 out of parts of Caldwell, Mitchell, Wilkes, and Watauga Counties.
Source: North Carolina State Board of Agriculture 1905: 5-34.

logging operations, such as the Bemis Hardwood Lumber Company in Robbinsville, established small company towns with housing, schools, commissaries, and churches for worker families (Starnes and Hairr 2006).

Industrial timbering and the resulting deforestation had, by the second decade of the twentieth century, largely depleted the region's timber reserves while degrading the earth's ability to absorb rainwater. At the same time, most rural farmers switched to cattle, sheep, pork, and poultry raising on cleared land as their main cash crop (Miller 1916: 85-86). Freshets and landslides on the cleared land grew increasingly common. The decline in easily accessible stands of timber, together with the increasing frequency in flooding, had a two-pronged effect. It forced larger sawmills out of business, and it eroded other water-powered mill operations through destructive flooding.

Heavy logging across the country prompted movements towards conservation and reforestation. The Weeks Act, signed into law by President William Howard Taft in March 1911, established a system for federal land acquisition to protect watersheds and prevent forest fires. An 8,100-acre tract owned by the Burke McDowell Lumber Company, near Marion, North Carolina, became the first purchase under the new law. The state created its first park at Mount Mitchell in 1915 (Butler et al. 2006). At the same time, the mountains began to attract sightseers and seasonal residents, helping to encourage preservation of the region's natural beauty.

Decline of Water-Powered Industries

Alternate Power Supplies

The development first of the steam boiler, then the internal combustion engine, and finally the electric motor ultimately supplanted waterpower for processing and manufacturing. Mill machines powered by tractors replaced feed and other types of mills. Water-powered sawmills, in particular, were especially prone to abandonment in favor of the new technologies. Already weakened by stiff competition from industrial-scale production in the Midwest, the number of individual water-powered sawmills in North Carolina declined sharply at the turn of the twentieth century in favor of portable mills powered by the new technologies (Powell & Popovic 2006). These new mills could be moved between jobsites, thereby eliminating the cost of transport and related fixed costs tied to waterpower. The modern mills were also more efficient. One portable sawmill promoted in the Western Sentinel claimed that 50 percent of a log was wasted at a conventional mill in the form of leftover slabs and sawdust (WS, 29 March 1910: 7). At Moravian Falls, the original hydro-powered mills were joined by the county's first steam-powered sawmill (Laws 1936:3). The transition away from water-powered sawmills was further hastened by World War I, which caused an initial slump in prices that proved catastrophic to large producers. Many slipped into bankruptcy. However, a rally in demand soon prompted dozens of small timber milling operations to spring up across North Carolina without the use of waterpower:

> Any man who can find a clump of pine or hard wood trees big enough to square ten inches gets into a junk pile some place and fishes out an old boiler and engine, a circular saw, and a piece of belting and he proceeds to build the rest of a saw mill out fit that will cut from a thousand to three or four thousand feet of lumber a day, and he is a saw mill man (NAO, 21 June 1917: 7).

To adapt, existing water-powered mill sites turned to improved technologies. The operators of the Moravian Falls mills installed the county's first turbine water wheel in an effort to boost efficiency (Laws 1936: 3). The Ward family of Sugar Grove in the Watauga River Valley, who epitomized the role of the small community miller, had operated mills from the time of their arrival in the late 1700s (Van Winkle 2003, E.5; F.68). William Lorenzo Ward (1865-1932) set up a new grist mill in 1890 using a Pelton-type turbine. A 1901 flood washed Ward's grist mill away, but this was replaced by 1906 with a new dam of hemlock logs across the Watauga River, and he installed a 26-inch Samson turbine to power his small circular sawmill and grist and hammer mills, the latter for the purpose of removing corn from the cob to produce cattle feed (Givens 2014: E.5) (see Figure 2.6). Lorenzo ran the milling concern until his death in 1932. At that time, his son Ben Ward took over and fashioned the property into the B.O. Ward House and Mill Complex that is present today.

Individual Water-Powered Systems

By the turn of the twentieth century, improved technology made waterpower practical for individual use. Newspapers and agricultural journals promoted the advantages of individual water-powered systems on farms across the nation. Publications like *The Complete Farmer, A Practical Handbook on Soils, Crops, Live Stock & Farm Equipment*, provided a detailed discussion of the benefits and requirements of waterpower:

> In high districts or on farms adjacent to high ground there is no better power for driving the fixed machinery of the homestead than a head of water. It is usually necessary to make a dam to hold a supply, even when there is a running stream, because it may dry up or become reduced in hot weather, but once this has been made and the channel or pipe laid which carried the water to the homestead there is no further outlay (McConnell 1910: 419).

The guidebook discusses the suitability and efficiencies of turbines, undershot wheels, and overshot wheels, based on circumstances. It weighed the cost benefits of iron piping and earthen headraces for delivering the water to the specified wheels and the distances involved, and it considers the additional expense for the wheel and associated buildings. In farm applications, the guidebook associates waterpower with the operation of such apparatus as fixed thrashing machines. At the same time, the author notes that the advent of portable internal combustion engines meant that erecting new wheels or turbines on existing impoundments was becoming increasingly impractical (McConnell 1910: 420). Foreshadowing the age of electrification and the transformation of small water-powered manufacturing, the guidebook offers the following advice:

> Where water-power is running to waste there will probably be a future utilization for the development of electrical power. A wheel or turbine can now be placed at a minimum cost for pipes or sluices at the side of the water to drive a dynamo, and the power be then carried on wires to any reasonable distance as a motor for machinery. There is a tendency to follow this line now for manufacturing purposes, and there are many farms where this plan could be adopted, where formerly the water was too far away from the homestead or too low down for use (McConnell 1910: 420).

In 1917, the North Carolina General Assembly provided further encouragement for adapting waterpower to hydroelectric generation, when it authorized the University of North Carolina's Division of Country Home Comforts and Conveniences in the Bureau of Extensions to assist farmers with developing private small-scale hydroelectric power in the range of 10 to 500 horsepower

(Dunn Dispatch [DD], 19 February 1920: 6). In Caldwell County, for example, farmer D.C. Flowers was among the first to explore the possibility. "Mr. W. C. Walke of the State Highway Commission," reported the *Dunn Dispatch*,

> working in collaboration with the University bureau of extension, was here from Chapel Hill to go over the proposition with Mr. Flowers and make estimates of the probable cost for his development. Within the next few days Mr. Walke plans to return to Lenoir and go over a small water-power site for Mr. John B. Steele in the Valley. In both cases Mr. Walke will figure out the probable cost accessory for the development of the water power and then the cost of all installations, including lighting for home and farm houses and for [illegible] farm machinery and other conveniences (DD, 19 February 1920, 6).

Walke's promotional pamphlet on the development of small hydroelectric plans acknowledges the trend toward gasoline and kerosene-powered generators for individual farm plants. Very often, however, it notes, "farmers have installed these plants when they have close at hand a stream of water with a sufficient fall to develop as much if not more power than is supplied by these farm lighting sets," and regarding existing water-powered establishments, he points out that "there are unquestionably hundreds of small water powers in North Carolina which lack only the necessary initiative on the part of the owner to turn them into small private utilities" (Tar Heel, 12 November 1920: 3).

Hydroelectric Generation

The rate of growth in the use of waterpower changed dramatically with the first successful applications of electric street lighting and traction power for street cars between 1885 and 1890. Demand swelled. At the same time, advancements in electric generation and transmission allowed small mill owners to install hydroelectric plants to supply power for themselves and their neighbors. Consisting mainly of small turbines and dynamos capable of generating 1,000 horsepower or less, "these small water powers are available for domestic and municipal uses, for running farm machinery, lighting farm homes, lighting small towns and cities, and furnishing power for the hundred uses of small businesses therein" (NL, 10 November 1915: 1). As noted in the University of North Carolina's newspaper, the *News Letter*, "many such communities in the state are near enough to some small stream with sufficient fall to provide the necessary power for their use" (NL, 25 February 1920: 1). The mill owners at Moravian Falls were reportedly the first in the county to install a dynamo as part of a rural electric light generating plant (Laws 1936: 3).

Water-powered mills across the Mountain region were quickly converted to hydroelectric generation. In 1908, the total output from waterpower across the state leaped to 162,284 horsepower, mainly as the result of the construction of new hydroelectric facilities controlled by emerging large power companies (Hall 1909: 561). By 1910, the U.S. Census recorded 42,196 horsepower of hydroelectric generation in use for manufacturing in North Carolina. At the same time, the census documented 191 custom sawmills and 861 custom grist mills in operation using an additional 22,000 horsepower of hydroelectric operation (NL, 10 November 1915: 1; Eagle 1916: 18). Boosters of the Highlands recognized the shift when they reported on the region's industrial development in 1916:

> …the wealth of the mountains, I think, lies more in their water power and agricultural advantages….There is, of course, more water power in the mountains than in any other equal area in the state, but most of the streams are small and they have been but little utilized. There are numbers of streams of considerable power and hundreds of smaller streams that could furnish light and motor power for farm homes, towns, and industrial enterprises…. The farmers are already beginning to utilize those smaller streams for that purpose (Miller 1916: 87-88).

How best to utilize western North Carolina's waterpower potential became the subject of great debate as small producers and community power companies merged to form large power utilities with plans to harness waterpower on an industrial scale. A survey of western North Carolina's waterpower in

1912 identified only two small facilities for local electric generation (NL, 10 November 1915: 1). "In the mountain regions of the state," notes one promotor of small hydroelectric development, "and on the long slope eastward to the fall line in North Carolina, and southeastward along the stream flowing into South Carolina, our potential minimum waterpower is 578,000 horsepowers on a basis of 75 per cent efficiency" (NL, 10 November 1915: 1). Continuing, the promotor cautions:

> When our wasteful methods of lumbering, our steady destruction of present and prospective timber by forest fires, and our enormous yearly cut of firewood have brought us to our knees in North Carolina, we will begin to realize the immense value of our unconsidered small water powers (NL, 10 November 1915: 1; Eagle 1916: 18-19).

Early examples of small facilities constructed specifically to generate electric power included the Appalachian Training School in Boone, Watauga County, which adapted a small stream to drive a 30-horsepower turbine to produce light, heat, and power for both the school and parts of the town. The Robert E. Lee Hall at the Blue Ridge Assembly in Black Mountain, Buncombe County developed a similar system in an adjoining stream to provide light to 600 guest rooms (Eagle 1916: 19). Dr. E.H. Sloop incorporated the Linville Power Company and erected a large arched stone dam and powerhouse on the Linville River in 1915 to provide power to the local community (see Figures 2.4 and 2.5). At Banner Elk, the Presbyterian mission operating there erected its first hydroelectric plant in 1912 on approximately the same location as an early grist mill complex first erected by Samuel Henry Banner after the Civil War (United States Geographical Survey [U.S.G.S.] 1895). The community founder, Reverend Edgar Tufts, published a national appeal for funds to build the facility:

> The School is now trying to raise the money to build to harness a water power that is going to waste on its property to furnish electricity for light and power. Among other advantages an electric plant would save time, labor and money, lesson the danger of fire, give the pupils more time for study add efficiency and breadth to the medical work of the school and demonstrate to other mountain villages the value of water power (The Continent, 15 August 1912: 1164).

The original wooden dam and power plant served Lees-McCrae College, Grace Hospital, Grandfather Home orphanage, as well as several homes and businesses in central Banner Elk.

Floods and Flood Control

Fire and natural disasters were destroyers of water-powered mills. Catastrophic flooding, in particular, could sweep away all evidence of a facility, and these disasters grew increasingly common as logging left bare the region's steep mountain sides. The loss of the Ward family's dam on the Watauga River in a 1900 flood was just one example (Figures 2.7-2.9). A particularly disastrous flood on July 15, 1916 destroyed many small dams and mills still in operation. Wilkes County was especially hard hit. The water reached nine feet above the previously recorded flood stage and inundated low-lying manufacturing areas on all the major waterways. The North Wilkesboro water supply and hydroelectric plant were destroyed. Across the county, every bridge except the main span between Wilkesboro and North Wilkesboro was reportedly swept away. Corn and tobacco fields were submerged, and newspapers reported "houses, barns, and other buildings being washed away" (NAO, 18 July 1916: 8). Among the 20 or more streams and rivers emptying into the 37 miles of the Yadkin River flowing through Wilkes County, witnesses reported seeing nearly 100 homes swept away. "In all the valleys and coves," the reports continued, "the loss is clean, nothing of vegetation or buildings is left…The two Wilkesboro's and other towns could probably cope with the situation, they say they could, but in the rural sections, along all the streams, the loss is absolute – in many, many instances everything is gone –home, property, stock and land, the rich alluvial lowlands are left in gullied wastes" (UR, 27 July 1916: 4). In Ashe County, all the mills along Cranberry Creek were reportedly washed away (UR, 27 July 1916: 4). In Lenoir, Caldwell County, homes, warehouses, stores, bridges, and lumber were carried off. Part of a store and warehouse belonging to the Gwyn-Harper Manufacturing Company were destroyed, while the company's two dams on the Yadkin River collapsed (Greensboro Daily News,

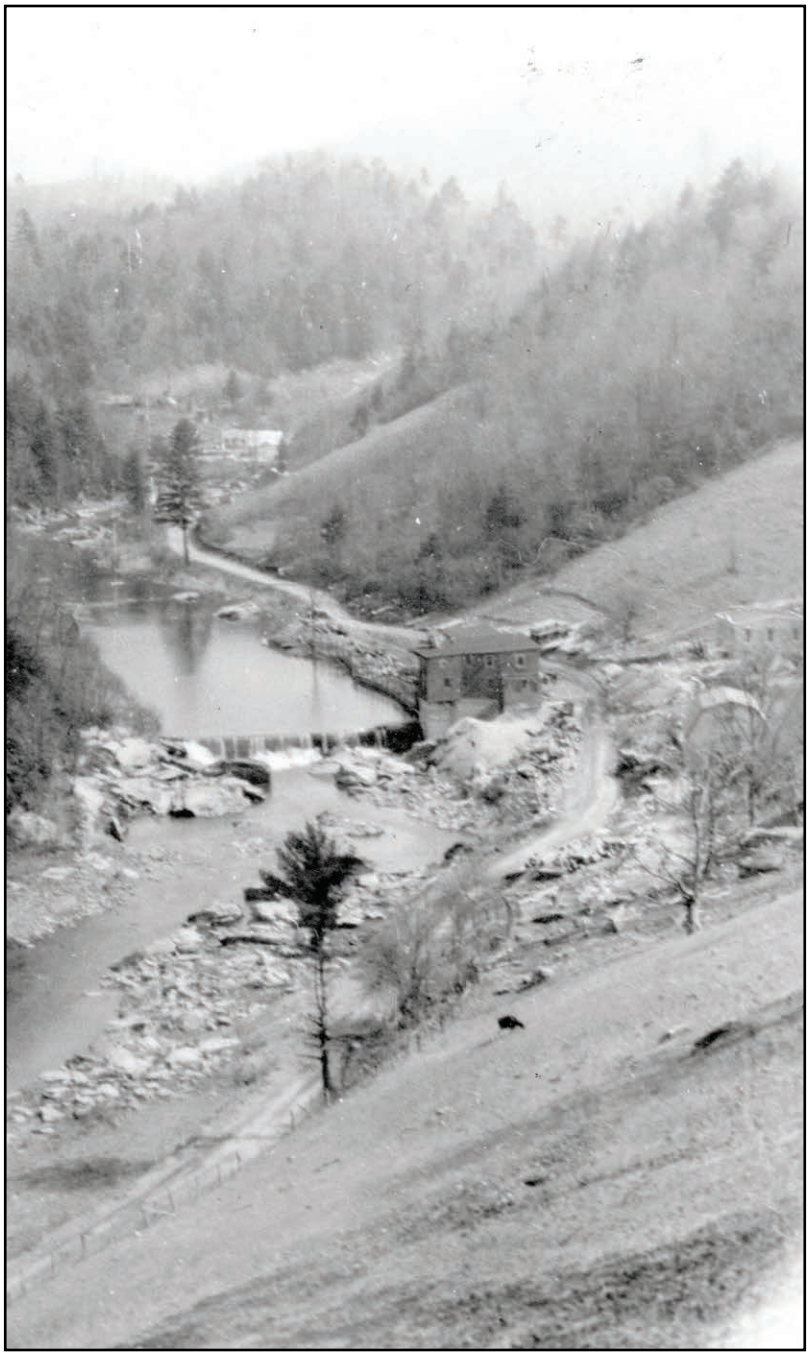

Figure 2.7: Lorenzo Ward's circa 1905 hemlock dam across Watauga River. This dam was dismantled in 1963 and replaced with a concrete dam (Courtesy of The Foxfire Museum).

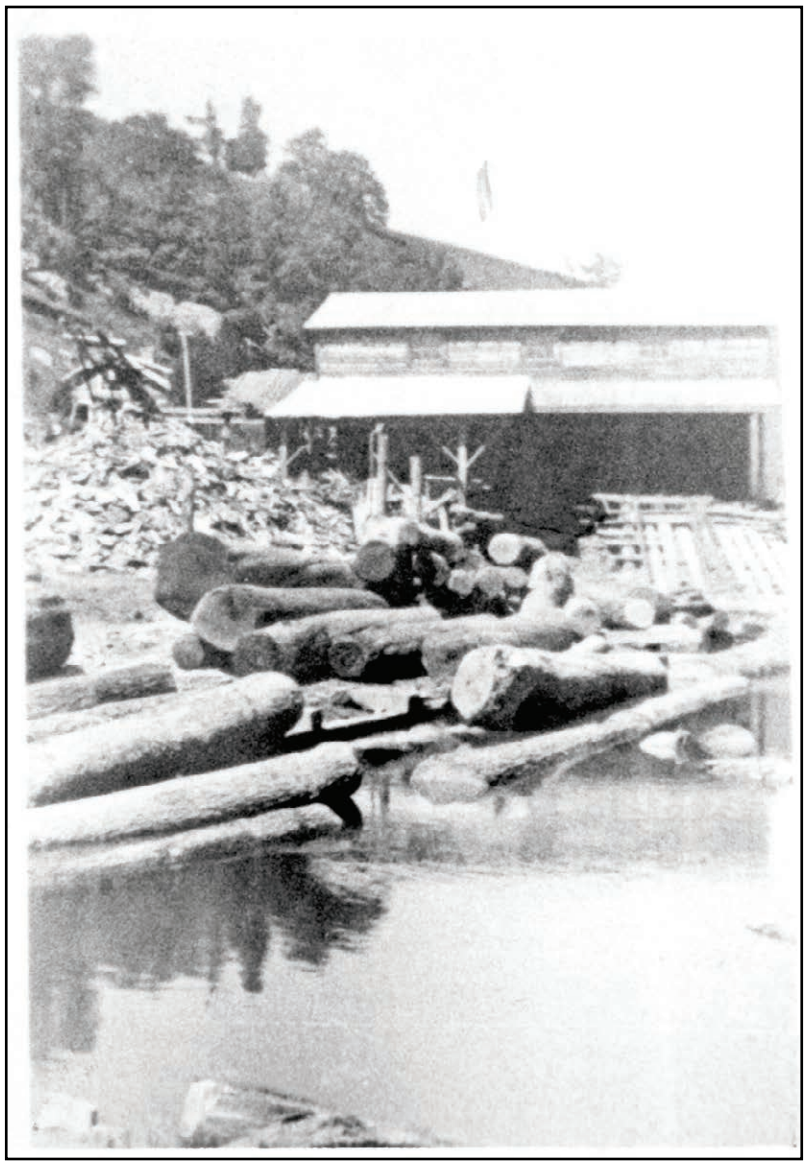

Figure 2.8: Lorenzo Ward's 1906 sawmill, which washed away in the 1940 flood (Courtesy of The Foxfire Museum).

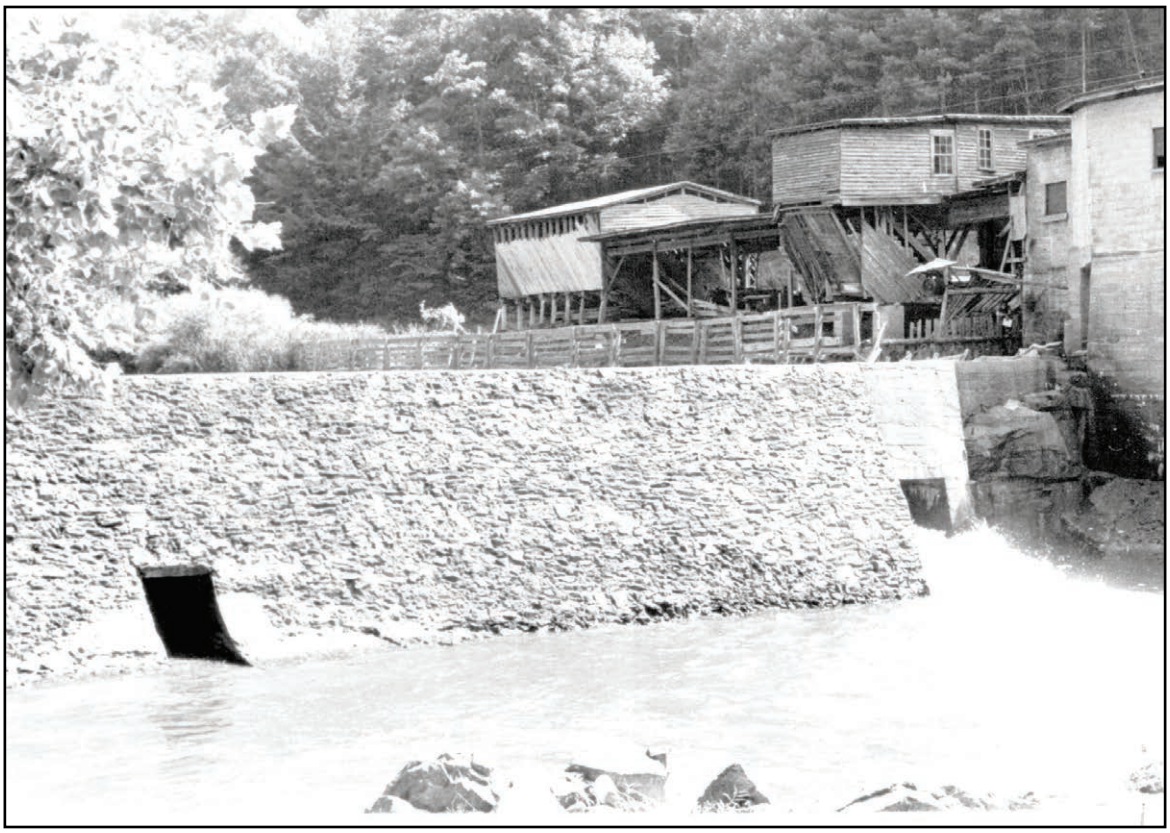

Figure 2.9: B.O. Ward's 1962 concrete and rock dam and 1941 sawmill, circa 1975 (Courtesy of The Foxfire Museum).

22 July 1916: 5). The original small power plant dam erected at Banner Elk, Avery County to supply energy to the Lees-McRae Institute school, hospital, orphanage, and church facilities was swept away, requiring a replacement structure of reinforced concrete built in 1917 and still in place today (see Section 3.0) (Presbyterian Church 1917: 20).

The 1916 flood prompted calls for flood control and better management of the forests. In 1917, citizens of Wilkes, Ashe, and neighboring counties called for a massive program of federal land acquisition and reforestation under the Weeks Act to protect the headwaters of the Yadkin River and reduce the severity of flooding (UR, 22 February 1917: 8).

Six years later, almost to the day, a cloudburst over Wilkes County repeated the destruction. Cornfields in Trap Hill and Brushy Mountain townships were inundated. The dam of the Moravian Falls Light & Power Company was swept away. J.T. Humphries' spoke and handle mill and Jonie Ball's saw and grist mills disappeared in the deluge. The dam on Hunting Creek supplying power to Peter Moore's mills collapsed, taking with it the entire mill building (Carter's Weekly [CW], 20 July 1922: 1). Bridges and roads were similarly damaged or destroyed.

An even more devastating flood struck again in August 1940. Once more, homes, businesses, and mills were swept away (Journal-Patriot, 15 August 1940a: 1). The severity of the flood was again blamed on "the excessive cutting of timber and also from the system of farming practices along the streams" (Journal-Patriot, 26 August 1940b: 6). The Ward's dam in Watauga County was the only dam along the Watauga River to survive this event, although it did take the family's circa 1906 frame mill (Turco and Harpe 2020: 3-1) (see Figures 2.7 and 2.8). At Moravian Falls, the onslaught of water obliterated the mill, scattering machinery and equipment for hundreds of yards along the streambank (The Charlotte Observer [TCO], 15 August 1940a: 2) (Figures 2.10-2.12). Large hydroelectric dams erected by the Duke Power Company in the Catawba River were credited with controlling the water in that drainage, but the unconstrained Yadkin River broke its banks and inundated Wilkesboro and North Wilkesboro destroying factories and sparking fires (TCO, 15 August 1940a: 2).

The Legacy of Waterpower

By the end of World War II, the age of water-powered industry was largely over. Some milling operations survived, such as the Ward Mill at Sugar Grove and the Elkin Creek Mill at West Elkin, and these facilities underwent regular modifications and upkeep, but new dam construction focused mainly on large-scale flood control, hydroelectric generation, and public water supply initiatives (Southern and Mobley [1980]: 8-2). Former mill ponds were allowed to empty or were transformed into picturesque recreational lakes for boating, swimming, and fishing, while mill sites were left to revert to a natural state. At the same time, the region's rugged beauty continued to attract tourists and vacationers, encouraging the removal of industrial sites and the gradual return to nature.

With the passing of water-powered milling, the remnants of the industry assumed nostalgic dimensions as tangible reminders of simpler times and a bygone era. Millstones and waterwheels found themselves repurposed for decoration and as emblems of the past. The Ward family incorporated spent millstones into the masonry walls of their buildings. At Old Hampton Mill (AV0216) in Linville in Avery County, a small, relocated waterwheel served as a popular backdrop for family photographs and as a form of advertising for the tourist restaurant it adjoined. This waterwheel was removed around 2000 (Personal Communication with David Deal). The site of the mills at Moravian Falls evolved into a tourist attraction and campground, where the proprietors erected a modern faux mill building and salvaged water wheel to convey the impression of a picturesque historic site (see Figure 2.12). More serious collectors of early mill technology, such as Ray Estes, salvaged and preserved elements of milling technology by recreating the elements of water-powered industry for their personal amusement. The restored Edwin Boston Mabry water-powered mill on the Blue Ridge Parkway is perhaps the most iconic example of the idealized North Carolina mill in the popular imagination. Today, former small water-powered industrial sites are recognizable chiefly by place names and street signs (Plate 2.7). The remnants of dams, raceways, and wheel houses occasionally survive in the landscape, but they are not always immediately apparent. Ultimately, the history of small water-powered industries in the mountain region may be best preserved as part of the written and archaeological record.

Figure 2.10: Post card of grist mill at Moravian Falls, 1907, Wilkes County (Source: Wilkes Community College Pardue Library Collection).

Figure 2.11: Replacement mill at Moravian Falls built circa after 1916 flood, undated photograph. This mill washed away in the flood of 1940 (Courtesy Ken Wike).

Figure 2.12: Moravian Falls reconstructed mill and overshot water wheel relocated from Tennessee around 1960 for the purpose of tourism development (Courtesy Ken Wike).

Plate 2.7: Street sign indicating the location of Shulls Mill in Watauga County.

Note, the mill is non-extant, and all that remains to identify the historic industrial use is the sign.

Photo view: Northwest

Photographer: Jason Harpe

Date: March 4, 2021

3.0 HISTORY AND DESCRIPTION OF SLOOP'S LAKE DAM AND POWERHOUSE (AV0082)

The Sloop's Lake Dam and Powerhouse is located along the Linville River in a narrow rocky valley above the outfall of Mill Timber Creek, between Snakeden Mountain and Camp Creek Mountain. The resource is accessed via Sloop Mill Dam Road, off Linville Falls Highway on the south side of the Town of Crossnore, Avery County, and is characterized by heavily forested steep mountain slopes and a rocky, rapidly falling river bed (Figures 3.1 and 3.2).

History

At the turn of the twentieth century, small water-powered mills and impoundments across the mountain region were quickly converted to hydroelectric generation. At the same time, the state promoted the development of small hydroelectric facilities to take advantage of existing waterpower for supplying energy to new electric motors and lighting systems. The large arched stone dam and accompanying stone powerhouse (AV0082) built by Dr. Eustace Henry Sloop (1878-1961) in 1915 is an excellent early example of a small facility constructed to generate electric power for specific local purposes. Dr. Sloop and his wife Dr. Mary T. Martin Sloop (1873-1962) moved to Crossnore in 1911 and established a pioneering medical practice and educational institution memorialized in Mary Sloop's book *Miracle in the Hills*, published in 1952 (Hood 1995). Recognizing the need for electric power as part of their improvement program, Eustace Sloop established the Linville Power Company to furnish power to the town, the Crossnore School, the Garrett Memorial Hospital, and the Crossnore Presbyterian Church. The power plant initially used a 2,300-pound direct-current dynamo. Later, Dr. Sloop purportedly rewound the coils to produce alternating current (Hood 1995 sec 8 p11). Two photographs taken in 1938 and in 1952 depict the structure at its full height and operating condition.

Description

The resource consists today of a dam and the remains of a powerhouse (Plates 3.1 and 3.2). The dam is fashioned of uncoursed rubble stone and concrete and utilizes an arched design with the convex side facing upstream against the flow of water. The structure absorbs the weight of the high impoundment behind it by transferring the pressure like an arch down into the flanking bedrock supporting the dam abutments. The portion of the dam adjoining the left (south) bank retains its full height and is capped by the remains of a poured concrete cap. The central section is partly demolished. The partly embanked ruins of the powerhouse stand on the right (north) bank slightly downstream of the dam and consist of a rectangular, multi-story, uncoursed rubble stone and concrete building with the remains of a flat, parapeted concrete slab roof, square window and door openings, grated tailrace opening, and adjoining rubble stone retaining walls. Window openings (some blocked) are fitted with either stone slab lintels or cobbled flat arches. The main block features a wide band of irregularly cut stone blocks laid flush to form a wide, smooth, decorative attic story. The site includes the remains of ancillary buildings marked by stone and concrete foundations. The remains of the sluice gate appear to survive within the northern end of the dam. The powerhouse is empty of equipment.

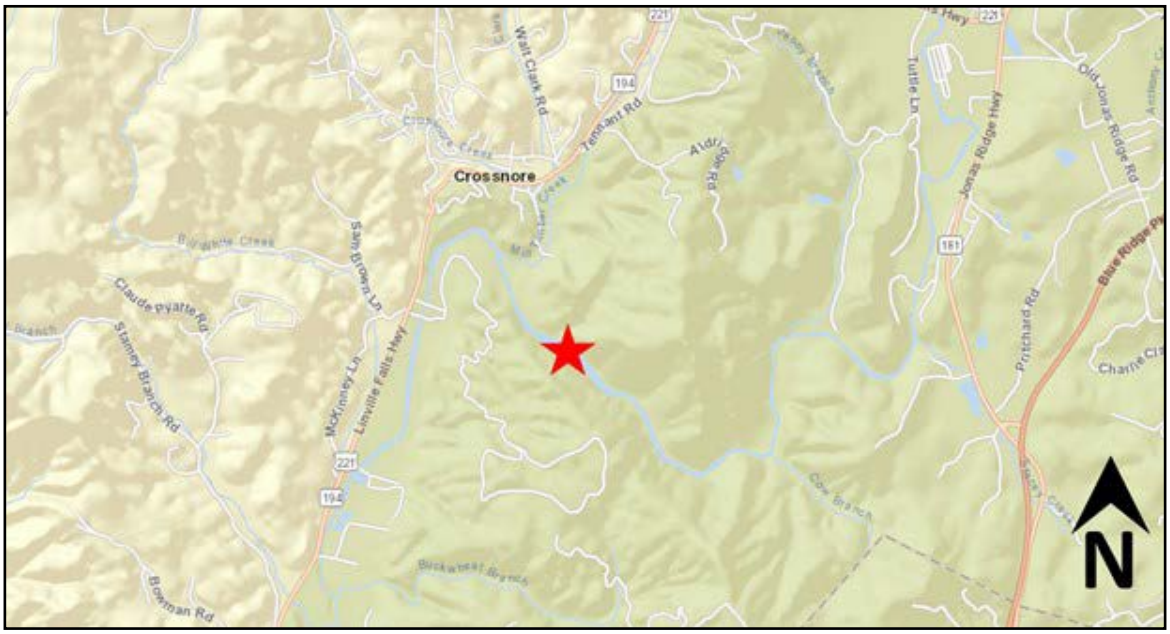

Figure 3.1: Street map showing the location of Sloop's Lake Dam and Powerhouse (AV0082), indicated by the red star, south of Crossnore, Avery County (World Street Map, ESRI 2020).

Figure 3.2: Aerial image of Sloops Lake Dam and Powerhouse (AV0082) on the Linville River (World Imagery, ESRI 2020).

Plate 3.1: View upstream of Sloop's Lake Dam (AV0082) on the Linville River.

Photo view: South

Photographer: Jason Harpe

Date: March 4, 2021

Plate 3.2: Powerhouse on the north end of Sloops Lake Dam (AV0082).

Photo view: Northeast

Photographer: Jason Harpe

Date: March 4, 2021

4.0 HISTORY AND DESCRIPTION OF WILDCAT LAKE DAM (AV0214)

The Wildcat Lake Dam is located in the mountainous uplands along Hickory Nut Gap Road, south of its intersection with the campus of the Grandfather Home for Children and the community of Banner Elk. The modern earth and rip-rap structure impounds Wildcat Creek, a tributary of the Elk River and serves recreational purposes, including boating, swimming, and fishing. The lake shore features an artificial beach, docks, and picnicking grounds (Figures 4.1 and 4.2). Private residences, vacation homes, and campgrounds dot the shores to the south and east. The wider area is characterized by rugged, wooded mountain terrain.

History

Located adjacent to the Grandfather Orphanage on lands owned by Lees-McRae College, Wildcat Lake is named for the stream it impounds. It was created in 1933 to provide extra power storage for a hydroelectric facility owned by the Edgar Tufts Memorial Association, which operated the college, orphanage, and other facilities in the town. The system's original water supply located in the Elk River (AV0217) often ran low during the summer months, requiring the added source. The 13-acre lake provided not only back-up waterpower but also a new community attraction for summer vacationers, who used the college campus as a hotel during the warmer months (TCO, 23 April 1933: 6; Tufts 1936: 12A; U.S.G.S. 1935; 1944). Plans for the new lake and dam were prepared by Professor J. A. Switzer, professor of hydraulic and sanitary engineering at the University of Tennessee and by the W.S. Lee Construction Company of Charlotte. When first built, the arched, reinforced concrete structure measured 41 feet high, 158 feet wide, and 7 feet thick at its base (NAO, 23 July 1933: 29; Lees McRae College Yearbook 1933). In 2005, the original dam showed signs of deterioration. The Eggers Construction Company undertook the reconstruction of the structure, including demolition of the original concrete dam and installation of the present rubble and earth embankment. The lake re-opened in 2009 (Eggers Construction Company 2021).

Description

The present Wildcat Lake Dam is a modern earth, stone, and rip-rap replacement erected on the site of the original arched concrete structure first installed in 1933. The present structure includes a large concrete emergency spillway (Plates 4.1 and 4.2).

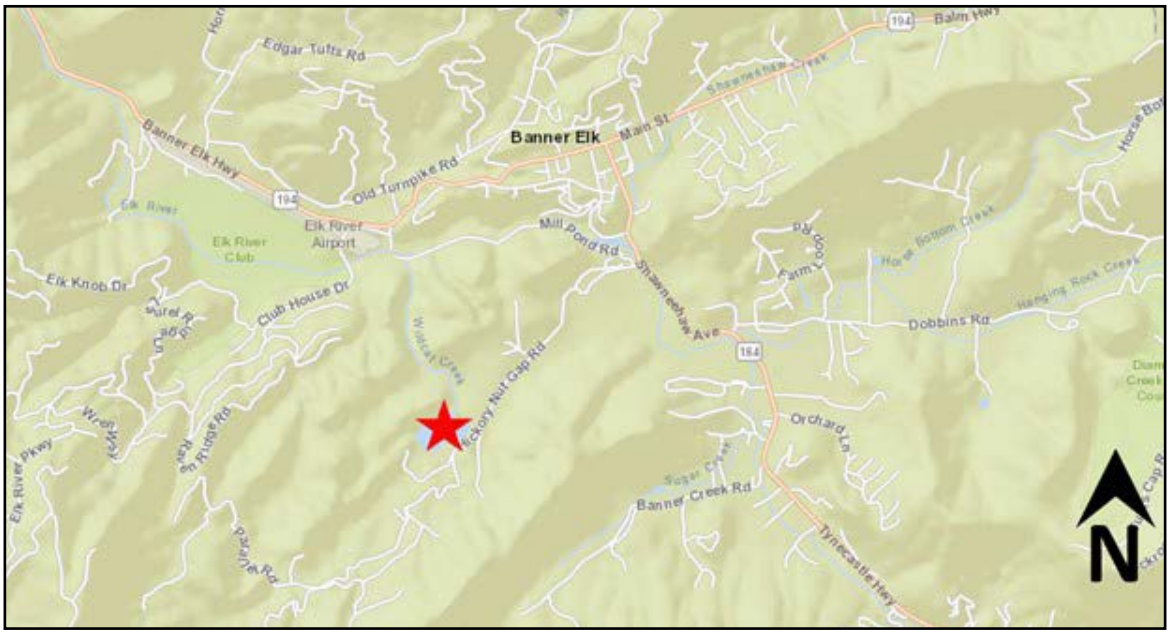

Figure 4.1: Street map showing the location of Wildcat Lake Dam (AV0214), indicated by the red star, south of Banner Elk, Avery County (World Street Map, ESRI 2020).

Figure 4.2: Aerial image of Wildcat Lake Dam (AV0214) on Wildcat Creek (World Imagery, ESRI 2020).

Plate 4.1: Lakeside view of the Wildcat Lake Dam (AV0214) on the north end of Wildcat Lake.

Photo view: East

Photographer: Jason Harpe

Date: March 4, 2021

Plate 4.2: Downstream side of the earth-and-riprap Wildcat Lake Dam (AV0214).

Photo view: Southeast

Photographer: Jason Harpe

Date: March 4, 2021

5.0 HISTORY AND DESCRIPTION OF KNIGHT POND DAM (AV215)

Located near the headwaters of Handpole Branch of the North Toe River in Newland, North Carolina, the Knight Pond parallels the Miller's Gap Highway between the intersections of Nelson Road and Blackburn Lane. Both stream and highway thread through a narrow valley between surrounding hillsides. A circa 1900 farmhouse with outbuildings stands east and downstream from the main dam structure at the foot of a forested hillside (Figures 5.1 and 5.2). The surrounding area is characterized by mountainous woodlands, scattered farmsteads, and rural residences.

History

The location of this dam is near the headwaters of Handpole Branch. The nearby residence first appears cartographically in 1934, although the form and design of the building suggests a building date of circa 1900 (U.S.G.S. 1934). A dam and impoundment appears for the first time in a 1962 U.S.G.S. map, but with a clearly delineated dam perpendicular to the main channel. By 1983, however, an aerial photograph of the site depicts a truncated impoundment with the stream's main channel running freely between Miller's Gap Highway and the pond's earthen embankment (NETR 1983). There is no outward evidence for a small water-powered industrial plant at this location, and the impoundment appears more likely to relate to a private recreational function associated with the adjoining residence.

Description

The Knight Pond Dam impounds a long, narrow body of water running parallel to the main channel of Handpole Branch. A low earthen structure, the dam forms the right (east) bank of the stream. At its northern (downstream) extreme, the embankment stands approximately five feet high, near the location of the associated residence. A pile of stones at the base of the dam near the stream may constitute the remnants of a former dam that once blocked the present channel. The structure lacks a discernable inflow or outflow. Today, the pond serves private recreational purposes. The adjoining farmhouse and outbuildings appear to pre-date the construction of the dam (Plates 5.1-5.3).

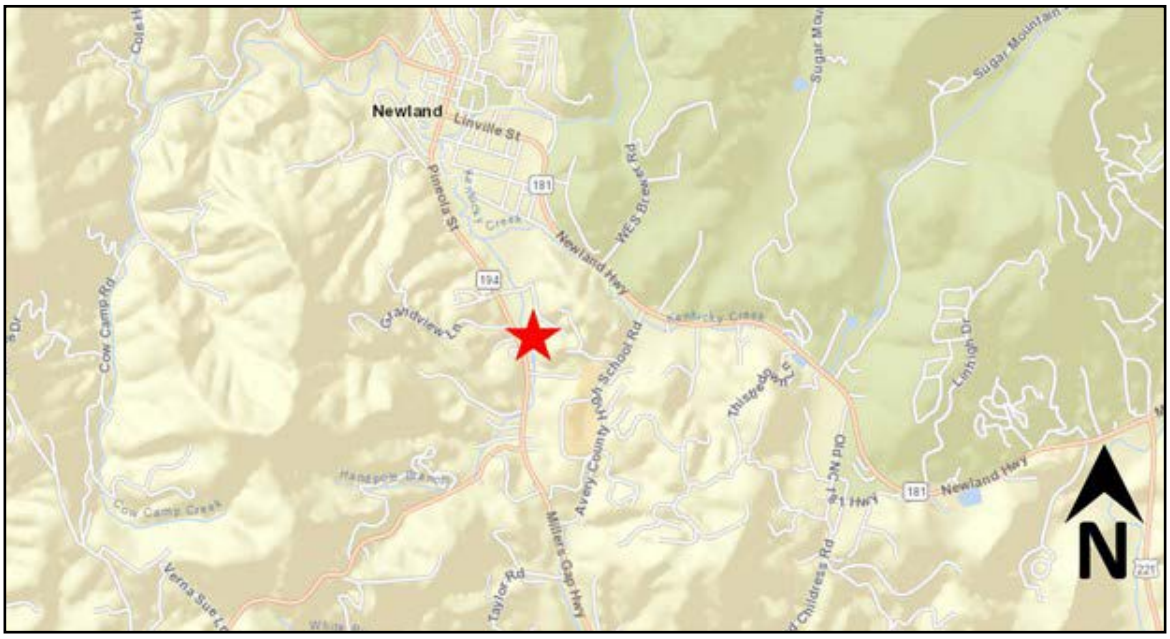

Figure 5.1: Street map showing the location of Knight Pond Dam (AV0215), indicated by the red star, off Miller's Gap Highway south of Newland, Avery County (World Street Map, ESRI 2020).

Figure 5.2: Aerial image of Knight Pond Dam (AV0215) on the Handpole Branch of the North Toe River (World Imagery, ESRI 2020).

Plate 5.1: Northwest corner of the house situated north of the Knight Pond Dam (AV0215), from Millers Gap Highway.

Photo view: Southeast

Photographer: Jason Harpe

Date: March 4, 2021

Plate 5.2: Knight Pond Dam (AV0215), showing Millers Gap Highway to the left.

Photo view: North

Photographer: Jason Harpe

Date: March 4, 2021

Plate 5.3: Northern embankment of Knight Pond Dam (AV0215), from Millers Gap Highway.

Photo view: East

Photographer: Jason Harpe

Date: March 4, 2021.

6.0 HISTORY AND DESCRIPTION OF MILL POND DAM AT LEES-MCRAE COLLEGE (AV0252)

The Mill Pond and Dam at Lees-McRae College is located off Mill Pond Road and Banner Road SW on the Elk River, immediately south of the community of Banner Elk. The site occupies a gap between Horse Bottom Ridge and Hemlock Hill and features a broad open floodplain upstream of the impoundment and a narrow, steep fall with rocky cascades downstream of the dam (Figures 6.1 and 6.2). The surrounding area consists of both cleared land and wooded hillside dotted with small rural residences, with more concentrated residential development on the outskirts of the town.

History

The introduction of reinforced concrete in dam construction at the turn of the twentieth century coincided with the adaptation of many old mill sites to hydroelectric facilities. The large concrete dam at the Lees-McRae College mill pond (AV252) represents such a dam, founded on a stone streambed with substantial stone banks to form the dam's abutments.

Rev. Edgar Tufts, principal of the Presbyterian mission at Banner Elk, commissioned the hydroelectric plant in 1912 to serve Lees-McRae Institute, Grace Hospital, Grandfather Home orphanage, the church buildings, and part of the town. The new dam, of timber construction, was reportedly erected on approximately the same location as an early grist mill complex first erected by Samuel Henry Banner after the Civil War. Following the flood of 1916, which destroyed the earlier dam, the school installed the present structure, erected in 1917 of reinforced concrete. It included a 1,000-foot iron penstock flume that channeled water to a powerhouse situated below the cascades. In 1947, the college sold the power plant to the Mountain Electric Cooperative (Rural Lines 1955: 19).

Description

The resource consists today of a well-maintained concrete dam and the ruins of a former powerhouse, iron penstock, and remnants of other stone features possibly belonging to a former headrace and tailrace associated with the original mill complex. The dam consists of a straight mass of reinforced concrete with a flush face, concrete crest, and tapered back. The main crest serves as the spillway. The left (south) dam abutment projects from the riverbank in a triangular plan and is capped by a low, uncoursed rubble stone wall. The right (north) abutment features a modern reinforced concrete auxiliary spillway with a gate valve and concrete pipe discharge. Miscellaneous fragments of poured concrete suggest substantial alteration to the area around the spillway. The remains of a riveted iron penstock flume rests below the right abutment in the river channel. Fragments of an embanked rubble-stone foundation stand on the right bank, downstream from the dam, and probably comprise the remains of the original mill located at the site. A nearby stone foundation and chimneystack on the uphill side of the left bank are the remains of a college building and are unrelated to the dam complex (Plates 6.1-6.3).

Figure 6.1: Street map showing the location of the Mill Pond Dam at Lees-McRae College (AV0252), indicated by the red star, between Mill Pond Road and Banner Road in Banner Elk, Avery County (World Street Map, ESRI 2020).

Figure 6.2: Aerial image of the Mill Pond Dam at Lees-McRae College (AV0252) on the Elk River (World Imagery, ESRI 2020).

Plate 6.1: Upstream side of the Mill Pond and Dam (AV0252) at Lees-McRae College.

Photo view: Southeast

Photographer: Jason Harpe

Date: March 4, 2021

Plate 6.2: Uncoursed rubble stone wall on the south side of the Lees-McRae College Mill Pond and Dam (AV0252).

Photo view: East

Photographer: Jason Harpe

Date: March 4, 2021

Plate 6.3: Stone chimney and ruins of a former Lees-McRae College building in the vicinity of the Mill Pond and Dam (AV0252).

Photo view: Northwest

Photographer: Jason Harpe

Date: March 4, 2021

7.0 HISTORY AND DESCRIPTION OF MORAVIAN FALLS MILL SITE (WK0559)

The Moravian Falls Mill Site is located at Moravian Falls, a natural sheer rock cascade located south of the Falls Road Bridge over Moravian Creek, approximately one-half mile southwest of its intersection with Route 18. A modern campground with a headquarters building and associated recreational facilities occupy lands on the north side of Falls Road. A one-story manufactured home stands upon a small natural rock shelf on the east side of the falls. A one-and-a-half-story gambrel-roof dwelling stands on the opposite bank (Figures 7.1 and 7.2). The area surrounding the mill site is largely wooded and includes numerous private dwellings and a mobile home park.

History

The settlement at Moravian Falls exemplified a pattern of cultural diffusion and settlement flowing out of the Middle Atlantic region into the mountain regions of North Carolina. One of its earliest settlers, William P. Waugh of Pennsylvania arrived in 1803 and established a seat near the natural cascades of Moravian Creek at what was then called "Forks of the Road," southwest of Wilkesboro (Laws 1936: 3). Waugh is credited by some as the first in Wilkes County to erect a water-powered flour mill using grinding stones (Laws 1936: 3). This was followed by additional mills for corn meal, linseed oil, and wool carding. All utilized the same common source of water. Waugh's successor, Prichard N. Hix, acquired the tract in 1849, enlarging the operation with the addition of a vertically mounted sash sawmill. A series of photographs of the mill taken in the late nineteenth or earlier twentieth century depicts a tall gabled frame structure standing atop a full-story rubble stone foundation built on a natural bedrock shelf formed in the falls. A wooden headrace visible at the top of the falls carried water from the impoundment further upstream and delivered it to the crest of the falls, where an iron penstock sluice delivered the water to the base of what appears to be a former stone wheel pit later framed in to form an enclosed turbine room. A wooden tailrace carried the spent water further downstream to what appears to be a secondary wheel. The image corresponds to reports that the operators of the Moravian Falls mills installed the county's first turbine water wheel in an effort to boost efficiency (Laws 1936: 3). The mill owners at Moravian Falls were also reportedly the first in the county to install a dynamo as part of a rural electric light generating plant, and they also added the county's first steam-powered sawmill (Laws 1936: 3).

In 1922, almost six years to the day since a flood in 1916 destroyed many water-powered industries in the county, the dam of the Moravian Falls Light & Power Company was swept away (CW, 20 July 1922: 1). A second photograph taken from atop the falls, illustrates an entirely new mill building, suggesting that the earlier pictured structure succumbed to the flowing water. The final blow hit in 1940 with another major flood that obliterated the mill, scattering machinery and equipment for hundreds of yards along the streambank (TCO, 15 August 1940: 2).

The mill site evolved into a tourist attraction and campground, where the proprietors erected a modern faux mill building and salvaged water wheel to convey the impression of a picturesque historic site.

Description

The Moravian Falls Mill Site no longer retains identifiable historic fabric. All evidence of the original complex of buildings was swept away in the 1940 flood. The present site includes two small residences, picnicking areas, and a circa 1960 one-story frame faux mill building with an attached metal overshot waterwheel salvaged from a location in Tennessee. The falls consists of a two-tiered sheer bedrock face of approximately 25 feet in height, which once formed a natural impoundment. The faux mill building stands at the base of the falls on tapered concrete piers and includes a front-gable roof with corrugated metal cladding, flush vertical board siding, and a vertical plank door. The large overshot wheel measures approximately 16 feet in diameter and features iron rod spokes and a single iron axis. One end of the axis is attached to the exterior of the building. The other rests atop a tall tapered concrete pier (Plates 7.1-7.3).

Figure 7.1: Street map showing the location of the Moravian Falls Mill Site (WK0559), indicated by the red star, off Falls Road in the unincorporated community of Moravian Falls, Wilkes County (World Street Map, ESRI 2020).

Figure 7.2: Aerial image of the Moravian Falls Mill Site (WK0559) on Moravian Creek (World Imagery, ESRI 2020).

Plate 7.1: Moravian Falls Mill Site (WK0559) on Moravian Creek, from the Falls Road Bridge, showing the circa 1960 faux mill to the left.

Photo view: South

Photographer: Jason Harpe

Date: March 5, 2021

Plate 7.2: Circa 1960 faux mill at the Moravian Falls Mill Site (AV0559).

Photo view: East

Photographer: Jason Harpe

Date: March 5, 2021

Plate 7.3: Late twentieth-century dwelling on the west bank of Moravian Creek, showing Moravian Falls, the circa 1960 faux mill, and a manufactured house on the same parcel in the background.

Photo view: Southeast

Photographer: Jason Harpe

Date: March 5, 2021

8.0 HISTORY AND DESCRIPTION OF SUGAR GROVE MILL (WT0406)

The Sugar Grove Mill, at 111 Old Mill Road, is situated on the east bank of Cove Creek one-half mile north of the unincorporated community of Sugar Grove, which lies roughly seven miles west of the Watauga County seat of Boone. To the east of the mill is Old Mill Road, a short loop road extending west from Old U.S. Highway 421, which winds its way through the Cove Creek valley northward from Sugar Grove through the communities of Sherwood, Amantha, Mast, Mabel, and Zionville before its terminus at present-day U.S. Highway 421 immediately south of the Tennessee state line. Scattered dwellings dating from the second half of the twentieth century surround the mill property. A short distance to the north is the Western Watauga Community Center and Library, which lies between Old Mill Road and Old U.S. Highway 421. To the southwest and across Cove Creek from the Sugar Grove Mill is the Cove Creek High School (WT0048), which was listed in the NRHP in 1998. Cove Creek now flows freely past Sugar Grove Mill, for the dam is no longer extant aside from remnants on the west bank opposite the mill. While the east bank of the former mill pond is clear of vegetation and characterized by sporadic development on level, grassy lots, the west bank is heavily wooded and undeveloped (Figures 8.1 and 8.2).

History

Local tradition holds that Joseph Mast constructed the Sugar Grove Mill in 1848 as a buhr-stone grist mill. It was converted to a roller mill circa 1900. Floods in the late 1800s and in 1905 washed out the dam, which was then rebuilt. The property remained in the Mast family through the early twentieth century, and it was J.C. "Pete" Mast who upgraded the facility to provide electricity to property owners in a 16-mile radius around the mill. A yet-unknown part of the mill was damaged by fire circa 1925, at which point John H. Mast rebuilt that portion of the building. The property was sold out of the Mast family in the late 1930s, when, in 1939, J.D. Stokes acquired the mill, employing his nephew, Hensel Stokes, in its operation. Ten years later, J.D. Stokes sold the property to Spencer Warren, who operated it briefly before conveying the mill back to the Mast family. Upon its 1974 sale by Cora Mast to Morton and Naomi Deutsch, the Sugar Grove Mill was converted to residential use.

Description

If the extant mill retains construction features or finishes dating from its 1848 construction by Joseph Mast, these elements are not visible on the exterior. The building was not accessible at the time of survey, and thus only the exterior was documented. The main block of the two-story, wood frame building features a rectangular footprint oriented perpendicular to Cove Creek. It is sheathed in weatherboard with flat cornerboards and features a metal-clad, front-gabled roof with exposed rafter tails under the eaves and open triangular braces on the gable ends. The mill sits on a concrete foundation rebuilt in 2004 after Hurricanes Ivan and Frances damaged an earlier concrete foundation. The original windows have been replaced with vinyl sash that appear to post-date 2000. Facing east toward Old Mill Road, the primary façade features a central entrance sheltered by a one-story, shed-roofed porch that spans the width of the main block. Above the porch is a pair of double-hung windows in a shared surround below a louvered vent in the gable peak. One-story, shed-roofed additions of wood frame construction project from the north and south elevations. The south addition features flush vertical board sheathing and a metal-clad roof below knee-wall windows on the second story of the main block. The north addition is clad in weatherboard. The roof of the north addition projects forward to create an extension off the front porch. The mill's conversion to residential use in the late twentieth or early twenty-first century introduced domestic features such as a long wood deck projecting from the east end of the north elevation and, above it, a small second-story balcony (Plates 8.1-8.3). The dam was not visible during the site visit (Turco and Harpe 2020: 3-8).

Figure 8.1: Street map showing the location of the Sugar Grove Mill (WT0406), indicated by the red star, on Old Mill Road north of the unincorporated community of Sugar Grove, Watauga County (World Street Map, ESRI 2020).

Figure 8.2: Aerial image of the Sugar Grove Mill (WT0406) on Cove Creek (World Imagery, ESRI 2020).

Plate 8.1: North and east elevations of Sugar Grove Mill (WT0406), from Old Mill Road.

Photo view: South

Photographer: Jason Harpe

Date: March 3, 2021

Plate 8.2: South elevation of Sugar Grove Mill (WT0406), from Old Mill Road.

Photo view: Northwest

Photographer: Jason Harpe

Date: March 3, 2021

Plate 8.3: West elevation of Sugar Grove Mill (WT0406), showing the site of the former dam.

Photo View: Southeast

Photographer: Jason Harpe

Date: March 3, 2021

9.0 HISTORY AND DESCRIPTION OF WINEBARGER MILL (WT0478)

The Winebarger Mill is situated at a sharp bend in Hopewell Church Road just west of its intersection with Meat Camp Road. The mill lies west of the property at 1695 Hopewell Church Road and across the street from 1618 Hopewell Church Road (Figures 9.1 and 9.2). Winebarger Mill is a severely deteriorating two-and-a-half story, heavily framed, side-gable grist mill on a three-quarter-acre parcel that was subdivided from the rest of the Winebarger family property in the late 1900s or early 2000s. The unincorporated community of Meat Camp, at the heart of which sits the Winebarger Mill, is a shallow valley formed where several small mountains or knobs converge. To the north is Locust Ridge and to the southeast is Greene Knob. Unnamed knobs lie west, southwest, and south of the mill.

History

In the late 1830s, Jacob Winebarger came to the Meat Camp area of Watauga County from Catawba County with a group of Lutherans organized by Jacob Moretz. Once in Watauga, the group established Moretz Mills and a small self-sufficient settlement. In 1848, Winebarger married Moretz's daughter, Sallie, and they eventually moved farther north along Meat Camp Creek. Sources are not clear about precisely when Winebarger built the first grist mill on his property. Some attribute an 1840s date to the enterprise, while others more specifically state that he built the mill in 1873. While the early history is not immediately known, it is clear that the mill was erected and operational well before Jacob Winebarger's death in 1883.

Jacob Winebarger's son, Hosea, inherited the property and continued operating the mill through the early twentieth century. In the spring of 1910, Hosea Winebarger lost his home and all its contents to a fire. On July 29, 1910, the mill burned to the ground (Watauga Democrat [WD], 4 August 1910: 3). Shortly after the fire, Winebarger erected a new mill and continued the operation until his death in 1928. Hosea's only surviving son, William, began operating the mill in 1928. It was William who erected the nearby house in 1921 to accommodate his growing family. William Winebarger also upgraded and expanded the mill's operation by constructing an addition on the front of the building to accommodate two steel roller mills. The improvements also included grain elevators and a metal waterwheel to replace the earlier wood one. In the 1920s and 1930s, the mill ground thousands of bushels of grain annually (TCO, 22 November 1970: 4B). The family also operated a non-extant sawmill on the property from the late 1920s until the 1940s, when they stopped using it and it fell into disrepair and eventually collapsed. William Winebarger continued milling through the second quarter of the twentieth century. As late as 1970, he shipped buckwheat flour all over the country (TCO, 22 November 1970: 4B).

A few years before his death in 1975, William Winebarger turned over operation of the mill to his son, Walter, who kept up the family enterprise. A November 1978 flood damaged the flumes that carried water from Meat Camp Creek to the mill. Until that time, orders for buckwheat flour came from across the country. The mill also sold corn meal, hominy grits and rye, white flour, and whole wheat flour. Some sales occurred through area stores, but they mostly came directly from individuals in the Meat Camp community and tourists visiting the mill. Until the flood, Walter Winebarger sold between 3,000 and 4,000 bags of flour and meal each year. With the flood damage to the flumes, the mill stopped operating for nearly a year when, in August 1979, Walter and several of his brothers repaired the infrastructure and began milling again (NAO, 31 August 1979: 17). Walter continued operating the Winebarger Mill through the early 1980s, even as state inspectors from the North Carolina Department of Agriculture's food and drug protection division ascertained that conditions in the facility were causing contamination of some of the cornmeal and required him to increase and improve cleaning measures in between batches (TCO, 27 September 1982: 3B).

As late as the 1990s, the property featured many resources comprising a self-sufficient working landscape at the heart of the 523-acre property, including the family houses of William and Walter Winebarger and several domestic outbuildings, farm buildings such as cattle and hay barns, a blacksmith shop, and the mill and related outbuildings.

Description

The Winebarger Mill is situated on a small rectangular plot of land of roughly one-half acre in area and bisected by Meat Camp Creek, which runs behind and in close proximity to the mill. The property is bordered on the northwest and northeast by Hopewell Church Road and on the south and east by a larger 10.84-acre parcel from which the mill property was subdivided and which contains the rest of the resources historically associated with Winebarger Mill. The mill is sited very close to a sharp bend in the road and just a few feet off the edge-of-pavement. Although the surrounding area is characterized as rugged and mountainous, the property containing the historic buildings of the Winebarger Mill complex is more accurately described as flat bottomland along Meat Camp Creek. Meat Camp Road runs in a north-south direction to the west of the complex, where it roughly parallels Meat Camp Creek to the intersection of Meat Camp Road and Hopewell Church Road, where Meat Camp Creek takes a sharp bend to the east and flows behind the mill before turning northward toward its headwaters on Rich Mountain.

The two-and-a-half-story timber-framed building rests on a low-profile pier foundation of dry-stacked stones. Clad in a combination of horizontal weatherboards, German siding, and diagonal plank sheathing, the mill features a side-gable roof clad in sheet metal. The window openings on the first story are mostly filled with double-hung wood sash in a mix of profiles that include six-over-six lights and two-over-two lights. The second-story windows mostly feature double-hung six-over-six wood sash. Where extant, the single-leaf doors on the first story are of vertical plank construction. The one-story addition constructed by William Winebarger in the late 1920s spans roughly two-thirds of the southeast elevation. Although the structural system is not visible, the exterior is sheathed in a similar manner as the main block of the building. The shed roof is clad in sheet metal. The mill is listing significantly to the southeast toward the flume that flows off Meat Camp Creek. A heavy wood beam braces the south corner of the mill, where the metal waterwheel was located. Archival images of the mill indicate that additional framing surrounded and supported the wheel. Its loss—and the loss of the wheel—may have jeopardized the building's structural stability. The interior was inaccessible at the time of the survey (Plates 9.1-9.3). However, documentary photographs of the interior were taken during an April 2012 site visit by staff in the Western Office of the State Historic Preservation Office (Plates 9.4-9.6). The impressive mill house and several other structures and outbuildings survive but are also in deteriorated condition (Plates 9.7-9.8).

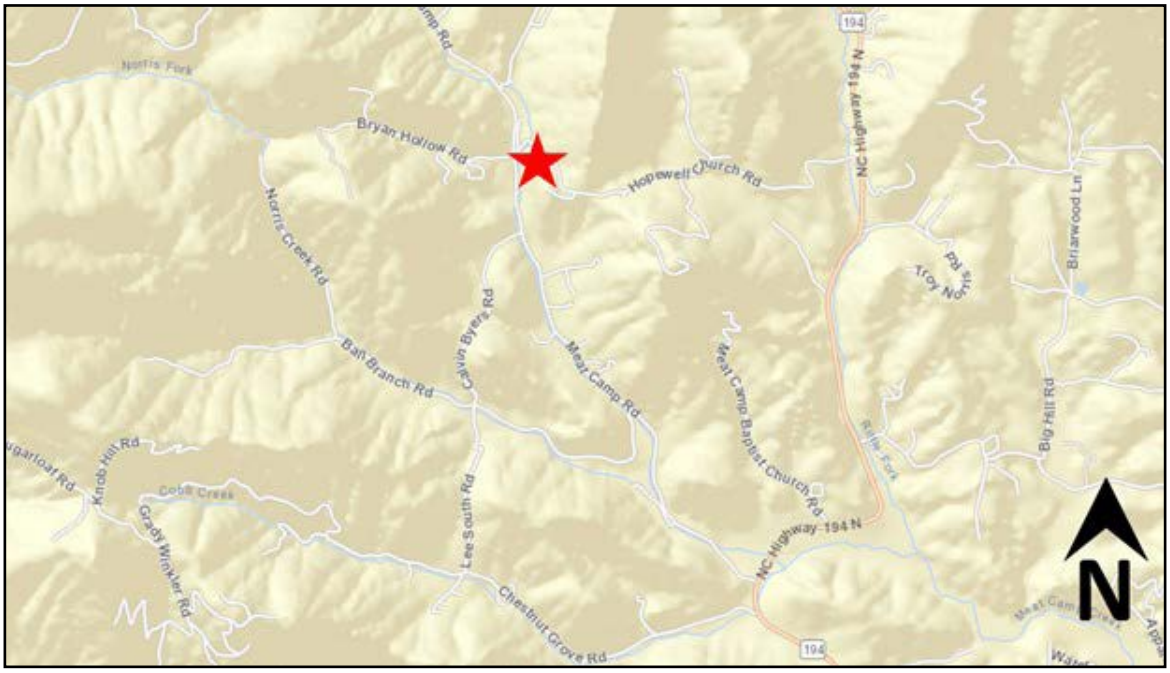

Figure 9.1: Street map showing the location of the Winebarger Mill (WT0478), indicated by the red star, on Hopewell Church Road east of the intersection with Meat Camp Road in the unincorporated community of Meat Camp, Watauga County (World Street Map, ESRI 2020).

Figure 9.2: Aerial image of the Winebarger Mill (WT0478) on Meat Camp Creek (World Imagery, ESRI 2020).

Plate 9.1: West elevation of Winebarger Mill (WT0478), from Hopewell Church Road.

Photo view: East

Photographer: Jason Harpe

Date: May 21, 2020

Plate 9.2: North elevation of Winebarger Mill (WT0478), from Hopewell Church Road.

Photo view: South

Photographer: Jason Harpe

Date: May 21, 2020

Plate 9.3: East elevation of Winebarger Mill (WT0478), from Hopewell Church Road.

Photo view: West

Photographer: Jason Harpe

Date: May 21, 2020

Plate 9.4: Interior view of the east end of the first floor of Winebarger Mill (WT0478).

Photo view: Southeast

Photographer: Jennifer Cathey, NC SHPO

Date: April 2012

Plate 9.5: Detail of machinery inside Winebarger Mill (WT0478).

Photo view: South

Photographer: Jennifer Cathey, NC SHPO

Date: April 2012

Plate 9.6: Interior view of the west end of the first floor of Winebarger Mill (WT0478).

Photo view: Southwest

Photographer: Jennifer Cathey, NC SHPO

Date: April 2012

Plate 9.7: House and outbuildings historically associated with Winebarger Mill (WT0478).

Photo view: Southeast

Photographer: Jennifer Cathey, NC SHPO

Date: April 2012

Plate 9.8: Outbuildings historically associated with Winebarger Mill (WT0478), from the intersection of Hopewell Church Road and Meat Camp Road.

Photo view: Southeast

Photographer: Jennifer Cathey, NC SHPO

Date: April 2012

10.0 HISTORY AND DESCRIPTION OF PRICE LAKE DAM (WT0734)

The Price Lake Dam impounds Boone Fork, a tributary of the Watauga River, and is located in a remote, wooded stretch of highlands along the Blue Ridge Parkway, approximately three miles west of Blowing Rock, Watauga County. The site includes a scenic pull-off overlooking the lake with vistas toward distant mountains. Manicured lawn characterizes the parking areas and earthen portions of the dam (Figures 10.1 and 10.2). The surrounding woodland includes a thick understory of laurel and rhododendron beneath deciduous hardwoods.

History

Like many earlier small industrial water-powered operations, the original facility at Price Lake was transformed into a picturesque recreational lake for boating, swimming, and fishing, catering to tourists and vacationers keen on experiencing the area's rugged natural beauty. The lake is presently part of a 4,200-acre tract formerly owned by Julian Price (1867-1946), president of the Jefferson Standard Life Insurance Company of Greensboro, North Carolina. Price intended to transform his holdings into a private recreational retreat for company employees, and he was in the process of supervising construction of a dam to create a 350-acre lake when he died in an automobile accident in North Wilkesboro in October 1946. The site of the dam had been previously used by timber man W.S. Whiting, whose large lumber operation acquired the lands surrounding Boone Fork in about 1915 for harvesting and constructed a small hydroelectric facility with a three-acre lake to power a band-saw sawmill used for processing the lumber (WD, 12 September 1946: 1, 8). After acquiring the cleared land, Price began enlarging the existing dam in late summer, 1946. The new earthen structure was to be 425 feet long, 64 feet thick at its base, and designed to carry a new access road across its crest. When construction began, newspapers wondered if the project might double as a hydroelectric power development (WD, 12 September 1946: 1). Following Price's death, the company and Price's children cooperated in the transfer of the land to the National Park Service (NPS) for use as a public recreation area. A term of the transfer included a request to complete the dam across Boone Fork to create the recreational lake, which was finished by the NPS, albeit on a smaller scale. The dam and 47-acre lake, along with an accompanying four-mile segment of the Blue Ridge Parkway crossing overtop the dam, opened in June 1960 (WD, 16 June 1960a: 1; WD, 23 June 1960b: 1). The lake continued to serve the recreational needs of Parkway patrons until August 18, 2021, when Tropical Storm Fred caused the dam to fail during intense rain. Price Lake ultimately was drained and is closed until further notice.

Description

The Price Lake Dam was completed in 1960 for the dual purpose of forming Price Lake and carrying the Blue Ridge Parkway across Boone Fork. The structure consists of an earthen berm with a bell-shaped concrete spillway crossed by a three-span concrete slab highway bridge supported on two pier bents standing on top of the spillway. Uncoursed stone blocks face the spillway and stepped abutments. The structure is believed to stand on the site of a circa 1915 hydroelectric facility erected to provide electric power to a sawmill. This dam was replaced in turn by the initial construction of a replacement dam in 1946. Nothing of the earlier dams is believed to survive. RGA surveyed the Price Lake Dam and Bridge on March 3, 2021, and the survey photos reflect the status of the structure prior to its damage during Tropical Storm Fred (Plates 10.1-10.3).

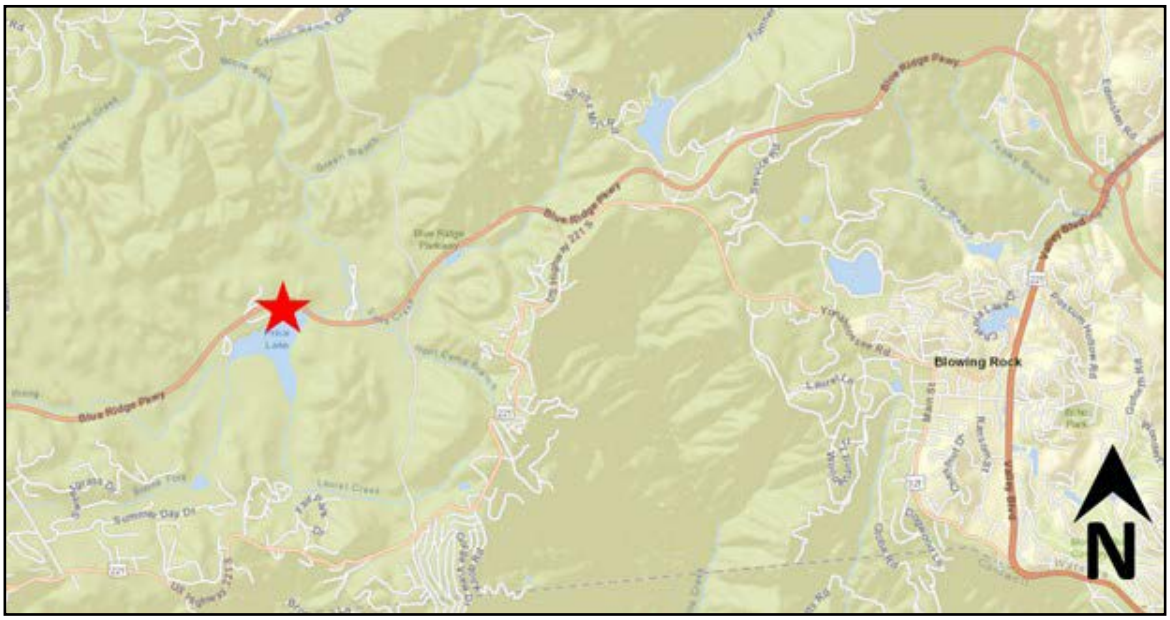

Figure 10.1: Street map showing the location of Price Lake Dam (WT0734), indicated by the red star, on the Blue Ridge Parkway west of Blowing Rock, Watauga County (World Street Map, ESRI 2020).

Figure 10.2: Aerial image of Price Lake Dam (WT0734) on the Boone Fork (World Imagery, ESRI 2020).

Plate 10.1: Price Lake Dam and Bridge (WT0734), on the north side of Price Lake, from the Price Lake Overlook on the Blue Ridge Parkway.

Photo view: Southeast

Photographer: Jason Harpe

Date: March 3, 2021

Plate 10.2: Close-up view of Price Lake Bridge (WT0734), above the dam, from the Blue Ridge Parkway.

Photo view: East

Photographer: Jason Harpe

Date: March 3, 2021

Plate 10.3: Price Lake Dam spillway (WT0734), viewed downslope on the east side of the Blue Ridge Parkway.

Photo view: South

Photographer: Jason Harpe

Date: March 3, 2021

11.0 HISTORY AND DESCRIPTION OF SIMS POND DAM (WT957)

The Sims Pond Dam impounds Sims Creek, a tributary of Boone Fork and the Watauga River, and is located in a remote, wooded stretch of highlands along the Blue Ridge Parkway, approximately 0.70 miles east of Price Lake, Watauga County. The site includes a scenic pull-off overlooking the pond and a path and footbridge across the spillway to the top of the dam. Manicured lawn characterizes the parking areas and earthen portions of the dam (Figures 11.1 and 11.2). The surrounding woodland includes a thick understory of laurel and rhododendron beneath deciduous hardwoods.

History

The pond is presently part of a 4,200-acre tract owned at one time by Julian Price (1867-1946), president of the Jefferson Standard Life Insurance Company of Greensboro, North Carolina. Price intended to transform his holdings into a private recreational retreat for company employees, and he was in the process of supervising construction of a dam to create a 350-acre lake at the site of present-day Price Lake when he died in an automobile accident in North Wilkesboro in October 1946. Following Price's death, the company and Price's children cooperated in the transfer of the land to the NPS Service for use as a public recreation area. A term of the transfer included a request to complete the recreational lake, which was finished by the NPS, albeit on a smaller scale, together with a four-mile segment of the Blue Ridge Parkway in June 1960 (WD, 16 June 1960a: 1; WD, 23 June 1960b: 1). Completed by 1957 in advance of the opening of Price Lake, the Sims Pond dam and impoundment was constructed for the purposes of raising trout to help stock the larger lake. When first completed, the dam featured rustic wooden guardrails along the dam crest and across the footbridge (NPS 1957). Today, it serves as a picturesque pull-off place along the Blue Ridge Parkway.

Description

The earthen and stone dam includes a narrow concrete spillway on its right (north) abutment which is spanned by a modern steel and timber plank walkway and lined with stepped, uncoursed and dressed stone walls with projecting stone caps (Plates 11.1-11.4).

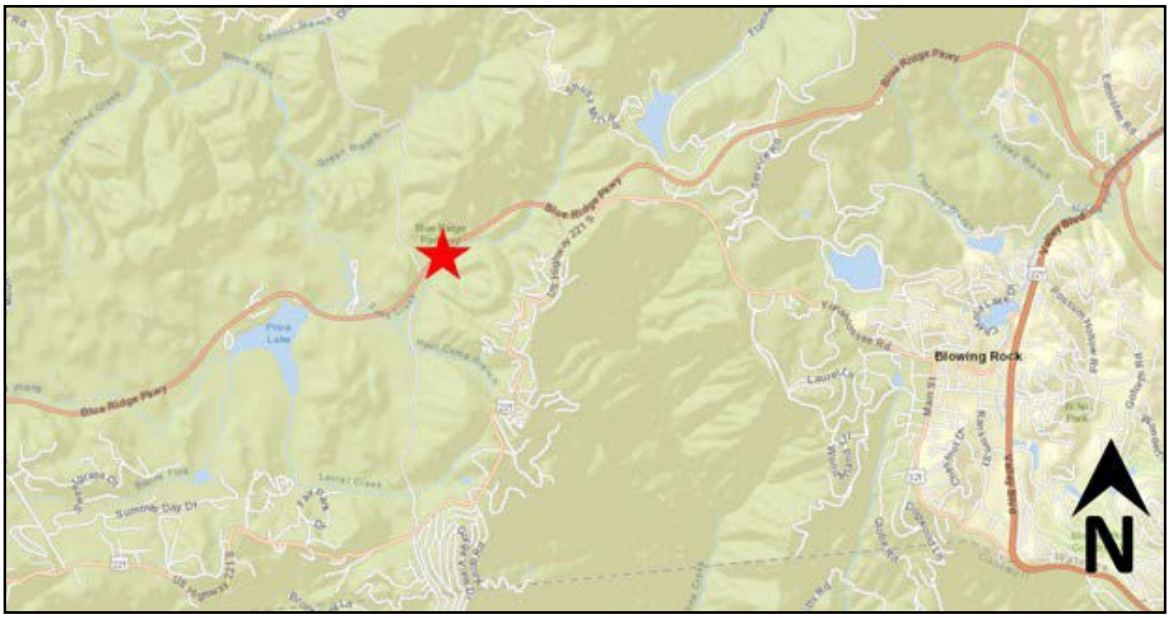

Figure 11.1: Street Map showing the location of Sims Pond Dam (WT0957), indicated by the red star, on the Blue Ridge Parkway west of Blowing Rock, Watauga County (World Street Map, ESRI 2020).

Figure 11.2: Aerial image of Sims Pond Dam (WT0734) on Sims Creek (World Imagery, ESRI 2020).

Plate 11.1: Bridge over the Sims Pond Dam spillway (foreground) and the earthen dam beyond it (WT0957), from the Sims Pond Overlook on the Blue Ridge Parkway.

Photo view: South

Photographer: Jason Harpe

Date: March 3, 2021

Plate 11.2: Sims Pond (WT0957), from the bridge over the spillway.

Photo view: East

Photographer: Jason Harpe

Date: March 3, 2021

Plate 11.3: The uncoursed, dressed stone walls lining the spillway at Sims Pond Dam (WT0957).

Photo view: East

Photographer: Jason Harpe

Date: March 3, 2021

Plate 11.4: Spillway at Sims Pond Dam (WT0957), from the south end of the bridge.

Photo view: Southwest

Photographer: Jason Harpe

Date: March 3, 2021

12.0 HISTORY AND DESCRIPTION OF RAY ESTES COMPLEX (WT0954)

The Ray Estes Complex (WT0954), at 204-230 Ray Estes Road, is spread across two parcels totaling 27.58 acres situated within a narrow valley traversed by Trivett Branch of Howard Creek, approximately three miles north-northwest of the Watauga County seat of Boone. While the individual parcels are irregularly shaped, the combined profile is roughly square. For the purpose of this survey, they are collectively referred to as "the property." The east boundary of the property lies on the east bank of Trivett Branch at the base of Doe Ridge (elev. 4,025 feet). The property crosses Trivett Branch and ascends the east face of Curly Maple Ridge (elev. 4,200 feet). Outside of the building complex, the acreage is heavily wooded. While many of the surrounding parcels are undeveloped, the buildings in the immediate vicinity are primarily vacation homes constructed during the third quarter of the twentieth century through the early 2000s. Trivett Branch forms a mill pond at the south edge of the property and then flows northward, roughly bisecting the property. The complex is accessed via Ray Estes Road, which extends south two-tenths of a mile from Doe Ridge Road near its intersection with Howard Creek Road. Geographically separated from surrounding properties, the Ray Estes Complex is remote and isolated (Figures 12.1 and 12.2). Because of limited primary source documentation on the property, and little more than brief anecdotal information about the Estes family, it is difficult to understand the apparently layered development history of the property.

History

Few details are known about Ray Estes and the history of this complex. Born September 24, 1907 to Maude and Frank Estes of Caldwell County, Cecil Ray Estes, known to friends and family as "Ray," was employed in his early 20s as a fireman in a heating plant. A scrapbook of the New River Power and Light Company identifies Estes in a circa 1930 photograph of steam plant employees on the campus of the Appalachian State Teacher's College, which is now Appalachian State University. At this time, Ray's wife, Edith Ford Estes, was a teacher at the Boone High School. The October 15, 1936 issue of the *Watauga Democrat* reported that Ray Estes had been injured in a fall at the college and that, following his recovery at a medical clinic, he would be returning to work with the New River Power Company in early November of that year (WD, 15 October 1936: 2). In 1939, he and S. McKinley Ayers, General Manager of the New River Power and Light Company, attended the institute for electrical contractors, inspectors, and electricians at the school of engineering and the extension division at the North Carolina State College (WD, 8 July 1954a: 4). The 1940 census documents Ray Estes as a 32-year-old electrician and linesman. For a period in the early 1940s, Ray and Edith Estes lived in Wilmington, North Carolina (WD, 28 January 1943: 5). On August 22, 1945, Ray Estes incorporated his business, the Home Electric Supply Company, with authorized capital stock of $25,000. The incorporation papers state that the purpose was to sell electrical appliances, automobile accessories, tires, radios, radio parts, and equipment. He also ran an electrical wiring business to wire houses and ran a repair shop for electrical equipment (Watauga County Register of Deeds, Deeds of Incorporation, Book B, page 225). In 1950, the Estes Electric Shop was located at 322 Main Street in Boone. By 1951, the company was known as the Estes Electric and Tin Shop (WD, 21 June 1951: 3). By 1954, Mrs. Estes was Principal of the Parkway School in Watauga County (WD, 11 November 1954b: 1). By the early 1960s, the Estes family maintained a winter home in Boynton Beach, Florida (WD, 7 April 1960: 5).

Two of the many buildings on the Ray Estes Complex property were first recorded by the HPO in the late 1970s as part of the regional survey completed for planning of the New River Dam (WT0460). At the time of that survey, Ray Estes was still the property owner, and the only resources identified were the two log dwellings and the northernmost resource, which was labeled as a "concrete barn" in the hand-drawn site plan in the survey file. Only the log houses—and no other buildings or landscape features—were photographed during that project. No historical information was collected. The property was re-surveyed in 2002 during the Watauga County survey update. By that time, the property had been sold to "David Ford and Mr. Miller." Although the property was not photographed during the survey update (with a notation on the survey form stating "no update photos"), some unsourced historical

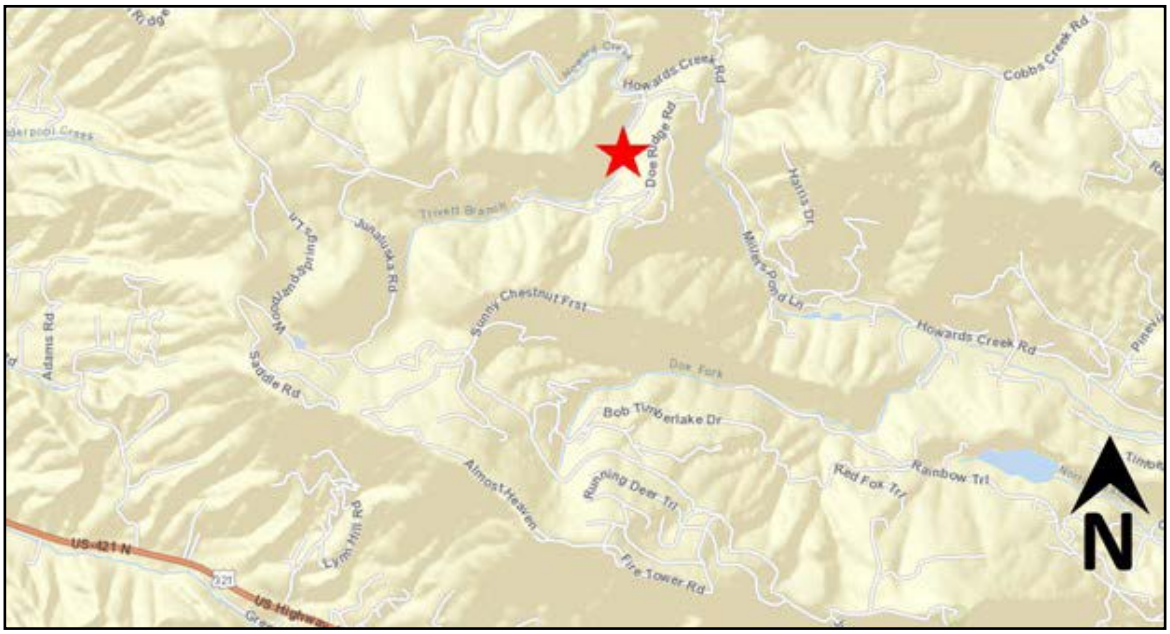

Figure 12.1: Street Map showing the location of the Ray Estes Complex (WT0954), indicated by the red star, on Ray Estes Road near the intersection with Doe Ridge Road north of Boone, Watauga County
(World Street Map, ESRI 2020).

Figure 12.2: Aerial image of the Ray Estes Complex (WT0954) on the Trivett Branch
(World Imagery, ESRI 2020).

information was included in the record. According to the surveyor, Tony Van Winkle, the two "nearly identical" nineteenth-century log houses were disassembled, relocated, and reassembled on the current property in 1948 as part of the larger Doe Ridge resort community nearby. The survey material indicates that Doe Ridge was established in 1949. Just as the historical record is vague on the history of Ray Estes and his property, it is similarly silent on the history of Doe Ridge, which was platted on the land of local farmer Finley P. Hodges. A sales ad in the May 7, 1953, edition of the *Watauga Democrat* reveals that Hodges was selling:

One to 500 acres of land; farms with houses, barns, and other buildings, with or without cattle, and all kinds of machinery. Springs, streams, electricity, telephone, all kinds of fruit trees. Farm land, pasture land, timber, meadow, tobacco base, camp cabin and summer home sites, beautiful streams, best fishing in western North Carolina. Scenery unexcelled (WD, 7 May 1953: 7).

On August 6, 1957, the "Finley Hodges Farm on Howard's Creek" was re-surveyed, though the original plat has not been located. Adjoining parcels in the 1957 plat were labeled only "Tract," and therefore, it is not clear who owned surrounding properties (Watauga County Register of Deeds, Plats, Plat Book 2, page 110). On September 19, 1964, Hodges registered the plat for the "Addition to Doe Ridge Development" on Howard Mountain. This plat identifies adjoining property owners as Estes and W.F. Johnson (Watauga County Register of Deeds, Plat Book 3, page 131). No other documents in the Watauga County Register of Deeds appear to document the sale of the subject property to Ray Estes or his wife, Edith. It is also not clear if the 2002 survey documentation's connection of the property to the Doe Ridge development is accurate. However, the apparent date of the house and related buildings appears to align with the platting and sale of lots in Doe Ridge, suggesting a connection between them.

Ray Estes, having pre-deceased his wife on June 20, 1996, named David Ford, of Alexander County, her Power of Attorney, and Carroll Laxton as alternate or successor attorney-in-fact (Watauga County Register of Deeds, P/A Book 372, page 330). On May 27, 1999, Edith Ford Estes sold the southern portion of the property, closest to the mill pond and containing the large mid-twentieth-century house, to David Lee Ford and wife, Linda Kay Ford, of Hiddenite (Watauga County Register of Deeds, DB514, P168). That same day, Edith Ford Estes revoked the earlier Power of Attorney from 1996 and filed a new Power of Attorney with David Ford, assigning W. Ralph Miller as alternate or successor attorney-in-fact. (Watauga County Register of Deeds, P/A Book 514/page 159). That same day, Edith sold the northern parcel containing 11.192 acres to W. Ralph Miller (Watauga County Register of Deeds, B514, p 162). This explains the note in the 2002 survey form that attributes ownership to "David Ford/Mr. Miller." In August 2020, David Lee Ford and Linda Kay Ford sold the 16.388-acre parcel to Grant Seldomridge and Laura D. Mallard (Watauga County Register of Deeds B2118, page 284). In February 2020, the two acquired the northern parcel of 11.19 acres (DB2164/680).

Description

The buildings that comprise the Ray Estes Complex (WT0954) include the previously documented Ray Estes Log House (WT0460), which was recorded in 2002 during the comprehensive survey of Watauga County. The two are oriented along Ray Estes Road, which roughly parallels Trivett Branch and forms the spine of the complex at its south end. Ray Estes Road then turns to the east, crosses Trivett Branch at the dam, and turns northward between the 1953 house and garage before continuing north to form a long, narrow loop road. Though accessed from the north, the descriptions below begin with the mill pond and dam at the south end of the complex and proceed north. The letters ascribed to each resource below correspond to the site plan created for this survey (Figure 12.3).

A. Mill Pond and Dam

Constructed of stacked stone, the dam is roughly 10 feet tall by 20 feet wide. The impounded area, fed from the south by Trivett Branch, is variably one-quarter acre in area. The dam's construction date is currently unknown. It does not appear to date to the mid-twentieth century, which is when the main house and most of the associated buildings were constructed. Instead, it appears to pre-date most of the buildings by at least 30 years. Approximately 20 feet north of the dam and running parallel to it in

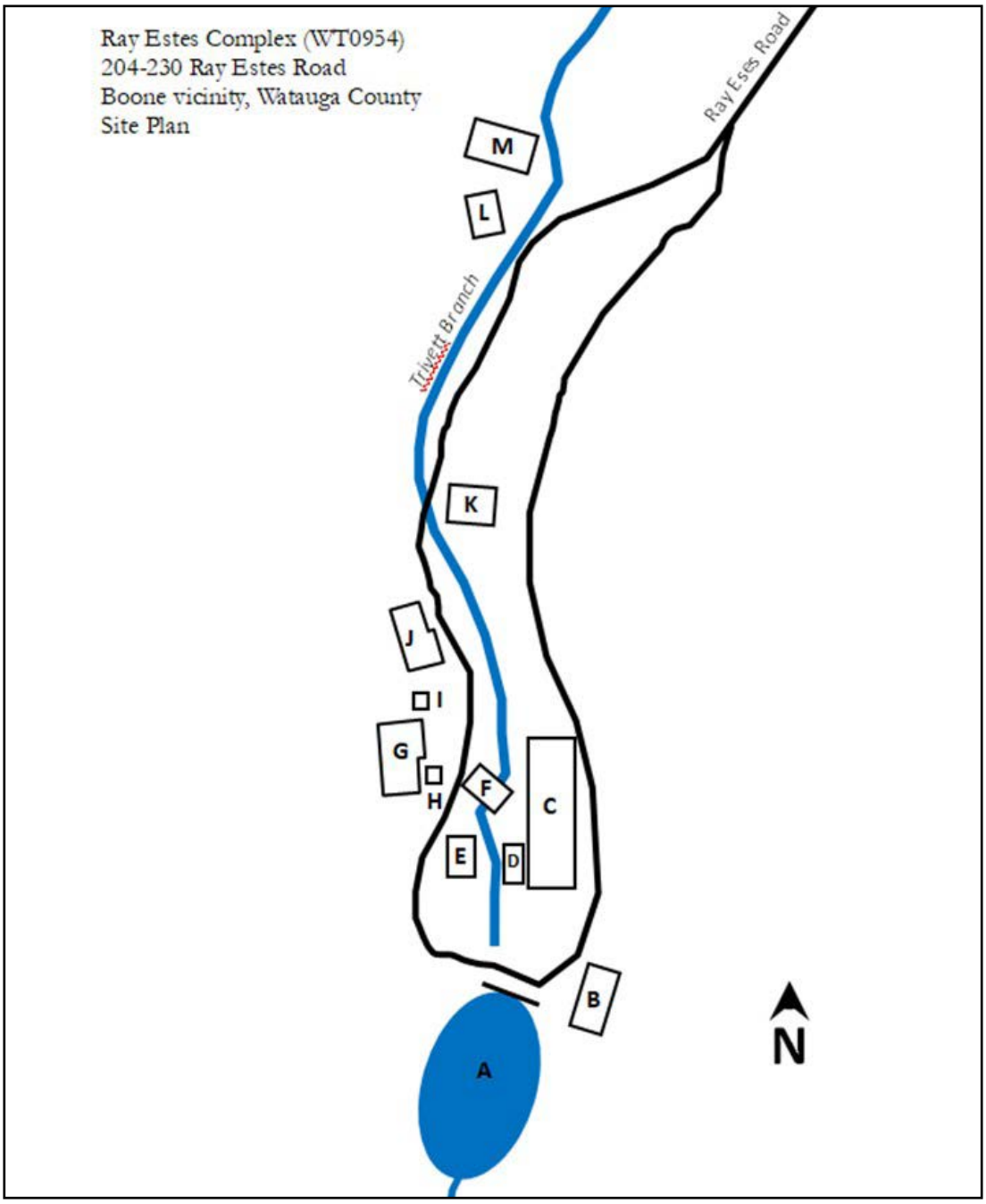

Figure 12.3: Site plan showing the layout of buildings and features at the Ray Estes Complex (WT0954), with labels corresponding to the description in Section 12.0.

an east-west direction is a bridge that connects Ray Estes Road on the east and west banks of Trivett Branch. The bridge is constructed of log beams that span Trivett Branch and rest on stacked stone walls that line the banks. Though the underside of the bridge was not visible during the survey, it appears as though wood planks formed the first layer of bridge decking. Atop the planks, the current surface of the bridge is poured concrete, the date of which is unknown (Plates 12.1-12.2).

B. Garage
Situated northeast of the mill pond at a point where Ray Estes Road turns sharply to the north, is a two-story dwelling with a gabled roof whose pitch is nearly flat. The building is located close to the mill pond and features a second-story balcony that overlooks the water feature. Extending from the north side of the building is a one-story, one-bay garage. The date of this building is unknown, but it was likely constructed in the 1950s.

C. House
Constructed in 1953, this two-story frame dwelling features a long, linear footprint oriented north-to-south on the east bank of Trivett Branch. Physical evidence suggests that it was built on what appears to be a much older foundation dating to the nineteenth or early twentieth century. The buttressed rubble stone foundation is roughly one story tall on the west side and features two parallel flights of integral stairs that rise to the south. The building is banked into the hillside, so the first story is level with the road that approaches from the east. The house appears to be an excellent example of Modernist architecture in rural Watauga County. It is sheathed in board-and-batten siding and features a hipped roof clad in asphalt shingles. The windows are primarily double-hung one-over-one units or large fixed-pane one-light picture windows. The west elevation overlooks Trivett Branch and features abundant glazing (Plates 12.3-12.5).

D. Mill
Roughly aligned with the south end of the 1953 dwelling, and sited close to its west elevation is a one-story, one-bay mill of board-and-batten-sheathed frame construction on a raised rubble stone foundation. It is capped by an asphalt shingle-clad gable roof. This building abuts Trivett Branch on the east bank and features an overshot waterwheel on the west elevation. A battered rubble stone pier supports the wheel. While the wheel is connected to equipment on the inside of the mill, it is not presently clear when or if it operated. The construction date is unknown (Plates 12.6-12.9).

E. Barn
Situated opposite the mill on the west bank of Trivett Branch is a two-story wood frame barn sheathed in waney-edged siding with a metal-clad gable roof and board-and-batten siding in the gable peaks. A one-story porch with a shed roof supported by square posts spans the south elevation facing the mill pond. The construction date is unknown (Plate 12.10).

F. Shed
To the north of the aforementioned mill and barn is a shed that lies close to the 1953 house and straddles Trivett Branch. Clad in board-and-batten siding, this one-story building features an asphalt shingle-clad gable roof with exposed rafter tails. The construction date is unknown (Plate 12.11).

G. Garage/Shop
On the west bank of Trivett Branch, opposite the north end of the 1953 house, is a one-story garage and shop building with an L-shaped footprint. The concrete block building is finished on the exterior with scored or formed concrete. Clad in sheet metal and asphalt shingle, the cross-gabled roof has deep overhangs that extend from the south- and east-facing gables. The east-facing gable, which covers the short end of the L-plan building, shelters two paneled, roll-up garage doors. The south end of the building features a single paneled, roll-up garage door. A single-leaf pedestrian door and window pierce the east elevation of the long end of the ell. The construction date is unknown (Plate 12.12).

Plate 12.1: Stone dam on Trivett Branch at the southern end of the Ray Estes Complex (WT0954).

Photo view: South

Photographer: Jason Harpe

Date: March 3, 2021

Plate 12.2: Bridge over Trivett Branch on the downstream side of the dam at the Ray Estes Complex (WT0954).

Photo view: Southeast

Photographer: Jason Harpe

Date: March 3, 2021

Plate 12.3: North end of the 1953 house at the Ray Estes Complex (WT0954).

Photo view: Southeast

Photographer: Jason Harpe

Date: March 3, 2021

Plate 12.4: South end of the 1953 house at the Ray Estes Complex (WT0954), from the bridge over the Trivett Branch.

Photo view: Northeast

Photographer: Jason Harpe

Date: March 3, 2021

Plate 12.5: West elevation of the 1953 house at the Ray Estes Complex (WT0954).

Photo view: East

Photographer: Jason Harpe

Date: March 3, 2021

Plate 12.6: Mill building to the west of the 1953 house, viewed from the bridge over Trivett Branch.

Photo view: East

Photographer: Jason Harpe

Date: March 3. 2021

Plate 12.7: Close-up of the waterwheel on the west side of the mill.

Photo view: North

Photographer: Jason Harpe

Date: March 3, 2021

Plate 12.8: Interior of the mill.

Photo view: Southeast

Photographer: Jason Harpe

Date: March 3, 2021

Plate 12.9: Interior of the mill, showing equipment.

Photo view: Northwest

Photographer: Jason Harpe

Date: March 3, 2021

Plate 12.10: Barn (left) and shed that crosses Trivett Branch, from the bridge at the south end of the Ray Estes Complex (WT0954).

Photo view: North

Photographer: Jason Harpe

Date: March 3, 2021

Plate 12.11: Shed over Trivett Branch, showing the barn (left) and mill (right).

Photo view: North

Photographer: Jason Harpe

Date: March 3, 2021

Plate 12.12: Garage/shop and storage building on the west side of Trivett Branch.

Photo view: West

Photographer: Jason Harpe

Date: March 3, 2021

H. Storage Building
Banked into the low hillside to the east of and in close proximity to the Garage/Shop is a low, one-story, one-bay-square storage building or cellar. Clad in the same formed or scored concrete as the Garage/Shop, this building features a front-gabled roof with exposed rafter tails that is covered in sheet metal. Vertical plank wood siding finishes the shallow gable peak above the concrete. A small, single-leaf plywood door with a ventilating screen pierces the east elevation. The construction date is unknown (see Plate 12.12).

I. Shed
North of the garage/shop is a one-story, one-bay-square shed with a flat roof clad in sheet metal. The exterior walls are covered in the same formed or scored concrete. The short, single-leaf door on the east elevation is made of plywood with a ventilated opening. The construction date is unknown (Plate 12.13).

J. Dwelling
The one-story dwelling, situated north of and close to the Storage Building, features a sheet metal-clad gable roof and exterior walls finished with formed or scored concrete. A carport extends from the main roof to the east and south, obscuring the elevations. The construction date is unknown (Plates 12.13-12.14).

K. Log House
This two-story log house is situated on the east bank of Trivett Branch near a bend in the waterway and at a distance to the north of the house and aforementioned ancillary buildings. The dwelling rests on a continuous mortared stone foundation, with a mortared stone exterior chimney rising along the west elevation. The single-pen dwelling features half-dovetail notching and a side-gable roof clad in sheet metal above exposed rafter tails. A one-story, full-width porch covers the primary façade, which faces north. The shed roof of the porch is clad in sheet metal and supported by square wood posts. Only a flat, square-edged handrail spans the distance between the porch posts. The central entrance features a vertical plank door with horizontal bracing. Flanking the door are double-hung, six-over-six wood sash windows. Two double-hung, six-over-six wood sash windows pierce the second story of the façade, while similar windows are located on the first and second stories of the west elevation beside the chimney. Anecdotal information suggests that Ray Estes relocated this dwelling to the property in 1948 (Plates 12.15-12.16).

L. Log House
Situated on the west bank of Trivett Branch, and north of the log house on the east bank, this two-story log house is positioned at a slight angle to the waterway and faces roughly east toward Ray Estes Road. Resting on a continuous mortared stone foundation, the single-pen dwelling features half-dovetail notching and exposed logs on the first story of the primary façade, where they are sheltered by a full-width front porch with a 5-V-metal-clad shed roof. A late twentieth-century wood railing spans the porch between square wood posts. Above the porch, the second story is finished with weatherboards. The logs on the side and rear elevations are exposed to the full height of the building. The gable peaks below the 5-V-metal-clad side-gabled roof are sheathed in board-and-batten siding. An exterior stone chimney rises along the north gable end of the dwelling. The main entrance is centered on the façade and features a replacement door likely installed in the mid- to late 1900s flanked by double-hung six-over-six wood sash windows. Two double-hung one-over-one vinyl windows pierce the outer ends of the façade's second story. The south gable end features two fixed six-light wood window sash at the top of truncated window openings with log infill in the bottom halves. This change appears to date to the third quarter of the twentieth century. Centered on the second story is a single double-hung six-over-six wood sash window. Projecting from the rear (west) elevation is a one-story addition sheathed in plywood with a shed roof. Anecdotal information suggests that Ray Estes relocated this building to the property in 1948 (Plates 12.17-12.18).

Plate 12.13: Shed and dwelling on the west side of Trivett Branch.

Photo view: Northwest

Photographer: Jason Harpe

Date: March 3, 2021

Plate 12.14: Southeast corner of the dwelling on the west side of Trivett Branch.

Photo view: Northwest

Photographer: Jason Harpe

Date: March 3, 2021

Plate 12.15: North elevation of the log house on the east side of Trivett Branch.

Photo view: Southeast

Photographer: Jason Harpe

Date: March 3, 2021

Plate 12.16: West and south elevations of the log house on the east side of Trivett Branch.

Photo view: Northeast

Photographer: Jason Harpe

Date: March 3, 2021

Plate 12.17: East elevation of the log house on the west side of Trivett Branch.

Photo view: West

Photographer: Jason Harpe

Date: March 3, 2021

Plate 12.18: South elevation of the log house on the west side of Trivett Branch, showing the mill and machine shop in the background.

Photo view: North

Photographer: Jason Harpe

Date: March 3, 2021

M. Mill & Machine Shop

A second mill with waterwheel is situated at the north end of the complex, roughly one-tenth of a mile south of the intersection of Ray Estes Road and Doe Ridge Road. The mill, which also serves as a machine shop, is two stories tall and oriented perpendicular to and abutting Trivett Branch and, to the east, Ray Estes Road. It sits at the base of and butting into Curly Maple Ridge to the west. The mill/machine shop and log house to the south are accessed via a short bridge over Trivett Branch. Of wood construction, the bridge sits atop roughly coursed rubble stone abutments on the east and west banks. The abutment on the west bank continues to form the foundation of the two-story porch that spans the primary façade of the mill. Apparently converted to residential use as a dwelling or duplex now called The Meadows, this building has been extensively altered over the past 50 years. The aforementioned porch, framed and finished with dimensional lumber to include a straight flight of steps leading from the bridge to the second story, appears to date from the third quarter of the twentieth century. Framed in wood, the mill building is presently finished with a formed or scored concrete. Windows on the first and second stories appear to be replaced or newly introduced, and all appear to be vinyl. A low-pitched gable roof caps the structure. Attached to the north elevation is the waterwheel, which is fed by a flume extending a short distance from Curly Maple Ridge. The waterwheel stands a full story taller than the mill and is supported on the outer side by a formed concrete pier. The construction date is unknown (Plates 12.19-12.20).

Plate 12.19: North elevation of the mill and machine shop.

Photo view: Southwest

Photographer: Jason Harpe

Date: March 3, 2021

Plate 12.20: East elevation of the mill and machine shop.

Photo view: West

Photographer: Jason Harpe

Date: March 3, 2021

13.0 HISTORY AND DESCRIPTION OF SHULL'S MILL DAM (WT0955)

The Shulls Mills Dam is located at the present-day intersection of Old Shulls Mills Road and Route 105, north of the community of Shulls Mills in Watauga County. The structure spans a narrow, rocky section of a boulder-strewn rapids on the Watauga River, flanked on the west by Route 105 and on the east by the remains of a former railroad right-of-way, now partly converted into a road. A large dirt and gravel parking area on Route 105 marks the approximate location of the former powerhouse (Figures 13.1 and 13.2). The surrounding area is rural, mountainous, and wooded, with an assortment of small vacation homes and a private country club and golf course.

History

The Shulls Mills Dam (WT0995) in Watauga County was unrelated to the milling operations located in the community of Shulls Mills, approximately 0.70 miles upstream (south) of the dam site. The existing structure was constructed as part of a small-scale hydroelectric facility for the community of Blowing Rock, North Carolina. An impoundment first appeared cartographically in a 1920 Rural Route Delivery map published by the postal service, although it is unclear if an earlier water-powered industry utilized the site at that time. North (downstream) of the dam, the map illustrates a building on the left (west) bank with the label "power plant," suggesting that the map actually dates to after completion of the Blowing Rock hydroelectric facility (United States Post Office 1920). In 1922, during a honeymoon trip, electrical engineer Edward William Thompson (d. 1933) of New Orleans became interested in financing a hydroelectric facility to support the growing resort hotel business at Blowing Rock (WD, 19 October 1933: 1). He formed the Blowing Rock Power and Light Company to build the dam, turbine plant, and six miles of transmission lines between the dam site on the Watauga River, located downriver of Shulls Mills, and a substation at Blowing Rock. Construction of the $50,000 dam and powerhouse was already underway by February 1923 and was expected to open by May 1 of that year (Danbury Reporter, 21 February 1923: 8). The arc concrete design of the dam exemplified the engineering principles of this type of structure, which utilized the compressive power of concrete and the strength of an arch to buttress the structure against the weight of the water behind it by transferring the loads into the rock streambed and banks (Flinn, Weston, and Bogert 1918: 115-216).

By 1927, the power company already recognized the need for auxiliary power and installed a coal-fired steam turbine plant to supplement the waterpower (TCO, 25 January 1927: 4). A 1928 county soils map depicts the power plant still in situ (United States Department of Agriculture 1928). That same year, the company sold its entire system to the Empire Public Service Company of Cleveland, Ohio, which launched a major rural electrification program to link many of the neighboring small towns to the system (WD, 2 August 1928a: 1; WD, 9 August 1928b: 1). By 1933, the plant contributed electric power to a distribution network covering Blowing Rock, Valle Crucis, Shulls Mills, Sugar Grove, and Amantha (WD, 19 October 1933: 1). The facility eventually became part of the Northwest Carolina Utilities Company. The flood of 1940 demolished the hydroelectric plant, which was supplanted by the utility's other steam-powered plants (TCO, 17 August 1940b: 12). In 1948, the mill pond and dam were still visible in an aerial photograph, although it was not clear if the facility was still used to provide hydroelectric power (NETR 1948). Today, only the concrete dam remains, but with a large hole punched in its center to permit water to flow through (Plates 13.1-13.3).

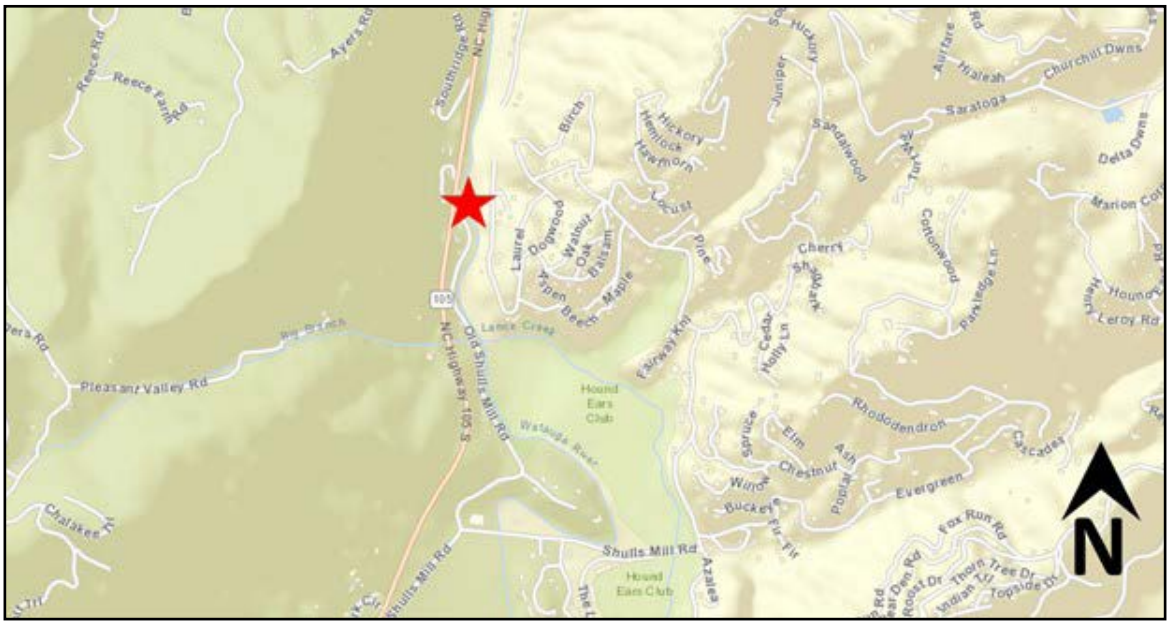

Figure 13.1: Street map showing the location of Shulls Mill Dam (WT0955), indicated by the red star, along Old Shulls Mill Road near its intersection with Route 105, north of the unincorporated community of Shulls Mill, Watauga County (World Street Map, ESRI 2020).

Figure 13.2: Aerial image of the Shulls Mill Dam (WT0955) on the Watauga River (World Imagery, ESRI 2020).

Plate 13.1: View downstream of Shull's Mill Dam (WT0955).

Photo view: North

Photographer: Jason Harpe

Date: March 3, 2021

Plate 13.2: Close-up of Shull's Mill Dam (WT0955), showing hole punched in the concrete.

Photo view: East

Photographer: Jason Harpe

Date: March 3. 2021

Plate 13.3: Close-up of west abutment at Shull's Mill Dam (WT0955).

Photo view: East

Photographer: Jason Harpe

Date: March 3, 2021

14.0 HISTORY AND DESCRIPTION OF SPICE BOTTOM CREEK FARM POND DAM (WT0956)

The Spice Bottom Creek Farm Pond Dam site is located off Church Hollow Road, east of its intersection with Locust Lane, on the south side of the community of Foscoe, Watauga County. The impoundment occupies a swampy hollow fed by Spice Bottom Creek and formed by Mill Ridge and Bench Mountain (Figures 14.1 and 14.2). The surrounding area is characterized by open fields, livestock pasture, and small farm holdings with early twentieth-century dwellings and manufactured homes. Beyond, the landscape includes mountainous high country and woodland.

History

Located near a stream named Moody Mill Creek, the dam site on Spice Bottom Creek is unrelated to the water-powered industry. The double ponds were created along with a number of similar nearby watering holes between 1971 and 1979, when they first appeared as new features on the U.S.G.S. quadrangle map for the area (U.S.G.S. 1971, 1979). Probably installed as part of an effort to reclaim wetlands, establish watering holes, and improve recreational opportunities, the ponds transformed a low, swampy area into open water. A 1983 aerial photograph depicts the two-pond configuration for the first time (NETR 1983).

Description

Of modern construction, the teardrop-shaped pond extends along the left (north) bank of Spice Bottom Creek and is impounded by an earthen embankment extending around its perimeter. A crescent-shaped internal embankment divides the pond into upper and lower pools. A spillway in the lower southeast end of the structure discharges water back into Spice Bottom Creek. Topped primarily in grass, the embankments also feature encroaching hardwood saplings (Plates 14.1-14.2).

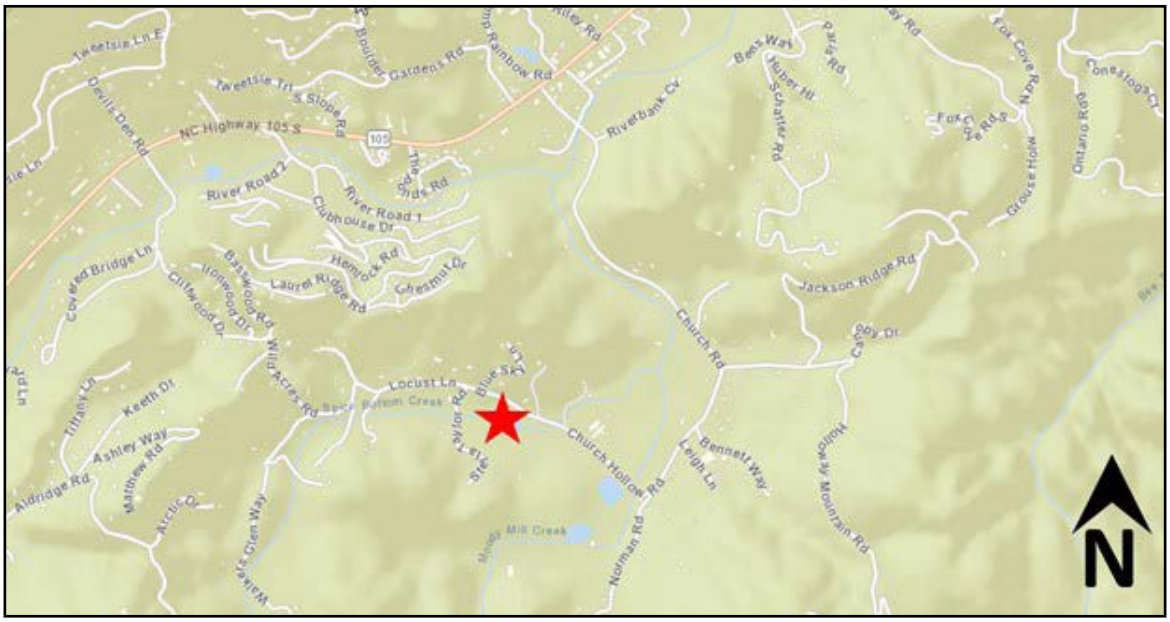

Figure 14.1: Street map showing the location of the Spice Bottom Creek Farm Pond Dam (WT0956), indicated by the red star, off Church Hollow Road south of the unincorporated community of Foscoe, Watauga County
(World Street Map, ESRI 2020).

Figure 14.2: Aerial image of Spice Bottom Creek Farm Pond Dam (WT0956) on Spice Bottom Creek
(World Imagery, ESRI 2020).

Plate 14.1: Spice Bottom Creek Farm Pond Dam (WT0956), from Church Hollow Road.

Photo view: South

Photographer: Jason Harpe

Date: March 3, 2021

Plate 14.2: Spice Bottom Creek Farm Pond Dam (WT0956), showing Church Hollow Road to the left.

Photo view: East

Photographer: Jason Harpe

Date: March 3, 2021

15.0 NATIONAL REGISTER EVALUATION AND PRELIMINARY ELIGIBILITY RECOMMENDATIONS

Based on the findings of the background history and historic context, small, rural water-powered industries that are 50 years of age or more and retain most or all of the seven aspects of historic integrity—location, design, setting, materials, workmanship, feeling, and association—are potentially eligible for listing in the NRHP under Criterion A in the areas of commerce, community planning and development, exploration/settlement, and industry and under Criterion C in the areas of architecture and engineering. The resources are also potentially eligible under Criterion D both as architectural properties and/or archaeological sites for their likely ability to yield information important in history. In particular, this includes information about the engineering and construction of dams, raceways, and mill complexes, as well as their initial establishment, evolution, and operation through time..

Because most small water-powered facilities evolved over time according to changing needs, new technologies, and natural disasters, few, if any, early settlement mill sites remain intact. Evidence of these resources is only likely to survive in the archaeological record. Similarly, most water-powered operations underwent a functional transition from manufacturing to electric power generation, or they were constructed solely for electric generation just at the time when the residents and entrepreneurs in North Carolina weighed the benefits between small-scale independent manufacturing and large-scale electrification. Accordingly, resources exhibiting the characteristics of electric generation should not be overlooked for their potential to retain aspects of earlier manufacturing practices within their structures or in their accompanying archaeological record under Criterion D. Similarly, resources built solely for small-scale electric generation in the period between circa 1900 and 1920 are potentially significant for the moment of transition away from water-powered manufacturing and toward the electrification of rural America. Such facilities, while perhaps lacking individual distinction, cannot be overlooked as possible contributing elements to nearby historic districts, particularly as non-contiguous resources eligible under Criteria A and/or C.

The following surveyed resources are recommended ineligible for listing in the NRHP, either because they lack the necessary historic significance or because they do not possess the requisite historic integrity to appropriately embody their significant associations (see Table 1.1).

- The Sugar Grove Mill (WT0406) is historically significant for its association with Watauga County's industrial history but is not eligible for listing in the NRHP under any criteria due to extensive alterations since the 1990s that have significantly jeopardized the property's integrity of setting, design, materials, workmanship, feeling, and association.

- Shull's Mill Dam (WT0955) is historically significant for its association with hydroelectric power generation in Watauga County but is not eligible for the NRHP under any criteria due to the loss of the powerhouse, which was an important component of the complex, and overall loss of integrity of design, materials, workmanship, feeling, and association.

The following surveyed resources appear to meet the thresholds for historical significance and integrity and are recommended eligible for listing in the NRHP (see Table 1.1).

- Sloops Lake Dam and Powerhouse (AV0082), which was placed on the National Register Study List in 1981, appears to be historically significant for its association with hydroelectric power generation in Avery County. Although the remains of the powerhouse lack equipment, the site nevertheless retains integrity of location, setting, design, and feeling. The rubble stone dam and powerhouse also retain sufficient integrity of workmanship and materials to convey their historical significance. Thus, Sloops Lake Dam and Powerhouse is recommended NRHP-eligible under Criterion A in the area of Industry. Because the site also includes the remains of ancillary buildings in the form of stone and concrete foundations, Sloops Lake Dam and Powerhouse

may also be eligible under Criterion D for its potential to yield important information about small-scale hydroelectric facilities. Further investigations would be needed to fully assess the site for eligibility under Criterion D.

- The Mill Pond and Dam at Lees-McRae College (AV0252) appears to be historically significant as part of the Lees-McRae College Campus Historic District (AV0110), which was placed on the National Register Study List in 1986. At that time, Study List designations did not specify under which NRHP Criteria a property was considered eligible. However, it is reasonable to conclude that the campus was placed on the National Register Study List for significance under Criterion A in the area of education and under Criterion C in the area of architecture. In 2021, the campus was determined eligible for the NRHP under Criteria A and C following an intensive survey of Lees-McRae College that extended beyond the original core of the historic district to include resources to the south as far as Mill Pond Road and Bobcat Way. While the Mill Pond and Dam at Lees-McRae College is considered a contributing resource within this district, its status is not specifically tied to either NRHP Criterion.

- Because all of the historic resources associated with the Moravian Falls Mill Site (WK0559) were lost in floods during the first half of the twentieth century, the property is not NRHP-eligible under Criteria A, B, or C. However, given the site's history and layered pattern of development evident in the archival and photographic record, the Moravian Falls Mill Site may be eligible under Criterion D for its potential to yield important information about the industrial history of Wilkes County from the nineteenth through the mid-twentieth century. Further investigations would be needed to fully assess the site for eligibility under Criterion D.

- The Winebarger Mill (WT0478) was placed on the National Register Study List in 2003 following the comprehensive survey of Watauga County. It was determined eligible for the NRHP in 2004. The property retains integrity of location, setting, and feeling and sufficient integrity of design, materials, and workmanship to convey its significant historic associations. RGA recommends that the Winebarger Mill, despite its deteriorated condition, remains NRHP-eligible under Criterion A in the area of Industry and under Criterion C in the area of Architecture.

- While the history of the mill, pond, and dam are not immediately clear, the Ray Estes Complex (WT0954) may be NRHP-eligible under Criterion C in the area of Architecture for the historical significance of the 1953 house as an excellent and intact example of Modernist architecture in rural Watauga County. Further evaluation of the property within the context of post-World War II architecture in Watauga County is needed to understand its potential historic significance in this area. The property appears to retain integrity of location, setting, design, materials, workmanship, feeling, and association. Because the property exhibits a layered developmental history, evident in the rubble stone foundation of the house, the dam, and the walls lining Trivett Branch, the Ray Estes Complex may be eligible under Criterion D for its potential to yield important information about industrial development in rural Watauga County in the nineteenth and early twentieth centuries. Further investigations would be needed to fully assess the site for eligibility under Criterion D.

Dams built to form lakes used primarily for recreational purposes such as swimming, boating, or sport fishing, or those installed for agricultural use may be individually eligible for the NRHP under Criterion A in the area of entertainment/recreation and/or agriculture or under Criterion C in the area of architecture or engineering. The following surveyed resources, all of which are dam-and-lake complexes historically used for recreational or agricultural purposes, remain unevaluated due to the scope of the project, which focused on the documentation and evaluation of dams built for industrial purposes. Further research and survey would be necessary to render recommendations on their individual NRHP eligibility under Criteria A and C.

- Price Lake Dam and Bridge (WT0734) and Sims Pond Dam (WT0957) are NRHP-eligible as contributing resources within the Blue Ridge Parkway Historic District, which was determined eligible in 1990. They have not been evaluated for individual NRHP eligibility.

- The Wildcat Lake Dam (AV0214), Knight Pond Dam (AV0215), and Spice Bottom Creek Farm Pond Dam (WT0956) have not been evaluated for individual NRHP eligibility.

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APPENDIX A: MEMORANDUM OF AGREEMENT AND PROJECT DOCUMENTATION

North Carolina Department of Natural and Cultural Resources

State Historic Preservation Office

Ramona M. Bartos, Administrator

Governor Roy Cooper
Secretary Susi H. Hamilton

Office of Archives and History
Deputy Secretary Kevin Cherry

March 9, 2020

Jordan Hessler jhessler@wildlandseng.com
Wildlands Engineering, Inc.
1430 South Mint Street, Suite 104
Charlotte, North Carolina 28203

Re: Proposed Ward Mill Dam removal project, Laurel Creek Township, Watauga County, ER 20-0338

Dear Mr. Hessler,

Thank you for your February 7, 2020, letter concerning the above-referenced undertaking. We have reviewed the materials submitted and offer the following comments.

There are several archaeological sites along this part of the Watauga River, including the National Register-eligible Ward Site (31WT22). Most of these sites are adjacent to the proposed impoundment area, which will experience passive water drawdown effects as a result of the dam removal. We do not believe that any archaeological sites will be impacted by the water drawdown or by the removal of the dam structure.

The submitted plans indicate that there will be improvements on about 300 meters of stream bank directly up- and downstream of the Ward Mill Dam that may include minor grading. Given the nature of this landscape and its proximity to other archaeological resources, we have determined that there is a high probability that additional archaeological resources may be present within the proposed area of disturbance for stream bank improvements.

Prior to initiation of any ground disturbing activities within the project area, we recommend that a comprehensive archaeological survey of the areas where stream bank grading is proposed be conducted by an experienced archaeologist to identify and evaluate the significance of any archaeological remains that may be damaged or destroyed by the proposed project.

Our office now requests consultation with the Office of State Archaeology Review Archaeologist to discuss appropriate field methodologies prior to the archaeological field investigation. A list of archaeological consultants who have conducted or expressed an interest in contract work in North Carolina is available at https://archaeology.ncdcr.gov/archaeological-consultant-list. The archaeologists listed, or any other experienced archaeologist, may be contacted to conduct the recommended survey.

One paper and one digital copy of all resulting archaeological reports, as well as one digital copy of the North Carolina site form for each site recorded, should be forwarded to the Office of State Archaeology through this office for review and comment as soon as they are available and in advance of any ground disturbance activities.

We are unable to accurately assess impacts to historic properties within the proposed Area of Potential Effect. The B. O. Ward House & Mill (WT0358) complex, which includes the dam proposed for demolition, should be evaluated by a Secretary of the Interior qualified Architectural Historian and a report submitted to us for review and comment.

Please be sure to review our Historic Structure Survey Report Standards (https://www.ncdcr.gov/about/history/division-historical-resources/nc-state-historic-preservation-office/environmental-0) to ensure timely review. Missing deliverables will cause a delay in processing.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-814-6579 or environmental.review@ncdcr.gov. In all future communication concerning this project, please cite the above referenced tracking number.
Sincerely,

Renee Gledhill-Earley

for Ramona Bartos, Deputy
State Historic Preservation Officer

cc: Annie McDonald, NCHPO

From: *Fuemmeler, Amanda J CIV (USA)*
Sent: *Monday, July 20, 2020 12:05 PM*
To: *Jake McLean <jmclean@wildlandseng.com>*
Cc: *Ellen Turco <eturco@rgaincorporated.com>; Andy Hill <andy@mountaintrue.org>; Erin McCombs <emccombs@americanrivers.org>; Gail Lazaras <glazaras@americanrivers.org>; Jonathan Hartsell <hartselljonathan@gmail.com>*
Subject: *RE: Ward Mill report*

Thanks Jake. I have forwarded on our adverse effects determination and request for MOA to SHPO and ACHP. I would recommend at this point, you/Ellen et al. draft an MOA that can be provided to SHPO to move things along. I'm not sure what mitigative measures that would be acceptable in the MOA so may want to reach out to SHPO for some ideas/recommendations prior to drafting.

Amanda
828-271-7980 ext. 4225

MEMORANDUM OF AGREEMENT

BETWEEN THE U.S. ARMY CORPS OF ENGINEERS,

NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICER,

AMERICAN RIVERS,

BLUE RIDGE RESOURCE CONSERVATION & DEVELOPMENT COUNCIL, INC.,

AND

MOUNTAIN TRUE,

FOR

DEMOLITION OF WARD'S MILL DAM, WATAUGA COUNTY,

NORTH CAROLINA

WHEREAS, a partnership between American Rivers, Blue Ridge Resource Conservation and Development Council, Inc., and Mountain True (Partnership) plans to remove the Ward's Mill Dam on the Watauga River in Watauga County, North Carolina, as shown in Appendix A, to help restore natural river flow (Undertaking); and

WHEREAS, the proposed removal of the Ward's Mill Dam will require one or more federal permits from the United States Army Corps of Engineers (USACE); and

WHEREAS, USACE has been designated the lead federal agency for this Undertaking with regard to compliance with Section 106 of the National Historic Preservation Act; and

WHEREAS, the Partnership are consulting parties as an applicant for a federal permit and/or assistance and are therefore invited signatories, pursuant to 36 CFR §800.2(c)(4); and,

WHEREAS, USACE has determined that the Undertaking will have an adverse effect on the Ward Mill Complex and Dam (WT0358), which is eligible for listing in the National Register of Historic Places, and has consulted with the North Carolina State Historic Preservation Officer (SHPO) pursuant to 36 CFR Part 800, the regulations implementing Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108); and

WHEREAS, the Partnership, on behalf of USACE*,* initiated consultation with the Eastern Band of Cherokee Indians in a letter dated February 28, 2020 regarding this Undertaking in accordance with Section 106 of the National Historic Preservation Act, 53 U.S.C. 300101 et seq. and its implementing regulations, 36 CFR Part 800, and received no objection to its determination; and,

WHEREAS, in accordance with 36 CFR § 800.6(a)(1), USACE has notified the Advisory Council on Historic Preservation (ACHP) of its adverse effect determination, and the ACHP has chosen not to participate in the consultation pursuant to 36 CFR § 800.6(a)(1)(iii);

NOW, THEREFORE, USACE, the SHPO and Partnership agree that the Undertaking shall be implemented in accordance with the following stipulations in order to mitigate the effects of the Undertaking on the historic properties.

STIPULATIONS

USACE shall ensure that the following stipulations are implemented:

I. Mitigation

A. The Partnership will hire a qualified consultant who meets the Secretary of the Interior's Professional Qualifications in History or Architectural History, to develop a historical context for dam and mill complexes built for localized industrial production over 50 years of age and located within Avery, Watauga, and Wilkes Counties.

a. Context Resources

i. Dams meeting the requirements in Section I.A will be considered regardless of size.

ii. Specific resources included in the context survey will include Sloop Lake Dam (AV0082), North Wilkesboro Water Intake (WK0390), Ward Mill (WT0358), Price Lake Dam (WT0734), Shull Mill Dam, Mill Pond Dam and all other properties identified by the consultant through desktop analysis and research that meet the above criteria and retain extant dams.

iii. Dams that were constructed solely for the purpose of generating electricity will not be included in the context survey.

iv. Resources will be preliminarily evaluated for National Register of Historic Places eligibility.

v. Survey record documentation should be completed for each resource surveyed and included within the context. This includes requesting a Survey Site Number (if previously unrecorded), completing a digital record for the Survey Database, and providing photographs/photo sheets keyed to site plans.

b. Deliverables Timeline

i. The Partnership will provide SHPO with a scope of work and a preliminary list of resources to be included in the context document for review and comment within three (3) months of execution of this MOA.

1. SHPO will have fifteen (15) days to comment.
2. If SHPO does not comment within 15 days survey work may begin using the preliminary resource list.

ii. An initial draft of the context document shall be submitted to the SHPO within nine (9) months of the execution of this MOA. SHPO will have 30 days to comment on the initial draft.

iii. A final draft of the context document and all associated deliverables for the Survey record shall be submitted to the SHPO within eighteen (18) months of the execution of this MOA. SHPO will have 30 days to comment on the final draft.

B. The Partnership will develop a GIS-based story map that integrates the information gathered about the historic Ward Mill Complex and Dam, a representative sample of dams included in the context document, and the purpose for the water-way restoration.
    a. A draft of the GIS story map shall be submitted to the SHPO within eighteen (18) months of the execution of this MOA. SHPO will have thirty (30) days to comment.
    b. The final GIS story map shall be submitted to the SHPO within two (2) years of the execution of this MOA. If the SHPO does not comment within thirty (30) days of receipt of the final story map draft, the Partnership may consider the story map complete.
    c. The final GIS story map will be made available to the public via the Partnerships' websites for a period of no less than 5 years.

II. DURATION

This MOA will expire if its terms are not carried out within five (5) years from the date of its execution. Prior to such time, USACE may consult with the other signatories to reconsider the terms of the MOA and amend it in accordance with Stipulation V below.

III. MONITORING AND REPORTING

Following the execution of this MOA, until it expires or is terminated, the Partnership shall annually provide a summary report detailing the work undertaken to all parties to this agreement. Such report shall include any scheduling changes proposed, any problems encountered, and any disputes and objections received related to carrying out the terms of this MOA.

IV. DISPUTE RESOLUTION

Should any signatory or concurring party to this MOA object at any time to any actions proposed or the manner in which the terms of this MOA are implemented, USACE shall consult with such party to resolve the objection. If USACE determines that such objection cannot be resolved, USACE will:

A. Forward all documentation relevant to the dispute, including the USACE's proposed resolution, to the ACHP. The ACHP shall provide USACE with its advice on the resolution of the objection within 30 days of receiving adequate documentation.

B. If the ACHP does not provide its advice regarding the dispute within the thirty 30 day time period, USACE may make a final decision on the dispute and proceed accordingly.

C. Prior to reaching a final decision on the dispute, USACE shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories and concurring parties, and provide them with

a copy of this written response. USACE will then proceed according to its final decision.

D. The parties' respective responsibility to carry out all other actions subject to the terms of this MOA that are not the subject of the dispute remain unchanged.

V. AMENDMENTS

This MOA may be amended when such an amendment is agreed to in writing by all signatories. The amendment will be effective on the date a copy signed by all of the signatories is filed with the ACHP.

VI. TERMINATION

If any signatory to this MOA determines that its terms will not, or cannot be carried out, that party shall immediately consult with the other signatories to attempt to develop an amendment per Stipulation V, above. If within 30 days (or another time period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories.

Once the MOA is terminated, all work related to the Undertaking shall cease, and prior to work continuing on the Undertaking, USACE will either (a) execute another MOA pursuant to 36 CFR § 800.6 or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7. USACE shall notify the signatories as to the course of action it will pursue.

VII. IMPLEMENTATION

Execution of this MOA by USACE and North Carolina HPO and implementation of its terms are evidence that USACE has taken into account the effects of this Undertaking on historic properties and afforded the ACHP an opportunity to comment.

MEMORANDUM OF AGREEMENT
BETWEEN THE U.S. ARMY CORPS OF ENGINEERS,
THE NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICER,
AMERICAN RIVERS, THE BLUE RIDGE RESOURCE CONSERVATION AND DEVELOPMENT COUNCIL, INC., AND MOUNTAIN TRUE,
FOR
DEMOLITION OF WARD'S MILL DAM, WATAUGA COUNTY, NORTH CAROLINA

Appendix A: Ward Mill Dam Location Map. Excerpted from *Ward Mill Dam Removal (NCSHPO ER# 20-0338, Technical Report # 2020-077NC)* by Richard Grubb & Associates

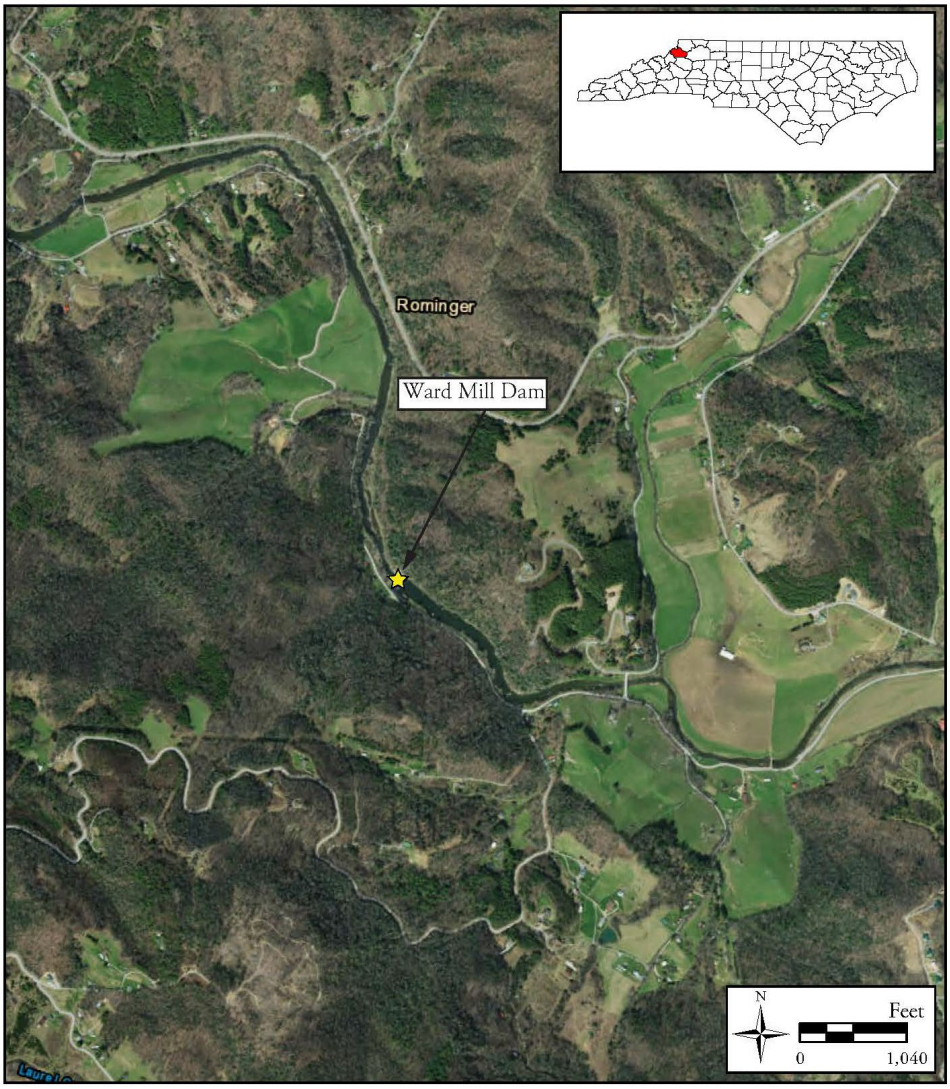

Figure 2.2: Aerial Map showing the project location (World Imagery, ESRI 2020).

2-4

Appendix A (continued): Ward Mill Dam Location Map. Excerpted from *Ward Mill Dam Removal (NCSHPO ER# 20-0338, Technical Report # 2020-077NC)* by Richard Grubb & Associate

Figure 2.4: Area of Potential Effects Map
(World Imagery, ESRI 2020). The limits of construction depicted as a blue line on this map reflects the most recent limits provided Wildlands Engineering in July of 2020.
2-6

MEMORANDUM OF AGREEMENT
BETWEEN THE U.S. ARMY CORPS OF ENGINEERS,
THE NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICER,
AMERICAN RIVERS, THE BLUE RIDGE RESOURCE CONSERVATION AND DEVELOPMENT COUNCIL, INC., AND MOUNTAIN TRUE,
FOR
DEMOLITION OF WARD'S MILL DAM, WATAUGA COUNTY,
NORTH CAROLINA

Signatory:

U.S. ARMY CORPS OF ENGINEERS
FOR THE COMMANDER

By:_____ Date: Nov. 23 2020
Scott McLendon
Chief, Regulatory Division
Wilmington District

MEMORANDUM OF AGREEMENT
BETWEEN THE U.S. ARMY CORPS OF ENGINEERS,
THE NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICER,
AMERICAN RIVERS, THE BLUE RIDGE RESOURCE CONSERVATION AND DEVELOPMENT COUNCIL, INC., AND MOUNTAIN TRUE,
FOR
DEMOLITION OF WARD'S MILL DAM, WATAUGA COUNTY,
NORTH CAROLINA

Signatory:

NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICER

By: Kevin Cherry Date: 11-16-2020
Dr. Kevin Cherry
State Historic Preservation Officer

MEMORANDUM OF AGREEMENT
BETWEEN THE U.S. ARMY CORPS OF ENGINEERS,
THE NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICER,
AMERICAN RIVERS, THE BLUE RIDGE RESOURCE CONSERVATION AND DEVELOPMENT COUNCIL, INC., AND MOUNTAIN TRUE,
FOR
DEMOLITION OF WARD'S MILL DAM, WATAUGA COUNTY, NORTH CAROLINA

Signatory:

AMERICAN RIVERS

By: Kristin M. May Digitally signed by Kristin M. May Date: 2020.11.13 14:05:30 -05'00' Date: 11/13/2020
Kristin May
Chief Financial Officer

MEMORANDUM OF AGREEMENT
BETWEEN THE U.S. ARMY CORPS OF ENGINEERS,
THE NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICER,
AMERICAN RIVERS, THE BLUE RIDGE RESOURCE CONSERVATION AND DEVELOPMENT COUNCIL, INC., AND MOUNTAIN TRUE,
FOR
DEMOLITION OF WARD'S MILL DAM, WATAUGA COUNTY, NORTH CAROLINA

Signatory:

BLUE RIDGE RESOURCE CONSERVATION & DEVELOPMENT COUNCIL

By: _____ Date: 11/10/20
Jonathan Hartsell
Executive Director

MEMORANDUM OF AGREEMENT
BETWEEN THE U.S. ARMY CORPS OF ENGINEERS,
THE NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICER,
AMERICAN RIVERS, THE BLUE RIDGE RESOURCE CONSERVATION AND DEVELOPMENT COUNCIL, INC., AND MOUNTAIN TRUE,
FOR
DEMOLITION OF WARD'S MILL DAM, WATAUGA COUNTY, NORTH CAROLINA

Signatory:

MOUNTAIN TRUE

By:_____ Date: 11/10/2020
Julie Mayfield
Co-Director

Filed by the Advisory Council on Historic Preservation

Date:_____

APPENDIX B: NATIONAL REGISTER OF HISTORIC PLACES CRITERIA FOR EVALUATION

1. State and National Registers of Historic Places Criteria
2. Criteria of Adverse Effect

1. State and National Registers of Historic Places Criteria

Significant historic properties include districts, structures, objects, or sites that are at least 50 years of age and meet at least one National Register criterion. Criteria used in the evaluation process are specified in the Code of Federal Regulations, Title 36, Part 60, National Register of Historic Places (36 CFR 60.4). To be eligible for inclusion in the National Register of Historic Places, a historic property(s) must possess:

> the quality of significance in American History, architecture, archaeology, engineering, and culture [that] is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

a) that are associated with events that have made a significant contribution to the broad patterns of our history, or

b) that are associated with the lives of persons significant in our past, or

c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components lack individual distinction, or

d) that have yielded, or may be likely to yield, information important in prehistory or history (36 CFR 60.4).

There are several criteria considerations. Ordinarily, cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register of Historic Places. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

a) a religious property deriving primary significance from architectural or artistic distinction or historical importance, or

b) a building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event, or

c) a birthplace or grave of a historical figure of outstanding importance if there is no other appropriate site or building directly associated with his/her productive life, or

d) a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events, or

e) a reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived, or

f) a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historic significance, or

g) a property achieving significance within the past 50 years if it is of exceptional importance. (36 CFR 60.4)

When conducting National Register evaluations, the physical characteristics and historic significance of the overall property are examined. While a property in its entirety may be considered eligible based on Criteria A, B, C, and/or D, specific data is also required for individual components therein based on date, function, history, and physical characteristics, and other information. Resources that do not relate in a significant way to the overall property may contribute if they independently meet the National Register criteria.

A contributing building, site, structure, or object adds to the historic architectural qualities, historic associations, or archeological values for which a property is significant because a) it was present during the period of significance, and possesses historic integrity reflecting its character at that time or is capable of yielding important information about the period, or b) it independently meets the National Register criteria. A non-contributing building, site, structure, or object does not add to the historic architectural qualities, historic associations, or archeological values for which a property is significant because a) it was not present during the period of significance, b) due to alterations, disturbances, additions, or other changes, it no longer possesses historic integrity reflecting its character at that time or is incapable of yielding important information about the period, or c) it does not independently meet the National Register criteria.

2. Criteria of Adverse Effect

Whenever a historic property may be affected by a proposed undertaking, Federal agency officials must assess whether the project constitutes an adverse effect on the historic property by applying the criteria of adverse effect. According to the Advisory Council on Historic Preservation, the criteria of adverse effect (36 CFR 800.5), is as follows:

> (1) An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that would qualify it for inclusion in the National Register, in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation for the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or cumulative.
>
> (2) Adverse effects on historic properties include, but are not limited to (36 CFR 800.5(a)(2)):
>
> i) Physical destruction of or damage to all or part of the property;
>
> ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;
>
> iii) Removal of the property from its historic location;
>
> iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;

v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;

vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and

vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

A finding of adverse effect or no adverse effect could occur based on the extent of alteration to a historic property, and the proposed treatment measures to mitigate the effects of a proposed undertaking. According to 36 CFR 800.5(3)(b):

> The agency official, in consultation with the SHPO/THPO, may propose a finding of no adverse effect when the undertaking's effects do not meet the criteria of § 800.5(a)(1) or the undertaking is modified or conditions are imposed, such as the subsequent review of plans for rehabilitation by the SHPO/THPO to ensure consistency with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines, to avoid adverse effects.

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APPENDIX C: PRELIMINARY LIST OF SURVEY TARGETS AND MAPS

Table of the 62 potential survey targets.

***NOTE:** Key for colors and acronyms are at the bottom

Dam/Mill Name	County	Lat	Long	HPO Survey Status	Source	Comments/Notes
Mill Pond Dam	Avery	36.158012	-81.87244	None	HPO Office; SABPT	SABPT notes that an abandoned-looking dam in poor condition
Sloop Lake Dam (Sloop's Dam & Powerhouse)	Avery	36.010853	-81.92341	AV0082	HPOWeb	Circa 1922; not under any threat to be torn down
Price Lake Dam	Watauga	36.138656	-81.731475	WT0734	HPOWeb; SABPT	Circa 1958; SABPT says removal unlikely
Shulls Mill Dam	Watauga	36.183086	-81.747215	None	HPO; SABPT	SABPT says removal planned
Ward Mill	Watauga			NR-Eligible; WT0358	RGA Reporting	Details in report produced by RGA; to be removed
North Wilkesboro Intake	Wilkes	36.161545	-81.156851	WK0390; SL 2019	HPOWeb; SABPT	SABPT says good candidate for removal but also says its purpose is water supply
Huston Steam Saw Mill	Avery	35.913838	-82.019495	None	SPOOM	Building along North Toe River
Knight Pond Dam	Avery	36.07228	-81.922295	None	SABPT	Older house on the property; unclear if any buildings are mill related; SABPT says good candidate for removal
Old Hampton Mill	Avery	36.0721	-81.87653	None	SPOOM	77 Ruffin St, Linville; overshot wheel gristmill; circa 1934
Unnamed	Avery	36.01543	-81.94127	None	SABPT	Possible older mill building nearby that sits along the creek; SABPT says good candidate for removal
Austin Dam	Watauga	36.256725	-81.69965	None	SABPT	Highly likely that there is a mill here; SABPT says good candidate for removal
Ray Estes Water Wheel	Watauga	36.256614	-81.699442	None	SPOOM	Overshot wheel grist mill; near Doe Ridge Church
Sugar Grove Mill	Watauga	36.26468	-81.78415	WT0406	HPOWeb; SPOOM	129 Old Mill Rd, Sugar Grove; served as comparable to Ward Mill altered and dam gone.
Unnamed - Beaver Dam	Watauga	36.293543	-81.823132	None	HPOWeb	Beaver Dam Supply Co. (WT0100) in vicinity; confluence of rivers and potential mill buildings in vicinity based on aerials
Winebarger Mill	Watauga	36.29272	-81.67098	WT0478	HPOWeb	Pitchback wheel grist mill; served as comparable to Ward Mill; sadly very deteriorated; appears structurally unsound.
Broyhills Mill	Wilkes	36.032147	-81.311777	None	1918 Soil Map	Number of older buildings remain near a pond and near creek

Dam/Mill Name	County	Lat	Long	HPO Survey Status	Source	Comments/Notes
Call Mill	Wilkes	36.13154	-81.075279	None	1918 Soil Map	Along Fishing Creek, looks like there's an older building along the creek
Churchs Mill	Wilkes	36.204005	-81.076911	None	1918 Soil Map	Old house located far off road but unable to tell if there are additional buildings due to tree coverage
Coffees Mill	Wilkes	36.025458	-81.3440997	None	1918 Soil Map	Number of older buildings still standing near creek
Doughton Mill	Wilkes	36.21961	-81.128524	None	1918 Soil Map	Possibility of older building along Mulberry Creek
Elkins Creek Mill	Wilkes	36.277838	-80.874338	WK0006; NRHP 1982	HPOWeb; 1918 Soil Map	Winery; also known as Stimson Mill on 1918 map; 318 Elkin Mill Rd
Estimated Dam 3233	Wilkes	36.078144	-80.977974	None	SABPT	Some buildings look like they remain on the site but it's unknown if they are related to the dam or just outbuildings; SABPT says good candidate for removal
Hays Mill	Wilkes	36.186485	-81.305778	None	1918 Soil Map	Possible mill in vicinity; several buildings in area and a lot of tree coverage in aerials
Hunting Creek Mill	Wilkes	36.12569	-81.043848	None	SPOOM	Looks like quite a few buildings near the creek
Mathis Mill	Wilkes	36.18	-80.97	WK0203; SL 2000	HPOWeb; 1918 Soil Map	
Mitchell Mill	Wilkes	36.09	-80.93	WK0316; Ineligible	HPOWeb; SPOOM	1059 Mitchell Mill Rd
Moravian Falls Mill	Wilkes	36.086382	-81.190159	None	SPOOM	Looks to be part of the KOA campground
Richard Chatham Dam	Wilkes	36.215355	-80.94587	None	SABPT	House and a barn on the property; nearby SL WK0319 Round About; and NRHP Claymont Hill (WK0186); SABPT says no evaluation
Royal Mill	Wilkes	36.3349113	-81.271426	None	1918 Soil Map	There is a building along Osborn Creek
Traphill Grist Mill	Wilkes	36.34	-81.03	WK0317	HPOWeb	452 Traphill Mill Rd
Vannoys Mill	Wilkes	36.250666	-80.895496	None	1918 Soil Map	Looks like there's a building on the pond but age unclear
Williams Dam	Wilkes	36.21609	-81.01663	None	SABPT	Some buildings nearby the water; utility and outbuildings; SABPT good candidate for removal
Andrews Dam	Avery	36.149597	-81.84676	None	SABPT	Older house in the area; possible remnants; SABPT says removal unlikely
Calloway Dam	Avery	36.015312	-81.877464	None	SABPT	Buildings in vicinity; no comment from SABPT

Dam/Mill Name	County	Lat	Long	HPO Survey Status	Source	Comments/Notes
Coffee Dam	Avery	36.071938	-81.77296	None	SABPT	Number of buildings in vicinity of dam; older buildings covered by trees to the NW?; SABPT says removal unlikely
Estimated Dam 3347	Avery	36.053642	-81.87902	None	SABPT	Large dam near golf course; not sure of age; SABPT says removal unlikely
Grandfather Mountain Club Lake Dam	Avery	36.07218	-81.84421	None	SABPT	Could be some industrial buildings near the dam but unsure of use; SABPT notes removal unlikely
Grandfather Mountain Dam	Avery	36.096786	-81.853935	None	SABPT	1964; power for the resort nearby; SABPT says removal unlikely
Grandfather Small Pond	Avery	36.10357	-81.851875	None	SABPT	1900; surrounded by newer development; unsure if mill remnants remain; SABPT says removal is unlikely
Johnson Dam	Avery	36.077408	-81.977486	None	SABPT	Looks like an older home location with barn nearby; heavy tree coverage; no notes from SABPT
Tynecastle	Avery	36.12124	-81.83491	None	SABPT	Buildings in vicinity; no comment from SABPT; 1971
Unnamed	Avery	36.19512	-81.9491	None	SABPT	A lot going on with his property with various buildings and building remnants; no notes from SABPT
Unnamed	Avery	36.0396	-81.91597	None	SABPT	Buildings in vicinity
Unnamed	Avery	36.144653	-81.868004	None	SABPT	Buildings in vicinity; couldn't find on interactive SABPT map
Wildcat Lake Dam	Avery	36.14888	-81.88193	None	SABPT	1922; no mill buildings on site; no notes on removal
Old Blowing Rock Water Supply	Watauga	36.143547	-81.672005	None	SABPT	Circa 1958; doesn't look like any milling operations take place here; SABPT good candidate for removal
Potato Hill Lake (Tater Hill Lake)	Watauga	36.282276	-81.7177	None	SABPT	Circa 1948; some buildings in the vicinity but heavy tree coverage; SABPT says removal unlikely
Unnamed	Watauga	36.16552	-81.691086	None	SABPT	Lots of older buildings in vicinity; not evaluated by SABPT
Unnamed	Watauga	36.210697	-81.60882	None	SABPT	Looks like a collection of older buildings nearby; heavy tree coverage; not evaluated by SABPT
Unnamed	Watauga	36.14841	-81.77269	None	SABPT	Area could have milling dams but unclear from aerials
Unnamed	Watauga	36.329853	-81.82737	None	SABPT	Older buildings in the immediate vicinity of the water

Dam/Mill Name	County	Lat	Long	HPO Survey Status	Source	Comments/Notes
Brewers Mill	Wilkes	36.32	-81.02	WK0413; Ineligible	HPOWeb; 1918 Soil Map	493 Brewers Mill Rd, Traphill; Brewer's Mill site and Miller's house; actual gristmill (WK0349) has been lost
Burcham Mill	Wilkes	36.24486	-80.9751	None	1918 Soil Map	Long, narrow barn along Little Bungaboo River
Hoots Mill	Wilkes	36.269821	-80.927429	None	1918 Soil Map	Appears to have suffered fire damage according to aerial
Johnson Dam	Wilkes	36.111153	-80.985634	None	SABPT	Circa 1960; looks like a retention pond; SABPT says no conservation benefit to removal
Mathias Lake	Wilkes	36.048496	-81.34752	None	SABPT	Different than Mathis Mill; might be an older house on property but nothing immediately surrounding water; SABPT no threat for removal
Oliver Dam	Wilkes	36.08854	-81.16003	None	SABPT	Building on the south side of the pond; SABPT says removal unlikely
Parks Mill	Wilkes	36.182528	-81.048925	None	1918 Soil Map; SPOOM	Moved by Vernon Triplett to its present location?; 1918 map shows is along Mill Creek near branch of Fishing Creek; Lat/Long is original location; present location may be in vicinity of North Wilkesboro on Mt. Zion Road
Ritchie Dam	Wilkes	36.066254	-81.18216	None	SABPT	Circa 1930; can't see any buildings due to tree coverage; SABPT says removal unlikely
Shepherds Mill	Wilkes	36.154877	-81.00676	None	1918 Soil Map	Brier Creek; looks like a circa 1930 Bungalow on the property with a narrow building nearby but unrelated to milling
Staley Dam	Wilkes	36.257645	-81.319435	None	SABPT	Unclear if there is anything remaining on the site; SABPT unsure about removal
Wells Mill	Wilkes	36.140101	-80.929207	None	1918 Soil Map	Along North Hunting Creek; unsure if anything remains from aerials but buildings are in vicinity

KEY:

Required by MOA

High potential to be included in survey

Low potential to be included in survey

SPOOM = Society for the Preservation of Old Mills

SABPT = Southeast Aquatic Barrier Prioritization Tool

Figure 1: Overall map showing survey targets (North Carolina State Historic Preservation Office HPOWeb 2021).

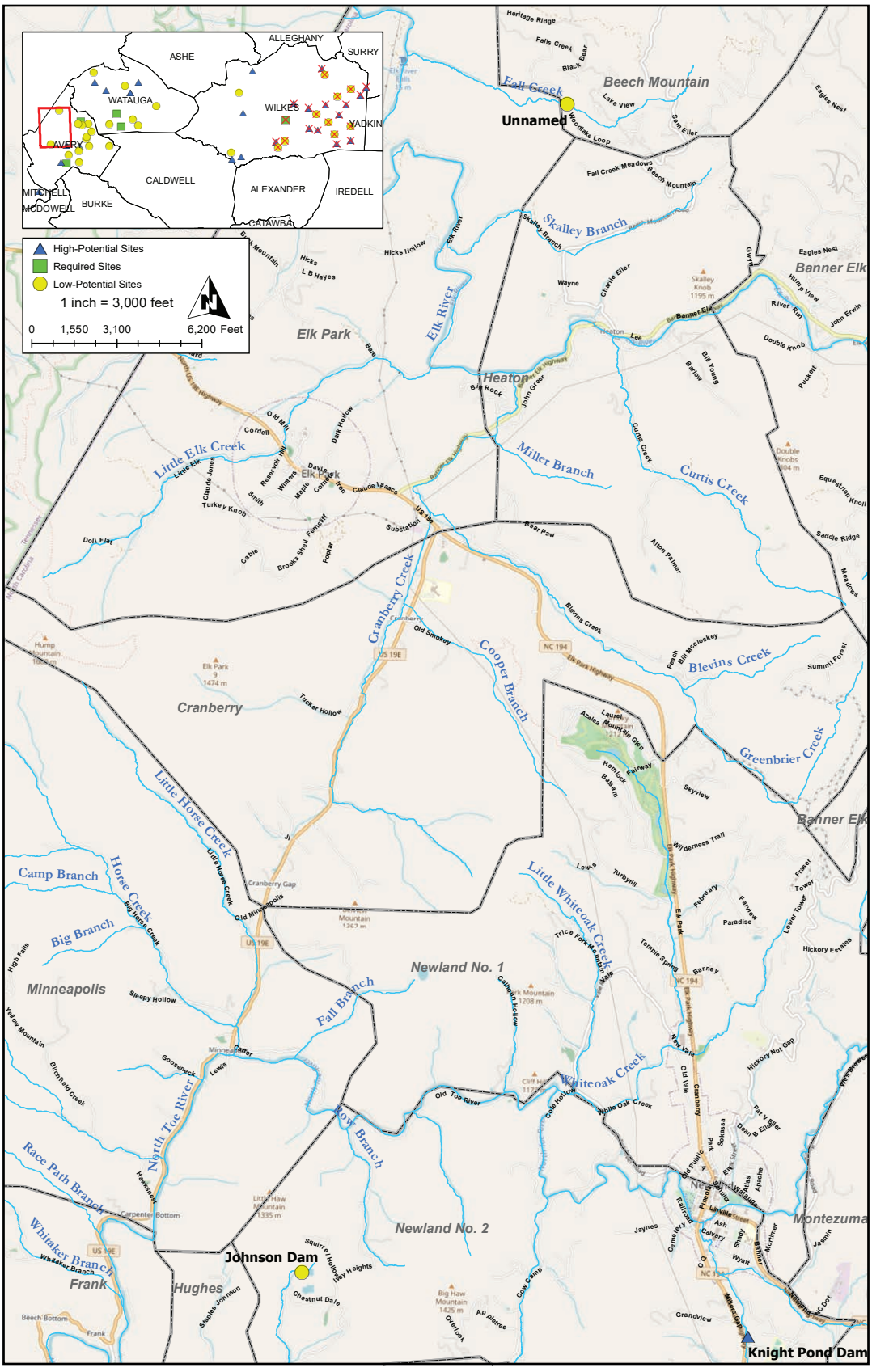

Figure 2: Map showing survey targets in Avery West (North Carolina State Historic Preservation Office HPOWeb 2021).

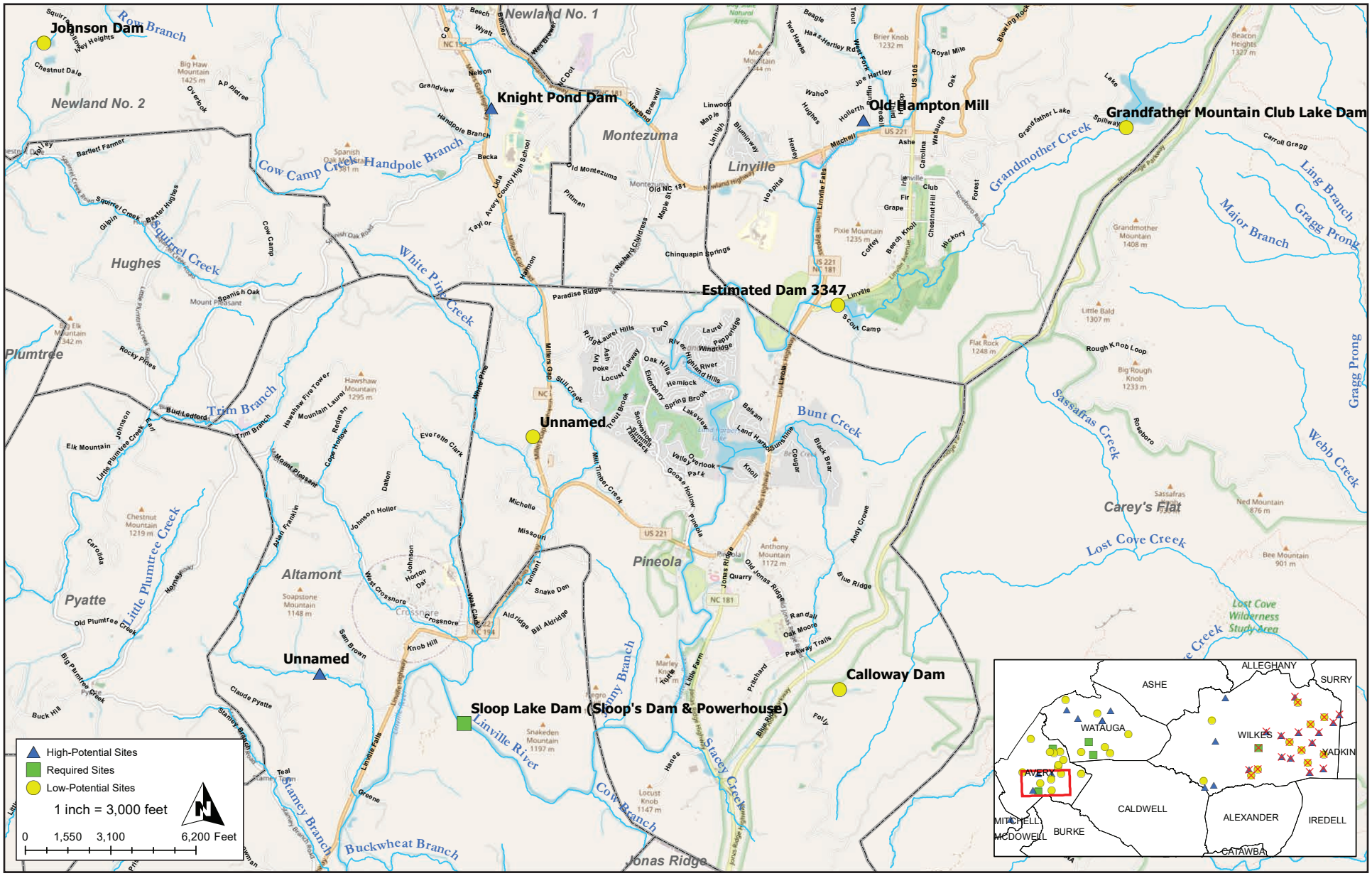

Figure 3: Map showing survey targets in Avery South (North Carolina State Historic Preservation Office HPOWeb 2021).

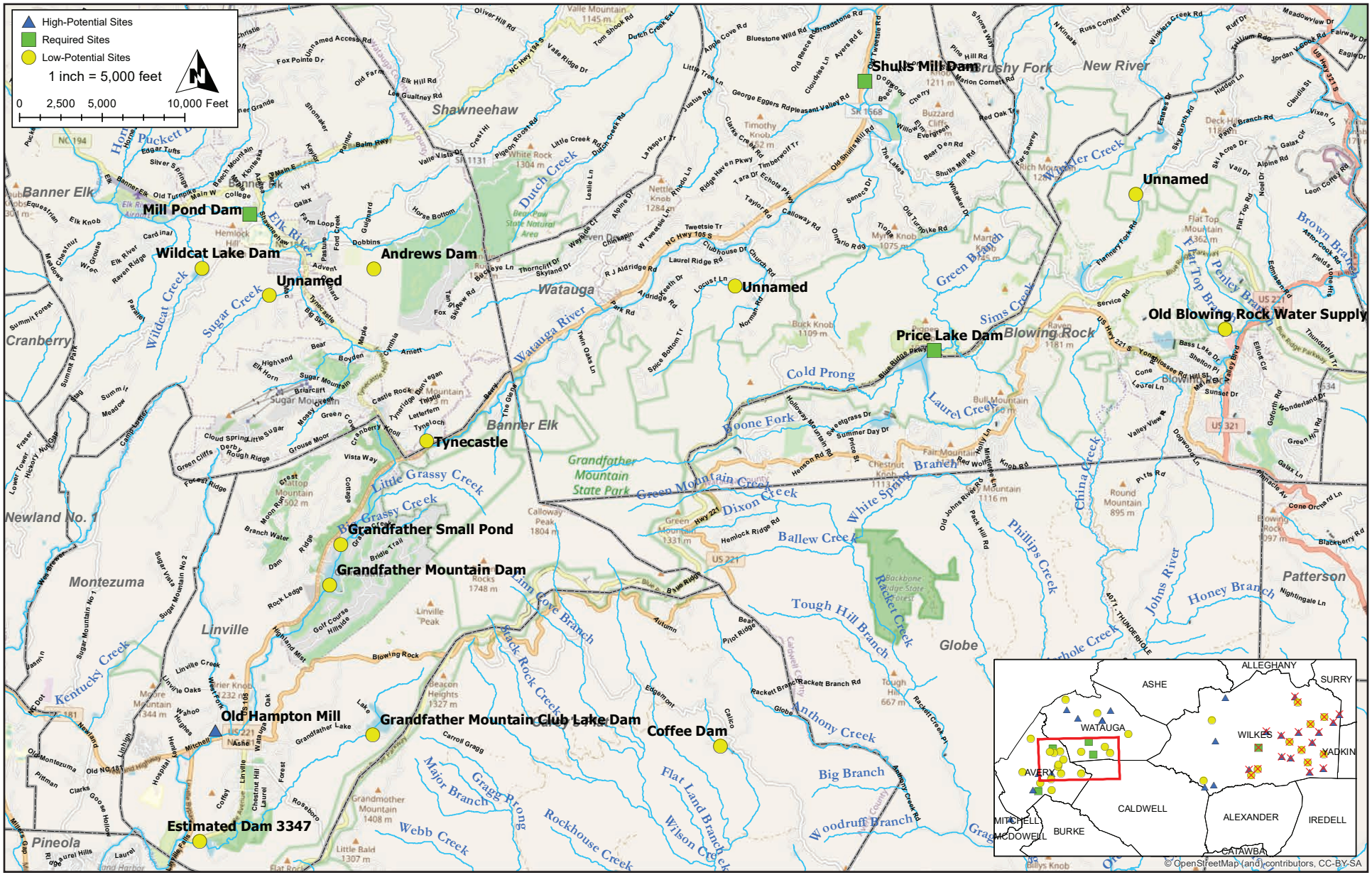

Figure 4: Map showing survey targets in Avery Watauga (North Carolina State Historic Preservation Office HPOWeb 2021).

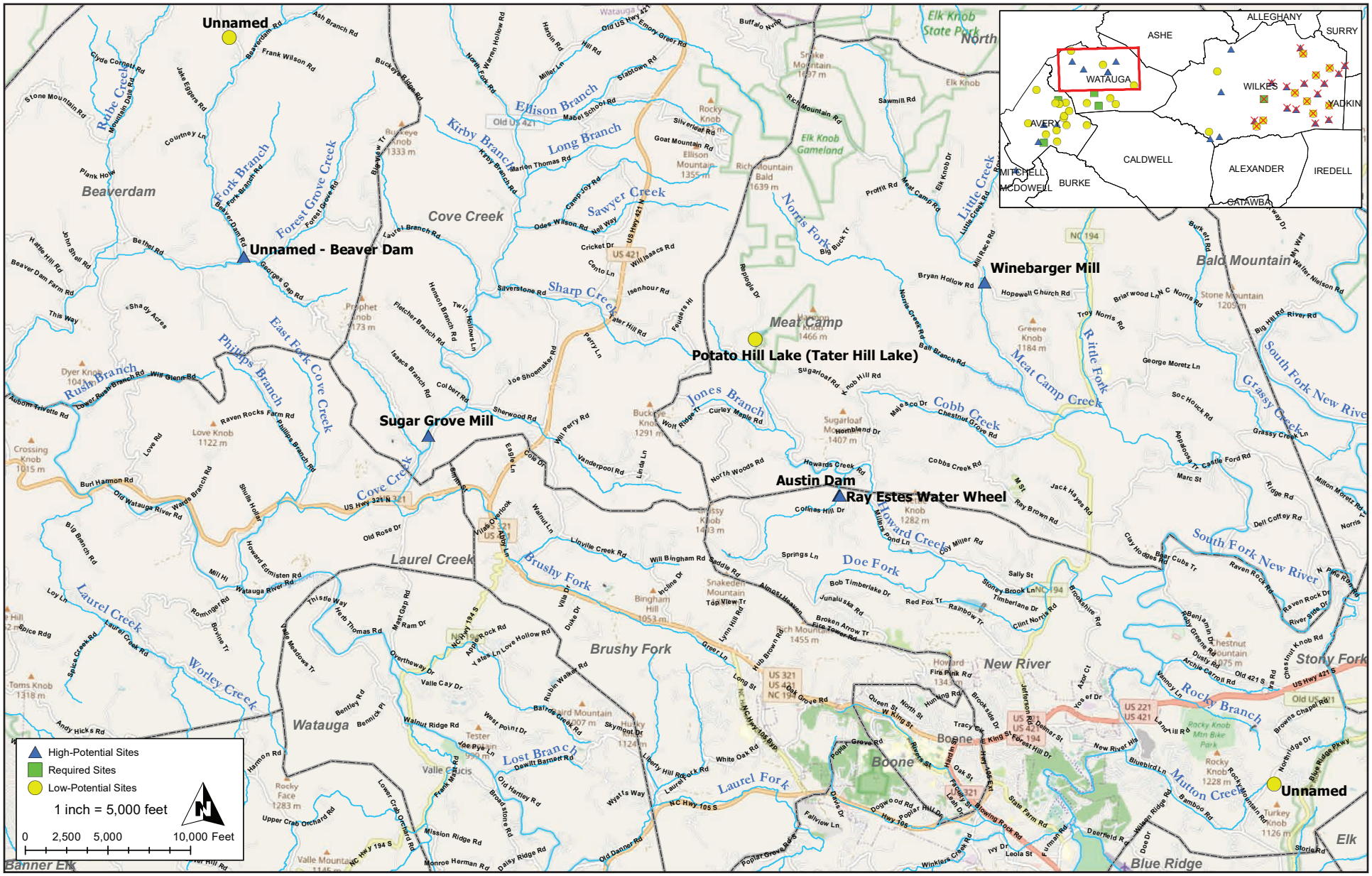

Figure 5: Map showing survey targets in Watauga (North Carolina State Historic Preservation Office HPOWeb 2021).

Figure 6: Map showing survey targets in Wilkes (North Carolina State Historic Preservation Office HPOWeb 2021).

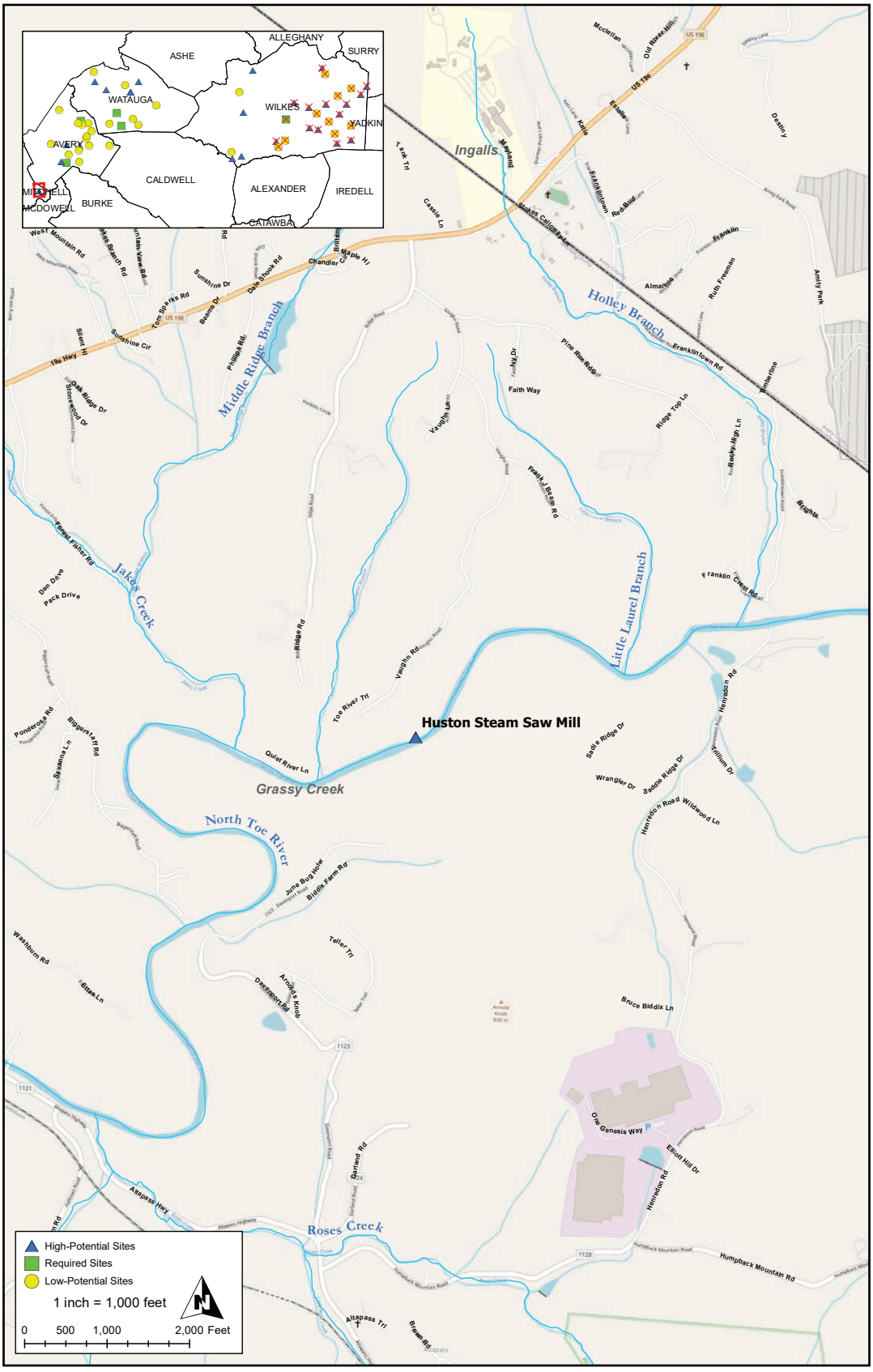

Figure 7: Huston Steam Saw Mill map (North Carolina State Historic Preservation Office HPOWeb 2021).

APPENDIX D: QUALIFICATIONS OF THE PRINCIPAL INVESTIGATOR AND AUTHORS

ELLEN TURCO
PRINCIPAL SENIOR HISTORIAN (36 CFR 61)

Ellen Turco has over 20 years of experience in cultural resources management in both the public and private sectors. She started her career as a historic preservation specialist for the North Carolina Historic Preservation Office and served as preservation planner and staff to the Wake County Historic Preservation Commission from 1998 to 2001. Her experience includes historical research and writing, architectural surveys and analysis, National Register of Historic Places evaluations for individual resources, districts, and landscapes, both state and federal Historic Preservation Tax Credit applications, and the preparation of both Memorandum of Agreement and Programmatic Agreement documents. She has directed large-scale cultural resources surveys in accordance with Sections 106 and 110 of the National Historic Preservation Act, as amended, NEPA, and other municipal and state cultural resource regulations. Ms. Turco exceeds the qualifications set forth in the Secretary of Interior's Standards for an Historian and Architectural Historian [36 CFR 61].

Ms. Turco has worked successfully with a number of state transportation departments, State Historic Preservation Offices, and federal agencies such as the General Services Administration, the Federal Emergency Management Agency, the U.S. Department of Army, the U.S. Air Force, the U.S. Army Corps of Engineers and the U.S. Forest Service as well as a broad array of county and local governments and private clients. She has conducted architectural and cultural resource surveys in California, Florida, Georgia, New York, North Carolina, South Carolina, and Virginia.

EDUCATION:

1995 North Carolina State University, *Master of Arts,* Public History
1992 Eckerd College, *Bachelor of Arts*, Philosophy

PROFESSIONAL EXPERIENCE:

Richard Grubb & Associates, Inc. (Wake Forest. North Carolina): *Principal Senior Historian* (2018-Present) Ms. Turco manages RGA's North Carolina regional office supervising a staff of five historians and archaeologists. She assists with hiring decisions, oversees staff workload and project assignments, and manages the day-to-day workings of the NC office. She serves as the Principal Investigator for all projects completed out of the NC office and for other projects throughout RGA's services areas as needed. Provides technical support to federal agencies for NEPA and Section 106 compliance nationwide. Ms. Turco engages in client, agency, public, and tribal consultations, provides writing and editorial guidance, writes compliance documents, and edits company-wide reports and develops and oversees proposals and marketing materials, new client development, and preparation of statements of qualifications.

New South Associates (Greensboro, North Carolina): *Senior Historian (2012-2018)* Served as Principal Investigator and author of cultural resources investigations across the South. Responsibilities included supervising historic resource surveys, researching and developing historic contexts, evaluating properties using the National Register Criteria, and developing effects determinations and agreement documents. Ms. Turco provided NEPA and Section 106 expertise to federal agencies, applicants, local governments, and private clients.

Circa, Inc. (Raleigh, North Carolina) *Owner/Principal (2002-2012)* Owned and managed a full-service cultural resources management firm serving private, state, and federal clients in North Carolina, South Carolina and Virginia. Circa specialized in cultural resources compliance for the telecommunications and transportation industries, as well as local preservation planning documents.

Wake County Planning Department (Raleigh, North Carolina) *Preservation Planner (1998-2002).*

North Carolina State Historic Preservation Office (Raleigh, North Carolina), *Historic Preservation Specialist, (1995-1998).*

PROFESSIONAL TRAINING:

Section 106 for Experienced Practitioners
Preparing Section 106 Agreement Documents
Section 106 Review for Planners and CRM professionals
Innovative Approaches to Section 106 Mitigation
Project Budgeting for CRM Professionals

PROFESSIONAL ORGANIZATIONS:

(former) Director, American Cultural Resources Association (ACRA)
(former) Chair, Wake Forest Historic Preservation Commission
Voting Member, Capital Area Preservation Anthemion Awards Committee
North Carolina Museum Council's Award of Excellence, 2018
Capital Area Preservation Anthemion Award, 2016

REPRESENTATIVE PROJECT EXPERIENCE:

Phase I and II Historic Architecture Survey and Evaluation for Survey Corridor K Appalachian Highway Development System, Graham County, NC (Sponsor: NCDOT; STIP # A-0009C). Served as Principal Investigator for this multi-phase project completed over 2 calendar years. The Phase I resources inventory included 137 properties. Conducted fieldwork and historical research, developed background history and historical contexts, and evaluated 40 resources using the National Register Criteria, including 2 historic districts. Managed a project team of 7 architectural historians and support staff, coordinated with archaeology team, and provided cultural resources expertise at regular meetings with project stakeholders and consulting parties.

Phase I and II Historic Architecture Survey and Evaluation for NC 115, North Wilkesboro, NC (Sponsor: NCDOT; TIP #R-5759). Principal Investigator for Phase I (82 resources) and Phase II (11 resources) studies. Managed a project team of 5 architectural historians and support staff. Provided technical review for the background history section as well as historic context for multiple property types. As a result of this study, 3 properties were recommended eligible and project design could proceed.

Historic Architecture Survey for the Mountain Valley Natural Gas Pipeline, Various Counties, VA (Sponsor: Tetra Tech). Directed a historic resources survey of a 105-mile natural gas pipeline route through seven counties in western Virginia. The pipeline crossed both urban and rural settings and individual buildings, districts and rural and cultural landscapes were documented and assessed for NRHP eligibility. Project management involved overseeing field crews and coordinating with the client, SHPO and FERC. Project tasks included completing over 600 Virginia Department of Historic Resources Survey Forms, labeling digital photographs to SHPO standards, V-CRIS database management and serving as principal author of eight reports.

Memorandum of Agreement for West Street Bridge Replacement, West Highland Historic District, Winston-Salem, NC (Sponsor: City of Winston-Salem; TIP # B-5007). Led Memorandum of Agreement mitigation coordination between the State Historic Preservation Office, the City of Winston-Salem, and the private engineering firm designing the new bridge. Compiled E106 notification package documenting project activities for the Advisory Council on Historic Preservation.

Smith Reynolds Airport Expansion Phase II Historic Architecture Survey and Evaluations, Winston-Salem, NC (Sponsor Forsyth County/Smith Reynolds Airport). Principal Investigator for historic architecture survey of 200 residences a mid-twentieth century African American suburban neighborhood, the Castle Heights Historic District. Reporting included the identification and documentation of comparable Winston-Salem neighborhoods and context development in the aeras of race-based zoning, urban renewal, and growth of African American suburbs. Managed a project team of cultural resources professionals and support staff, coordinated with archaeology team, and provided expertise at regular meetings with the prime consultant, the airport authority, and SHPO.

Cemetery Relocation, Wendell, NC (Sponsor: Wake Technical Community College) Served as project manager for a multicomponent project to relocate 16 nineteenth-century graves. The burials were on the site of the proposed new Wake Tech campus and were relocated to a perpetual care cemetery in Raleigh. This project required knowledge of, and strict adherence to, state grave removal laws, the preparation of a successful grave removal petition for presentation to the county Board of Commissioners, and coordination with multiple parties including the county health department, the county planning department, a licensed funeral director, and the grave removal contractor.

Beaufort County Historic Architecture Survey, Beaufort County, NC (Sponsor: North Carolina State Historic Preservation Office, Historic Preservation Fund and Beaufort County). Principal Investigator for an inventory of 800 resources within the county's seven municipalities. Final report included historical background for each municipality and recommendations for National Register historic districts and individual properties. Survey report was by the county to focus future historic preservation efforts, encourage tourism, and promote reinvestment in historic buildings through tax credits.

Historic Resources Survey of Greensboro, NC, 1940-1970¸ Greensboro, NC (Sponsor: North Carolina State Historic Preservation Office, Historic Preservation Fund and City of Greensboro). This project built on previous surveys of the city's historic architecture to document and contextualize resources between 1940 and 1970, when the city experienced significant growth. 3,500 resources were documented. Thematic focus areas included post WWII community planning and architecture, the Civil Rights movement. and the effects of urban renewal. The final planning document provided NRHP-based assessments of the integrity and significance of the resources. The report identified potential local and federal historic districts and recommended areas which merited further study.

Survey of Cold War Historic Architectural Resources at Cape Canaveral Air Force Station, Brevard County, FL (Sponsor: U.S. Army Corps of Engineers, Fort Worth District and the United States Air Force) Ms. Turco was the lead researcher and field architectural historian for this historic resources inventory at Cape Canaveral. The work was completed to Florida State SHPO standards and included National Register of Historic Places (NRHP) evaluations for 100 Cold War-era facilities and districts related to space exploration and military missile testing. The survey concluded with an inventory report with NRHP-eligibility recommendations for five twentieth-century historic districts. The project also included the completion of over 100 Florida Division of Historical Resources Master Site File Forms in compliance with the Florida SHPO's *Guide to the Historical Structure Form* Manual.

Historic Architecture Survey and NRHP Evaluation for Lakeside Park and Fairfax Manor Neighborhoods , Jacksonville, FL (Sponsor: FEMA). Directed a historic resources survey of two-mid twentieth century residential neighborhoods in Jacksonville, Florida. The work was conducted to mitigate the adverse effects of a flood control project on another Jacksonville neighborhood, Ms. Turco served as the PI, overusing project staff and the ensuring the quality of the deliverables. She ensured all work was adhered to the Historic Presentation Programmatic Agreement between the Florida SHPO and FEMA.

Mount Ararat African American Episcopal Church and Cemetery, Wilmington, New Hanover County, NC (Sponsor: NCDOT) Principal Investigator and Historian for this multi-part mitigation of a Reconstruction-era African American church and cemetery. Authored NRHP nomination text for the church, former school site, and adjacent cemetery. Provided background on folk burial practices in the eastern Coastal Plain for the ground-penetrating radar cemetery survey and authored an illustrated public history booklet about the history of the Middle Sound community entitled "Kin, Kindred, Relatives and Friends."

Friendship Chapel Cemetery, Wake Forest, Wake County, NC (Sponsor: Wake Forest Historical Society) Researched the hidden history of this former slave cemetery through deeds, oral histories, genealogies, and church and personal family records. Developed a context for area folk cemeteries and burial practices. This information, along with collected documentary and current photos, was compiled into a GIS-based interactive Storymap hosted on the website of a local museum. This project won an North Carolina Museum's Council's Award of Excellence for 2018.

Rebecca Vaughan House, Southampton County, VA (Sponsor: Southampton County Historical Society) Lead author and project manager for a historic preservation plan for the circa 1800 Rebecca Vaughan House, the only surviving structure associated with the Nat Turner Slave Rebellion in 1831. The plan synthesized published and original historical research and included an architectural and structural analysis resulting in a restoration plan for the Southampton County Historical Society.

Wireless Facilities Florida, Multi-site (Sponsor: Tower Engineering Professionals. Ms. Turco serves as RGA's Secretary of the Interior qualified architectural historian for wireless communications facilities in through the US. While at RGA she has reviewed over cultural resource reports for over 80 wireless facilities. Two examples of her Florida work are Section 106 Reviews of a collocation and tower height extension in Holmes County and a new tower site in Brooksville, Hernando County. Her work includes researching the Florida Master Site File, identifying historic properties, and assessment of a project's visual effects. All work meets the requirements of Section 106 of the National Historic Preservation Act (NHPA) and complies with the procedures of the Federal Communications Commission (FCC) Nationwide Programmatic Agreement (NPA) of October 4, 2004.

Historic Property Handbook and Design Guidelines, Wake Forest, NC (Sponsor: Town of Wake Forest) Chaired a five-person committee charged with revising the town's original set of historic district design guidelines adopted in 1999. Over a one-year period, the committee worked with town planners, the town attorney, and graphic designers to create a new set of illustrated guidelines. Outdated sections were replaced with new sections on the use of modern construction materials, archaeological sites, cemeteries, sustainability and energy efficiency, and disaster preparedness. The process included hosting public meetings and a final presentation to the Board of Commissioners.

Improvements to I-440 from Walnut Street to Wade Avenue, Town of Cary and City of Raleigh, Wake County, NC (Sponsor: NCDOT; TIP # U-2719). Architectural Historian and Author of this Phase I and II Historic Architectural Resource Survey and NRHP eligibility analysis of over 100 residential, commercial, industrial, and institutional buildings in a major urban area. The phase I survey resulted in a National Register-assessment of three historic districts and seven individual historic architectural resources, including Method, a historically African American community founded in Raleigh just after the Civil War, and the Berry O'Kelly Training School, a Rosenwald Foundation funded school and the state's first accredited high school for African American students.

REPORTS AND PUBLICATIONS

2021 Turco, Ellen and Jason Harpe. *Local Landmark Designation Report for Seth Jones Cemetery. Zebulon, North Carolina*. Client: Capital Area Preservation.

2021 Turco, Ellen and Jason Harpe. *Study List Application for the Logan Historic District, Concord North Carolina.* Client: City of Concord.

2021 Turco, Ellen and Jason Shellenhamer. *Cultural Resources Study and Grave Removal Petition for Eastern Wake Tech Campus Cemetery Relocation. Raleigh, North Carolina.* Client: Wake Technical Community College.

2021 Turco, Ellen and Matthew Harrup. *Cultural Resources Study and Grave Removal Petition for Honeycutt and Nipper Cemetery Relocations. Raleigh, North Carolina.* Client: First Carolina Properties.

2021 McEachen, Paul J. and Ellen Turco. *Phase I Archaeological Survey, Heritage Park Master Plan, Town of Hope Mills, Cumberland County, North Carolina.* Client: McAdams.

2021 Turco, Ellen and Jason Harpe. *Historic Structures Survey Report for the Holden Farm, Wake County, North Carolina*. Client: Spangler Environmental.

2020 Harrup, Mathew, and Ellen Turco et. al. *Frazier Farm Park Mater Plan Phase I Archeological Survey*. Client: McAdams.

2020 Ellen Turco and Matthew Harrup. *Literature Search and Ground Penetrating Radar Survey for the Mendenhall Subdivision, Zebulon, North Carolina.* Client: Strong Rock Development.

2020 Turco, Ellen, et. al. *Widening of NC 115 from US 421 to 2nd Street, North Wilkesboro, North Carolina.* Client: NCDOT.

2020 Turco, Ellen, et. al. *Corridor K Appalachian Highway Regional Development System, Robbinsville to Stecoah, Graham County, North Carolina*. Client: NCDOT.

2020 Turco, Ellen and Jason Harpe. *Historic Structures Survey Report for the Removal of Ward Mill Dam, Watauga County, North Carolina.* Client: Blue Ridge Conservation and Development Council. Inc.

2020 Turco, Ellen and Olivia Heckendorf. *Historic Structures Survey Report for the Grove Airport, Mecklenburg County, North Carolina.* Client: Pedcor Investments.

2020 Turco, Ellen and Olivia Heckendorf. *Historic Structures Survey Report for the Ezra Historic District Johnston County, North Carolina.* Client: Brown Environmental.

2020 Turco, Ellen and Olivia Heckendorf. *Historic Structures Survey Report for the Maynard Farms Parcel, Apex, North Carolina.* Client: Spangler Environmental.

2019 Turco, Ellen and Allee Davis. *White Pines Cabin Historic American Building Survey Documentation, Pisgah National Forest, Yancey County, North Carolina.* Client: US Forest Service.

2019 Turco, Ellen and Olivia Heckendorf. *Intensive-Level Historic Architectural Survey and National Register of Historic Places Evaluation for Proposed Taxiway Q at Smith Reynolds Airport, Winston-Salem, North Carolina.* Client: AVCON.

2019 Turco, Ellen. *The Biltmore West Tract for the Project Ranger Site, Asheville, North Carolina.* Client: Biltmore Farms, LLC.

2019 Turco, Ellen. *Historic Structures Survey Report for the Widening of Rockfish Road, Hope Mills, North Carolina*. Client: NCDOT

2018 Turco, Ellen, Lynn Alpert and Sean McHugh. *Hurricane Maria Recovery Phase I Cultural Resource Assessments.* Multi-site, Puerto Rico. Client: FEMA.

2018 Turco, Ellen. *Cultural Resources Study for Bike and Pedestrian Sidewalks Oakdale Road Corridor, Jamestown, Guilford County, North Carolina.* Client: Town of Jamestown, North Carolina.

2017 Turco, Ellen. *Historic Architecture Survey and Evaluation Report of Cold War Resources for Cape Canaveral Air Force Station, Brevard County, Florida*. Client: Cape Canaveral Air Force Base (Cultural Resources Management), Brevard County, Florida.

2017 Turco, Ellen and Martha Lauer. *Pinehurst Local Historic District Boundary Amendment.* Client: Village of Pinehurst, North Carolina.

2017 Turco, Ellen. *National Register Eligibility Evaluation of the U.S. Furniture Industries/Lampart Table Factory for the Widening of SR 1595 (Surrett Drive) from I-85 to SR 1961 (West Market Center Road), High Point, Guildford County, North Carolina.* Client: the North Carolina Department of Transportation.

2017 Lowry, Sarah, Maeve Herrick, Summer Ciomek, and Ellen Turco. *Remote Sensing Survey at the Red Banks Primitive Baptist Church (PT0049 and Site 31PT460**), Pitt County, North Carolina.* Client:: North Carolina Department of Transportation.

2017 Turco, Ellen. *National Register Eligibility Evaluation Boney House and Mill for the Replacement of Bridge No. 16 on SR 1145 (Boney Mill Road) over Buckhorn Creek, Sampson County, North Carolina.* Client: the North Carolina Department of Transportation.

2017 Gillett, Terri DeLoach and Ellen Turco. *National Register Eligibility Evaluation of the Intersection of NC 110 (Pisgah Drive) at Locust Street in Canton, Haywood County, North Carolina.* Client: the North Carolina Department of Transportation.

2017 Turco, Ellen. *National Register Eligibility Evaluation of the Rocky River Power and Light Company Dam and Powerhouse (Hoosier Dam), Chatham County, North Carolina.* Client: private Client:.

2017 Gillett, Terri and Ellen Turco. *National Register Eligibility Evaluation of the Robert Deavor House and the Sunset Motel for the Upgrade of SR 1116 (North Country Club Road) from Brevard City Limits to U.S. 64, Transylvania County, North Carolina.* Client: the North Carolina Department of Transportation.

2017 Turco, Ellen. *National Register Eligibility Evaluation of the Elizabeth Dorsey Walters House for the Replacement of Bridge No. 40 over Tabb's Creek on U.S. 158, Granville County, North Carolina.* Client: the North Carolina Department of Transportation.

2017 Bean, Colin J. and Ellen Turco. *Phase I Archaeological Survey of Denson's Creek Ford in the Uwharrie Ranger District, Montgomery County, North Carolina.* Client: Piedmont Conservation Council, Inc., Durham, North Carolina.

2017 Turco, Ellen. *Addendum Phase I Architectural Report for the Mountain Valley Pipeline, Pittsylvania, Franklin, Montgomery, Craig, and Giles Counties, Virginia*. Client: Tetra Tech, Inc., Parsippany, New Jersey.

2016 Turco, Ellen. *National Register Eligibility Evaluations for Improvements to U.S. 70 from SR 1121 to the Neuse River Bridge Craven County, North Carolina*. Client: the North Carolina Department of Transportation.

2016 Turco, Ellen. *National Register Eligibility Evaluation of the Phillips-Baker House for the Replacement of Bridge 196 over Moccasin Creek on SR 2308 (Fowler Road/Henry Baker Road) Wake and Franklin Counties, North Carolina.* Client: the North Carolina Department of Transportation.

2016 Lowry, Sarah and Ellen Turco. *Ground Penetrating Radar Survey and Marker Map of Historic Graves at the Clarks Creek Cemetery (31MK1080) in the Hampton Place Subdivision, Mecklenburg County, North Carolina.* Client: Mecklenburg County.

2016 Turco, Ellen and Robbie Jones. *Assessment of Effects for Mountain Valley Pipeline Pittsylvania, Franklin, Floyd, Montgomery, Craig, and Giles Counties, Virginia.* Client: Tetra Tech, Inc., Parsippany, New Jersey.

2016 Turco, Ellen and Robbie Jones. *Addendum to the Phase I Reconnaissance Architectural Survey for the Mountain Valley Pipeline Pittsylvania and Franklin Counties, Virginia.* Client: Tetra Tech, Inc., Parsippany, New Jersey.

2016 Turco, Ellen, David Price, and Robbie Jones. *Phase I Reconnaissance Architectural Survey for the Mountain Valley Pipeline Craig and Giles Counties, Virginia.* Client: Tetra Tech, Inc., Parsippany, New Jersey.

2015 Turco, Ellen. *Historic Architecture Survey Update of Apex, Fuquay-Varina, and Holly Springs Wake County, North Carolina.* Report submitted to North Carolina State Historic Preservation Office.

2015 Turco, Ellen, David Price, and Robbie Jones. *Phase I Reconnaissance Architectural Survey for the Mountain Valley Pipeline Montgomery County, Virginia (Route Rev 4v00).* Client: Tetra Tech, Inc., Parsippany, New Jersey.

2015 Turco, Ellen, David Price, and Robbie Jones. *Phase I Reconnaissance Architectural Survey for the Mountain Valley Pipeline Roanoke and Floyd Counties, Virginia.* Client: Tetra Tech, Inc., Parsippany, New Jersey.

2015 Martin, Tracy and Ellen Turco. *Plymouth Municipal Airport Cultural Resources Survey, Washington County, North Carolina.* Client: Michael Baker International.

2015 Patch, Shawn M., Ellen Turco, and Sarah Lowry. *Ground Penetrating Radar Survey of an Unmarked Cemetery Near Wade Nash Road, Wake County, North Carolina.* Report submitted to Parker Poe, LLP.

2015 Turco, Ellen , David Price, and Robbie Jones. *Phase I Reconnaissance Architectural Survey for the Mountain Valley Pipeline, Franklin County, Virginia*. Report submitted to Tetra Tech.

2015 Turco, Ellen , David Price, and Robbie Jones. *Phase I Reconnaissance Architectural Survey for the Mountain Valley Pipeline Pittsylvania County, Virginia*. Report submitted to Tetra Tech.

2015 Patch, Shawn, Lauren Souther, Rebecca Shepherd, and Ellen Turco. *Intensive Archaeological Survey and Testing for Proposed Widening and Improvements to U.S. 158, Forsyth and Guilford Counties, North Carolina*. Report submitted to North Carolina Department of Transportation.

2015 Turco, Ellen. *Historic Architectural Resources Evaluation Report Curve Improvements on NC 210 West of I-40, Johnston County, North Carolina*. Report submitted to North Carolina Department of Transportation.

2015 Turco, Ellen. *National Register Eligibility Evaluation of the J.M. Marshburn House for Replacement of Bridge No. 18 Over Cane Creek on SR 1004, Sampson County, North Carolina*. Report submitted to North Carolina Department of Transportation.

2015 Turco, Ellen. *National Register Eligibility Evaluation of the W. R. Denning Farm for Rail Safety Improvements to Intersections of US 301 and Hodges Chapel Road, Harnett County, North Carolina State*. Report submitted to North Carolina Department of Transportation.

2014 Turco, Ellen. *Letter Report for Historic Architectural Survey of Two Proposed Solar Sites (0045/Wilson and 0046/Ledford) in Clay County, North Carolina*. Report submitted to Inman Solar.

2014 Tyson, Jackie, Wm. Matthew Tankersley, and Ellen Turco. *A Cultural Resources Assessment for the U.S. Post Office and Courthouse Building Security Improvements, Lexington, Fayette County, Kentucky*. Report submitted to the General Services Administration.

2014 Turco, Ellen. *Eligibility Evaluations for Johnson Street/Sandy Ridge Road, High Point, Guilford County, North Carolina*. Report submitted to Atkins, Global and the North Carolina Department of Transportation.

2014 Turco, Ellen. *Historic Architectural Resources Survey Report for the Improvements to I-440 from Walnut Street to Wade Avenue, Cary and Raleigh, Wake County, North Carolina*. Report submitted to the North Carolina Department of Transportation.

2014 Turco, Ellen. *Eligibility Evaluations for Northwest Judd Parkway, Fuquay-Varina, Wake County, North Carolina*. Report submitted to Kimley-Horn and Associates and the North Carolina Department of Transportation.

2014 Turco, Ellen. *Eligibility Evaluation for the Rea Road Extension from Providence Road (NC 16) to Waxhaw-Indian Trail Road (SR 1008)*. Report submitted to the North Carolina Department of Transportation.

2014 Patch, Shawn and Ellen Turco. *National Register of Evaluations for Four Historic Sites in the Uwharrie Ranger District, Montgomery County, North Carolina*. Report submitted to U.S. Forest Service.

2014 Lowry, Sarah, Hugh B. Matternes, Ellen Turco, Valerie Davis, and Shawn Patch. *Geophysical Survey and Marker Inventory of the Mount Ararat AME Church and Bella Highsmith Cemetery, New Hanover County, North Carolina*. Report submitted to the North Carolina Department of Transportation.

2014 Turco, Ellen and Tracey Fedor. *Kin, Kindred, Relatives and Friends: The Middle Sound Community of New Hanover County, New Hanover County, North Carolina*. Report submitted to the North Carolina Department of Transportation.

2014 Turco, Ellen. *National Register of Historic Places Evaluation for the Nixon Oyster Plant, New Hanover County, North Carolina*. Report submitted to the North Carolina Department of Transportation.

2014 Turco, Ellen. *Mount Ararat African American Episcopal Church History Report, New Hanover County, North Carolina*. Report submitted to the North Carolina Department of Transportation.

2014 Turco, Ellen. *Letter Report for the Telecommunication Tower Site, 800 Taylor Street, Durham, Durham County, North Carolina*. Report submitted to North Carolina State Historic Preservation Office.

2014 Turco, Ellen. *Letter Report for the Telecommunication Tower Site, 75 Haywood St, Asheville, Buncombe County, North Carolina*. Report submitted to North Carolina State Historic Preservation Office.

2014 Turco, Ellen. *Letter Report for the Telecommunications Co-Location Site, University of North Carolina Greensboro (UNCG) Library, Greensboro, Guilford County, North Carolina*. Report submitted to the North Carolina State Historic Preservation Office.

2014 Patch, Shawn, Ellen Turco, and Michael Worthington. *National Register Evaluations of Four Historic Sites in the Uwharrie Ranger District, Montgomery County, North Carolina*. Report submitted to U.S. Forest Service

2014 Turco, Ellen. *Letter of Opinion for the Potential Statewide Significance of 211 Moore Street in Beaufort, in Carteret County, North Carolina.* Report submitted to Beth and Paul Winchell, Private Citizens.

2014 Turco, Ellen and Mary Beth Reed. *Addendum to the Improvements to I-440 from Walnut Street to Wade Avenue, Cary and Raleigh, Wake County, North Carolina*. Report submitted to the North Carolina Department of Transportation.

2014 Turco, Ellen. *Telecommunication Tower Site Letter Report for the Oxford Water Tank/RA33XC117-A, Oxford, Granville County, North Carolina*. Report submitted to North Carolina State Historic Preservation Office.

2014 Turco, Ellen. *Telecommunication Tower Site Letter Report for the 422 Pecan Avenue, Charlotte, Mecklenburg County, North Carolina*. Report submitted to North Carolina State Historic Preservation Office.

2014 Turco, Ellen. *Telecommunication Tower Site Letter Report for the Vance Water Tank, Rockingham County, North Carolina*. Report submitted to North Carolina State Historic Preservation Office.

2014 Turco, Ellen. *Telecommunication Tower Site Letter Report for the Thomasville Water Tank, Thomasville, Davidson County, North Carolina*. Report submitted to North Carolina State Historic Preservation Office.

2014 Turco, Ellen. *Telecommunication Tower Site Letter Report for the 4037 E. Independence Avenue, Charlotte, Mecklenburg County, North Carolina*. Report submitted to North Carolina State Historic Preservation Office.

2014 Turco, Ellen. *Telecommunication Tower Site Letter Report for the 2207 Wellesley Avenue, Charlotte, Mecklenburg County, North Carolina*. Report submitted to North Carolina State Historic Preservation Office.

2014 Turco, Ellen. *Eligibility Evaluations for Johnson Street/Sandy Ridge Road, High Point, Guilford County, North Carolina.* Client: Atkins Global and submitted to the North Carolina Department of Transportation.

2014 Turco, Ellen and Summer Ciomek. *Eligibility Evaluation for the Rea Road Extension from Providence Road (NC 16) to Waxhaw-Indian Trail Road (SR 1008), Wake County, North Carolina.* Report submitted to the North Carolina Department of Transportation.

2014 Turco, Ellen. *Eligibility Evaluations for Northwest Judd Parkway, Fuquay-Varina, Wake County, North Carolina.* Client: Kimley-Horn and Associates, Inc. and submitted to the North Carolina Department of Transportation.

2013 Turco, Ellen. *Historic American Building Survey (HABS) of Long Street Presbyterian Church, NC HPO Survey Site No. HK-002, Hoke County, North Carolina*. Report submitted to U.S. Department of Army, Fort Bragg, North Carolina.

2013 Turco, Ellen. *Historic American Building Survey (HABS) of Sandy Grove Presbyterian Church, NC HPO Survey Site No. HK-0018, Hoke County, North Carolina*. Report submitted to U.S. Department of Army, Fort Bragg, North Carolina.

2013 Turco, Ellen and Natalie Adams Pope. *Phase I Cultural Resource Survey of S-1725 (Spring Lake Road) Over Jackson Creek, Richland, South Carolina.* Report submitted to ICA Engineering.

2013 Lowry, Sarah, Shawn Patch, Lauren Souther, and Ellen Turco. *Geophysical and Archaeological Survey of the Proposed Currituck Ferry Landing Improvements, Currituck County, North Carolina.* Report submitted to North Carolina Department of Transportation.

2013 Turco, Ellen. *Historic Context for Stronach's Alley City Block, Raleigh, North Carolina.* Work performed for Raleigh Historic Development Commission, Inc.

2013 Turco, Ellen and Grace Keith. *United States Army Watervliet Arsenal, New York, Integrated Cultural Resources Management Plan (ICRMP).* Report submitted to TetraTech.

2013 Turco, Ellen and Grace Keith. *United States Army Sierra Army Depot, California, Integrated Cultural Resources Management Plan (ICRMP).* Report submitted to TetraTech.

2013 Turco, Ellen. *Eligibility Evaluation fro I-440 Beltline Improvements from Walnut Street, Cary to Wade Avenue, Raleigh, Wake County, North Carolina.* Report submitted to North Carolina Department of Transportation.

2013 Gregory, Danny, Lauren Souther, and Ellen Turco. *Management Summary: Cultural Resource Survey, Archaeological Evaluations, and Geophysical Survey for the Proposed Widening and Improvement to NC 158 from NC 34 in Belcross to NC 168 in Barco, Camden and Currituck Counties, North Carolina.* Report submitted to North Carolina Department of Transportation.

2013 Turco, Ellen. *Eligibility Evaluation of the Wentworth Historic District for Sidewalks and Pedestrian Crosswalks Along NC 65 Rockingham County, North Carolina.* Report submitted to North Carolina Department of Transportation.

2013 Tankersley, Wm. Matthew, Jackie Tyson, and Ellen Turco. *Archaeological Monitoring of the Bollard Replacement, U.S. Courthouse and Post Office, Lexington, Fayette County, Kentucky.* Report submitted to the General Administration Services.

2013 Souther, Lauren and Ellen Turco. *Cultural Resource Survey of the New River Valley Memorial U.S. Army Reserve Center Dublin, Pulaski County, Virginia.* Report submitted to CH2M Hill.

2013 Patch, Shawn, Sarah Lowry, and Ellen Turco. *Archival Research, Grave Marker Mapping, and Ground Penetrating Radar Survey at the North Pinewood Cemetery Mecklenburg County, North Carolina.* Report submitted to North Carolina Department of Transportation.

2013 Turco, Ellen. *National Register Evaluation of the East College Park and Sawyer Road Areas, Raleigh, Wake County, North Carolina.* Client: City of Raleigh Community Development Department.

2013 Turco, Ellen. *Phase II Intensive Architectural Survey Report, Improvements to NC 42 Interchange with I-40, Johnston County, North Carolina.* Report submitted to North Carolina Department of Transportation.

2013 Patch, Shawn and Ellen Turco. *Phase I Archaeological Survey for the Rutherford Farm Solar Array, Rutherford County, North Carolina*. Report submitted to ESCS Carolinas, LLP.

2013 Gregory, Danny, Lauren Souther, and Ellen Turco. *Cultural Resource Survey, Archaeological Evaluations, and Geophysical Survey for the Proposed Widening and Improvement to NC 158 from NC 34 in Belcross to NC 168 in Barco Camden and Currituck Counties, North Carolina.* Report submitted to North Carolina Department of Transportation.

2013 Gregory, Danny, Lauren Souther, Sarah Lowry, and Ellen Turco. *Archaeological Survey and Deep Testing at the Shearon Harris Reservoir, Wake County, North Carolina.* Report submitted to Duke Energy.

2012 Turco, Ellen and Patrick Sullivan. *GSA Modern-Era Buildings (1965-1978) Region 4 Inventory and Assessment: Silvio O. Conte Federal Building, Pittsfield Massachusetts.* Report submitted to GSA.

2012 Turco, Ellen and Patrick Sullivan. *GSA Modern-Era Buildings (1965-1978) Region 4 Inventory and Assessment: James C. Cleveland Federal Building, Concord New Hampshire.* Report submitted to GSA.

2012 Turco, Ellen and Patrick Sullivan. *GSA Modern-Era Buildings (1965-1978) Region 4 Inventory and Assessment: Phillip J. Philbin Federal Building, Fitchburg, Massachusetts.* Report submitted to GSA.

2012 Turco, Ellen and Patrick Sullivan. *GSA Modern-Era Buildings (1965-1978) Region 4 Inventory and Assessment: United States Border Patrol Sector Headquarters, Swanton, Vermont.* Report submitted to GSA.

2012 Turco, Ellen and Patrick Sullivan. *GSA Modern-Era Buildings (1965-1978) Region 4 Inventory and Assessment: Winston Prouty Federal Building, Essex Junction Vermont.* Report submitted to GSA.

2012 Turco, Ellen and Patrick Sullivan. *GSA Modern-Era Buildings (1965-1978) Region 4 Inventory and Assessment: Brien McCahon Federal Building and U.S. Courthouse, Bridgeport Connecticut.* Report submitted to GSA.

2012 Turco, Ellen and Patrick Sullivan. *GSA Modern-Era Buildings (1965-1978) Region 4 Inventory and Assessment: Social Security Trust Fund Building, Montpelier, Vermont.* Report submitted to GSA.

2012 Turco, Ellen and Patrick Sullivan. *GSA Modern-Era Buildings (1965-1978) Region 4 Inventory and Assessment: U.S. Border Patrol Houlton Sector Headquarters, Hodgdon, Maine.* Report submitted to GSA.

2012 Turco, Ellen and Patrick Sullivan. *GSA Modern-Era Buildings (1965-1978) Region 4 Inventory and Assessment: Social Security Trust Fund Building, Burlington, Vermont.* Report submitted to GSA.

2012 Turco, Ellen and Patrick Sullivan. *GSA Modern-Era Buildings (1965-1978) Region 4 Inventory and Assessment: Norris Cotton Federal Building, Manchester New Hampshire.* Report submitted to GSA.

2012 Turco, Ellen and Patrick Sullivan. *GSA Modern-Era Buildings (1965-1978) Region 4 Inventory and Assessment: Frederick C. Murphy Federal Records Center, Waltham, Massachusetts.* Report submitted to GSA.

2012 Turco, Ellen and Mary Beth Reed. *Intensive-Level Historic Architectural Analysis of Myatt's Mill Complex for the Replacement of Bridge 277 on SR 1006 (Old Stage Road) over Black Creek.* Wake County, NC. Report submitted to North Carolina Department of Transportation.

2012 Turco, Ellen and Mary Beth Reed. *Intensive-Level Field Survey for Improvements to NC 42 Interchange with I-40 in Johnston County, NC.* Report submitted to North Carolina Department of Transportation.

2012 Turco, Ellen. *Memorandum of Agreement for City Block Apartments, Wilmington, New Hanover County, North Carolina.* Adverse effect mitigation prepared for U.S. Department of Housing and Urban Development, North Carolina State Historic Preservation Office, Historic Wilmington Foundation, Wilmington Historic Preservation Commission and City Block, LLC.

2012 Turco, Ellen. *Literature Review Report for Stonebridge Development, Chesterfield, Virginia*. Report submitted to S&ME.

2012 Shawn Patch, Sarah Lowry, and Ellen Turco. *Mapping and GPR of Abandoned Cemetery for the Main Street Extension Project, Holly Springs, North Carolina.* Report submitted to Kimley-Horn and Associates.

2012 Turco, Ellen and Sarah Lowry. *Cultural Resources Survey Route 14 Drainage Improvements, Mathews Courthouse, Virginia.* Report submitted to John Milner and Associates and Virginia Department of Transportation.

2012 Turco, Ellen. *Williamson Page House National Register Nomination.* Report submitted to North Carolina State Historic Preservation Office.

2012 Turco, Ellen and Susan H. Daniel. *Historic Landmark Report for Harward House*. Report submitted to Capital Area Preservation.

2012 Turco, Ellen and Debbie Bevin. *Historic Landmark Report for the Seagroves Farm.* Report submitted to Capital Area Preservation.

2011 Turco, Ellen. *Phase I Architecture Survey and Evaluation of Anson County Tract.* Report submitted to Archaeological Consultants of the Carolinas.

2011 Turco, Ellen and Sasha Berghausen. *Photographic Recordation and Historic Documentation of 727 Mangum Street.* Report submitted to Durham Department of Community Development as part of Section 106 compliance for city's HUD-funded housing program.

2011 Turco, Ellen. *Transportation Feasibility & Impact Analysis for the U.S. 15/NC 50/NC 56 Intersection, Creedmoor, NC.* Report submitted to HDR, Inc.

2011 Turco, Ellen. *Gaston School National Register Nomination.* Nomination submitted to North Carolina State Historic Preservation Office.

2010 Southerlin, Bobby, Michael B. O'Neal, Ellen Turco. *Archaeological Investigations of the Original Site of the Rebecca Vaughan House*. Phase Report. Report submitted to the Southampton County Historical Society and Virginia Department of Historic Resources.

2010 Drucker, L.M., William Barr, Carole Bastain, and Ellen Turco. *Phase I Archaeological Survey of the Summerfield Farm Tract.* Report submitted to Goldie & Associates.

2010 Turco, Ellen. *Apex National Register Historic District Survey Update*. Report submitted to Capital Area Preservation.

2010 Reid, Dawn and Ellen Turco. *Phase I Archaeological Evaluation of the Adams-Edwards-Woodall House.* Report submitted to Capital Area Preservation.

2010 Montgomery, April A., Kenn Dodson, and Ellen Turco. *Uncommon Beauty: Physical Form and Uses of Moore Square. Report submitted to* Raleigh Urban Design Institute.

2010 Roth, Gary G., Ellen Turco, and Jason Harpe. *Historic, Structural and Artifacts Assessment, Howard Farm, Ferrell Store and Jones Farm Cary, NC.* Report submitted to Town of Cary Department of Parks, Recreation and Cultural Resources.

2010 Tibbetts, Rachel, Bobby Southerlin, and Ellen Turco. *Archaeological Survey of the Heartsfield House Lot, Wake County, North Carolina.* Report submitted to property owners.

2010 Traub, Gerald, Ellen Turco, Bobby Southerlin, and Michael B. O'Neal. *Recommendations for the Rehabilitation of the Rebecca Vaughan House.* Report submitted to the Southampton County Historical Society.

2010 Turco, Ellen. *Mock, Judson, Voehringer Hosiery Mill National Register nomination.* Nomination submitted to North Carolina State Historic Preservation Office.

2010 Turco, Ellen and Mary Farlander. *HAER Documentation for CM Thomas Coal Trestle.* Report submitted to Piedmont Triad Development Corporation.

2009 Turco, Ellen and Paul Webb. *Gold Park Cultural Resources Study.* Report submitted to Town of Hillsborough, NC.

2009 Turco, Ellen and Mary Frances Daniel. *Wendell Boulevard Historic District National Register Nomination.* Nomination submitted to North Carolina State Historic Preservation Office.

2009 Turco, Ellen. *Carolina Coach Garage and Shop National Register Nomination.* Nomination submitted to North Carolina State Historic Preservation Office.

2008 Kenn Dodson and Ellen Turco. *Isabella Cannon Park Master Plan, Raleigh, NC.* Report submitted to City of Raleigh Parks and Recreation Department.

2008 Turco, Ellen. *Improvements to Route 1092, Franklin County, VA*. Report submitted to Louis Berger Group, Richmond. VA.

2007 Turco, Ellen and Debbie Bevin. *Rockingham County, VA, Bridge Replacements***.** Phase I Historic Architecture Survey. Report submitted to Louis Berger Group, Richmond. VA.

2007 Turco, Ellen. *Improvements to Buck Mountain Road, Roanoke County, VA.* Report submitted to Louis Berger Group, Richmond. VA.

2007 Turco, Ellen and David Maurer. *Smithfield Masonic Lodge National Register Nomination.* Nomination submitted to North Carolina State Historic Preservation Office.

2007 Montgomery, April A. and Ellen Turco. *Pinehurst Survey and Local Designation Report.* Report submitted to the Village of Pinehurst.

2007 Reid, Dawn and Ellen Turco. *Phase I Survey and Evaluation of Altavista Quarry Tract.* Report submitted to Archaeological Consultants of the Carolinas.

2007 Reid, Dawn and Ellen Turco. *Phase I Survey of Meadowville Farmstead***.** Report submitted to Archaeological Consultants of the Carolinas.

PRESENTATION AND PAPERS

2017 *Vanishing New James City.* Historic Architecture Roundtable, Raleigh, NC.

2014 *James Salter, Architect.* Entry in *North Carolina Architects and Builders, A Biographical Dictionary.*

2013 *Historic Preservation Tax Credit Workshop.* Sponsored by the City of Greensboro Historic Preservation Commission and Preservation Greensboro, Inc. Served on the panel for the Federal income producing tax credit and made a presentation on the state and federal homeowner credits.

PHILIP A. HAYDEN
PRINCIPAL SENIOR ARCHITECTURAL HISTORIAN (36 CFR 61)

YEARS OF EXPERIENCE
With this firm: 2003-2015; 2018-Present
With other firms: 20

EDUCATION
MA 1992
University of Delaware/Winterthur Program
Early American Culture

BA 1984
Connecticut College
American History & Historic Preservation

PROFESSIONAL TRAINING
Amtrak Safety Training
April 2014

NJ Transit Safety Training
December 2014

TWIC Certification
December 2011

PATCO Safety Training
December 2011

ACHP Advanced Seminar: Reaching Successful Outcomes in Section 106 Review; August 2011

CRM Best Practices Workshop, Trenton, NJ
October 2006

Section 106: An Introduction, Washington, D.C.,
May 2005

Philip A. Hayden possesses over 30 years' experience in the fields of historic preservation, architectural history, and cultural resources management with an emphasis on transportation, railroad, and energy undertakings. Mr. Hayden has performed numerous investigations pursuant to the National Historic Preservation Act (NHPA, Sections 106 and 110), the National Environmental Policy Act (NEPA), the Department of Transportation Act (Section 4(f), and various state regulatory requirements. His experience includes preparation of identification and evaluation surveys, detailed historic contexts, effects determinations, Memorandums of Agreement (MOAs), Project Programmatic Agreements (PAs), and Historic American Buildings Survey (HABS)/Historic American Engineering Record (HAER) documentation. Mr. Hayden exceeds the qualifications set forth in the Secretary of Interior's Standards for Historians and Architectural Historians [36 CFR 61].

REPRESENTATIVE PROJECT EXPERIENCE:

Historic Resources Inventory, Fairfax Manor/Lake Side Park, City of Jacksonville, Duval County, FL (Sponsor: FEMA). In support of a large neighborhood architectural survey of approximately 225 residential structures, Mr. Hayden researched and authored an extensive historic context consistent with Florida State Historic Preservation Office requirements.

Foxhall, LLC Solar Farm Project, Baltimore County, MD (Sponsor: Cypress Creek Renewables LLC). Mr. Hayden served as Principal Investigator with TRC Environmental Corporation in the evaluation of the National Register eligibility of two early twentieth century residences and one large nineteenth-century farmstead. He successfully limited the evaluation effort by utilizing the Maryland Historical Trust (MHT) Determination of Eligibility (DOE) Short Forms for two resources and completed one DOE Long Form covering the farmstead and its many contributing buildings. The evaluation found the farmstead not eligible for listing in the National Register, and the MHT concurred.

WV Route 10 Operational Improvements Project, Mercer, Wyoming, and Logan Counties, West VA (Sponsor: West Virginia Department of Transportation, Division of Highways). This high-priority project for the West Virginia Department of Highways required cultural resources clearance for 70 miles of roadway improvements and numerous bridge replacements in a two-month period. Mr. Hayden, working as Principal Investigator and Senior Architectural Historian for TRC, identified areas of sensitivity to avoid, delineated multiple areas of potential effect, prepared required Historic Property Inventory forms, evaluated National Register eligibility, and assessed project effects, leading to the successful clearance of all project activities by the West Virginia State Historic Preservation Officer.

Eight Point Wind Energy Center Project, Allegany and Steuben Counties, NY (Sponsor: NextEra, Eight Point Wind Energy Center LLC). Acting as Principal Investigator and Senior Architectural Historian with TRC, Mr. Hayden coordinated with the New York State Office of Parks, Recreation, and Historic Preservation to finalize the fieldwork methodology, develop an Area of Potential Effects, and conduct a reconnaissance-level architectural survey and assessment of effects on 797 newly identified historic resources in rural New York. The investigation was in support of US Army Corps of Engineers permits and Articles VII and X of the New York Public Service Law.

Cameron Road / US 250 Widening and Resurfacing Project, Cameron, West Virginia (Sponsor: West Virginia Department of Transportation, Division of Highways). On behalf of the West Virginia Department of Highways and Rummel, Klepper & Kahl, Mr. Hayden delineated an Area of Potential Effects, identified and evaluated 76 residential and commercial buildings and culvert structures according to National Register criteria and the guidelines of the West Virginia Division of Culture and History, and assessed project effects on historic properties as part of a Phase I Cultural Resource Management Report.

Hampton Roads Crossing Study / Supplemental Environmental Impact Statement, Newport News and Norfolk Counties, Virginia (Sponsor: Virginia Department of Transportation). As a Senior Architectural Historian, Mr. Hayden supervised and aided the principal cultural resources sub-consultant with evaluating and preparing V-CRIS-based survey forms and personally surveyed approximately 175 buildings according to National Register Criteria and the guidelines of the Virginia Department of Historic Resources in support of Section 106, NEPA, and Section 4(f) requirements.

Baltimore and Potomac Tunnel Replacement Project, Baltimore City, MD (Sponsor: Amtrak). Mr. Hayden researched and prepared Maryland Determination of Eligibility forms according to National Register Criteria and the guidelines of the Maryland Historical Trust, assisted with assessing project effects on historic properties, facilitated meetings with consulting parties, and co-authored a Programmatic Agreement among the Federal Railroad Administration, the Maryland State Historic Preservation Officer, Amtrak, and Preservation Maryland to resolve adverse effects to numerous historic properties.

Atlantic City Railroad Cape May Division Historic District Management Study, Camden, Atlantic, and Cape May Counties, NJ (Sponsor: NJDOT). Serving as Principal Investigator, Mr. Hayden oversaw completion of a corridor management study within the National Register-eligible Atlantic City Railroad Cape May Division Historic District for use by the NJDOT and NJ TRANSIT. The 100-mile long survey included the main stem and six branch lines to Ocean City, Sea Isle City, Stone Harbor, Wildwood, Shellenger Landing/Harbor Point, and Cape May Point and included identification of all contributing and non-contributing resources, historic background research, descriptions of character-defining features, and recommendations regarding potential for preserving and enhancing the historic district.

Reconstruction of County Route 518, Somerset County, NJ (Sponsor: Somerset County). Acting as the Senior Architectural Historian and Principal Investigator for a roadway improvement project requiring New Jersey environmental permitting, Mr. Hayden completed a survey of eighteenth- and nineteenth-century buildings along a two-mile section of rural highway. The study included a detailed analysis of settlement and occupation in the area and identified one previously unrecorded eighteenth-century residence built by a locally prominent Dutch family. The investigation also explored the interrelationships between property owners, slaves, and freemen in early nineteenth-century New Jersey.

ANNIE LAURIE MCDONALD
SENIOR ARCHITECTURAL HISTORIAN (36 CFR 61)

YEARS OF EXPERIENCE
With this firm: 2021-Present
With other firms: 21

EDUCATION
MA 2000
Youngstown State University
History & Historic Preservation

BA 1996
Edinboro University of Pennsylvania
Art History

PROFESSIONAL TRAINING

Part 1 Tax Credit Application Training (NPS, 2017)

Cultural Landscapes: An Introduction (NPI, 2014)

PROFESSIONAL SOCIETIES

Member, American Cultural Resources Association

Member, National Trust for Historic Preservation

Member, National Alliance of Preservation Commissions

Member, Southeast Chapter of the Society of Architectural Historians

Member, Preservation North Carolina

Annie Laurie McDonald has more than 20 years' experience in historic preservation and cultural resources management at the local, regional, and state levels across the public and private sectors. She specializes in identifying, documenting, and analyzing historic resources within their historic and geographic contexts. She has extensive experience evaluating resources for National Register eligibility and successfully nominating individual properties and historic districts to the National Register of Historic Places. Ms. McDonald is highly experienced in regulatory compliance in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended. Ms. McDonald exceeds the Secretary of the Interior's Standards for Professional Qualifications in 36 CFR 61.

REPRESENTATIVE PROJECT EXPERIENCE

Comprehensive Historic Resources Survey of Lenoir, Caldwell County, NC (Sponsor: NC HPO) Scoped municipal survey of 480 historic resources dating from the late 19th century through 1975. Reviewed existing survey documentation, archival research, reviewing maps and plats, and fieldwork to identify individual properties and neighborhoods to be surveyed intensively. Presented at preliminary and post-survey public information meetings. Reviewed deliverables such as database records, paper survey files, and survey report for compliance with SHPO documentation standards. Evaluated ten individual properties and two residential historic districts for National Register eligibility and placement on the NC Study List.

Comprehensive Historic Resources Survey of Robbinsville, Graham County, NC (Sponsor: NC HPO) Scoped municipal survey of 100 historic resources dating from the late 19th century through 1975. Work included review of existing survey documentation, archival research, reviewing maps and plats, and fieldwork to identify individual properties and neighborhoods to be surveyed intensively. Supervised fieldwork, archival research, and National Register eligibility assessments by SHPO architectural historian completing the project. Reviewed draft survey report and evaluated five individual resources and two historic districts for National Register eligibility and placement on the NC Study List.

Comprehensive Historic Resources Survey of Valdese, Burke County, NC (Sponsor: NC HPO) Scoped municipal survey of 150 historic resources dating from the late 19th century through 1975. Work included review of existing survey documentation, archival research, reviewing maps and plats, and fieldwork to identify individual properties and neighborhoods to be surveyed intensively. Supervised remote fieldwork, data entry, and archival research by SHPO architectural historian.

Historic Structures Survey Reports for Section 106 Compliance, multiple counties, NC (Sponsor: Multiple) SHPO Advisor/reviewer on numerous reports prepared for federal undertakings across a 25-county region in compliance with Section 106 of the National Historic Preservation Act of 1966. Advised NC DOT staff on survey scoping. Advised consultants on research, identifying comparable properties, and applying National Register eligibility criteria for assessment of individual resources and historic districts. Reviewed consultant-prepared reports assessing National Register eligibility of surveyed resources and issued comments to SHPO Environmental Review Coordinator. Significant projects include **I-26 Widening and Realignment**, Buncombe and Henderson Counties; **Corridor K**, Graham County; **US 19/23**, Swain County; **Murphy Branch from Andrews to Murphy**, Cherokee County; and **Improvements to N.C. 268 from S.R. 1966 to Elkin Bypass**, Wilkes County.

JASON L. HARPE
SENIOR HISTORIAN (36 CFR 61)

YEARS OF EXPERIENCE
With this firm: 2019-Present
With other firms: 23

EDUCATION
MA 2006
University of North Carolina at Charlotte
Public History

BA 1996
University of North Carolina at Charlotte
History

PROFESSIONAL TRAINING
Campbell Center for Historic Preservation Studies, Preservation of Gravestones and Monuments, Basic and Advanced Techniques 2013

Edgecombe Community College, Preservation Trades School, 2008

PROFESSIONAL SOCIETIES
Member, American Cultural Resources Association

Professional Associate, American Institute of Conservation

Member, Association of Gravestone Studies

Member, National Trust for Historic Preservation

Past President, Charlotte Regional History Consortium, Charlotte Region, NC

Member, Charlotte Regional History Consortium

Member, Association for Preservation Technology

Past President, Lincoln County Historic Properties Commission

Jason Harpe has over twenty years of experience in the field of historic preservation. His experience includes historical research and writing, architectural surveys and analysis, the preparation of National Register of Historic Places nominations and local landmark reports, and facilitating the acquisition, preservation, restoration, and maintenance of historic structures, buildings, cemeteries, and historic sites. Mr. Harpe has worked on cultural resources surveys in accordance with Section 106 of the National Historic Preservation Act and other municipal and state cultural resource regulations. He is also a certified Gravestone and Monument Conservator and has prepared conditions assessments for cemeteries and has worked on numerous projects involving the conservation and restoration of gravestones and monuments. His educational and professional experience meet the qualifications set forth in the Secretary of Interior's Standards for an Architectural Historian and Historian [36 CFR 61].

REPRESENTATIVE PROJECT EXPERIENCE

US 74 New Improvements and New Alignment, Graham County; Improvements to NC 115, Wilkes County (Sponsor: NCDOT) Historian and survey crew leader for two Phase I Historic Building Inventories. The projects documented approximately 250 resources to the standards of the North Carolina State Historic Preservation Office (NCSHPO) and NCDOT.

National Register of Historic Places Nominations, City of Fountain Inn, Greenville County, SC (Sponsor: City of Fountain Inn) Consultant for researching, writing, and submitting National Register of Historic Places nominations to the South Carolina State Historic Preservation Office (SHPO) for the Robert Quillen Office and Library, Fountain Inn Principal's House and Teacherage, McDowell House, and the F. W. Welborn House. Presented all National Register Nominations to the South Carolina National Register Advisory Committee.

National Register of Historic Places Nominations, North Carolina (Sponsors: Funded by grants and privately-funded) Consultant for researching, writing, and submitting National Register of Historic Places nominations to the North Carolina SHPO for the Reinhardt-Craig House, Kiln, and Pottery Shop (Lincoln County), Holly Springs Masonic Lodge (Holly Springs), Eureka Manufacturing Company Cotton Mill (Lincoln County), Burt-Arrington House (Nash County), Oakdale Cemetery (Henderson County), and the Lincolnton Recreation Department Youth Center (Lincoln County).

National Register of Historic Places Nomination and Gravestone and Monument Conservation, Shiloh Presbyterian Church Cemetery, Town of Grover, Cleveland County, NC, and Town of Blacksburg, Cherokee County, SC (Sponsor: Privately-funded) Lead on a privately-funded project that included reports for the Shiloh Presbyterian Church Cemetery to be listed in the National Register of Historic Places and designated as a local historic landmark. Conserved professionally all of the gravestones and monuments in the cemetery. The National Register nomination had to be submitted to both the North Carolina SHPO and the South Carolina SHPO. Upon completion of the conservation work, all of the photographs of conserved gravestones and monuments were uploaded to Findagrave.com.

Preservation Plan for the City of Pelzer, Anderson and Greenville Counties, SC (Sponsor: City of Pelzer) Served as principal staff for a Historic Preservation Plan for the City of Pelzer that was funded by a grant from the National Trust for Historic Preservation. The project included public meetings to gather community input, documenting buildings, objects and sites of historic and cultural significance, and developing a plan to guide the town's future historic preservation efforts.

[External] Final Submittal Review: SAW-2019-02297 | ER 20-0338 | Ward Mill Dam - MOA stipulation - Historic Context Report Draft

Gail Lazaras <glazaras@americanrivers.org>

Thu 2/10/2022 3:50 PM

To: DCR - Environmental_Review <Environmental.Review@ncdcr.gov>

Cc: Harville, Katie E <katie.harville@ncdcr.gov>; King, Elizabeth C <Elizabeth.King@ncdcr.gov>; amanda.jones <amanda.jones@usace.army.mil>; Jonathan Hartsell <hartselljonathan@gmail.com>; andy@mountaintrue.org <andy@mountaintrue.org>; Ellen Turco <eturco@rgaincorporated.com>; Erin McCombs <emccombs@americanrivers.org>

Katie,
Please see final copy of the historic dam context report, attached, for review by your office prior to report finalization. I copied the relevant stipulation (I.A.b.iii) below for all of our reference. Please let me know if you have any questions.

NOW, THEREFORE, USACE, the SHPO and Partnership agree that the Undertaking shall be implemented in accordance with the following stipulations in order to mitigate the effects of the Undertaking on the historic properties.

STIPULATIONS

USACE shall ensure that the following stipulations are implemented:

I. Mitigation

A. The Partnership will hire a qualified consultant who meets the Secretary of the Interior's Professional Qualifications in History or Architectural History, to develop a historical context for dam and mill complexes built for localized industrial production over 50 years of age and located within Avery, Watauga, and Wilkes Counties.

a. Context Resources

i. Dams meeting the requirements in Section I.A will be considered regardless of size.

ii. Specific resources included in the context survey will include Sloop Lake Dam (AV0082), North Wilkesboro Water Intake (WK0390), Ward Mill (WT0358), Price Lake Dam (WT0734), Shull Mill Dam, Mill Pond Dam and all other properties identified by the consultant through desktop analysis and research that meet the above criteria and retain extant dams.

iii. Dams that were constructed solely for the purpose of generating electricity will not be included in the context survey.

iv. Resources will be preliminarily evaluated for National Register of Historic Places eligibility.

v. Survey record documentation should be completed for each resource surveyed and included within the context. This includes requesting a Survey Site Number (if previously unrecorded), completing a digital record for the Survey Database, and providing photographs/photo sheets keyed to site plans.

b. Deliverables Timeline

i. The Partnership will provide SHPO with a scope of work and a preliminary list of resources to be included in the context document for review and comment within three (3) months of execution of this MOA.

1. SHPO will have fifteen (15) days to comment.
2. If SHPO does not comment within 15 days survey work may begin using the preliminary resource list.

ii. An initial draft of the context document shall be submitted to the SHPO within nine (9) months of the execution of this MOA. SHPO will have 30 days to comment on the initial draft.

iii. A final draft of the context document and all associated deliverables for the Survey record shall be submitted to the SHPO within eighteen (18) months of the execution of this MOA. SHPO will have 30 days to comment on the final draft.

Gail Lazaras
American Rivers - NC
828-266-0206

From: DCR - Environmental_Review <Environmental.Review@ncdcr.gov>
Sent: Friday, January 7, 2022 3:41 PM

To: Gail Lazaras <glazaras@americanrivers.org>
Cc: Harville, Katie E <katie.harville@ncdcr.gov>; King, Elizabeth C <Elizabeth.King@ncdcr.gov>; amanda.jones <amanda.jones@usace.army.mil>; Jonathan Hartsell <hartselljonathan@gmail.com>; andy@mountaintrue.org; Ellen Turco <eturco@rgaincorporated.com>; Erin McCombs <emccombs@americanrivers.org>
Subject: SAW-2019-02297 | ER 20-0338 | Ward Mill Dam - MOA stipulation - Historic Context Report Draft

Our response is attached. Thank you.

Best,

Katie Harville (she/her)

Environmental Review Specialist

State Historic Preservation Office

109 E. Jones Street MSC 4603 Raleigh, NC 27699

919 814 6581 office

katie.harville@ncdcr.gov

***Please Note:** Requests for project review or responses to our review comments should be sent to the Environmental Review emailbox at environmental.review@ncdcr.gov. Otherwise, your request will be returned and you will be asked to send it to the proper mailbox. This will cause delays in your project. Information on email project submittal is at: NCHPO ER Project Review Checklist*

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