(Rev. 10-90)

VLR 9/11/02
NR 11/21/02

United States Department of the Interior
National Park Service

National Register of Historic Places
Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name Carter Hydraulic Rams
other names/site number VDHR site no. 237-5003

2. Location

street & number Off Grayson Street and US Highway 221 N/A not for publication
city or town Hillsville N/A vicinity
state Virginia code VA county Carroll code 035 zip code 24343

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this X nomination ___ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property X meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant ___ nationally ___ statewide X locally. (___ See continuation sheet for additional comments.)

[signature] 10/4/02
Signature of certifying official/Title Date

VIRGINIA DEPARTMENT OF HISTORIC RESOURCES
State or Federal agency and bureau

In my opinion, the property ____ meets ____ does not meet the National Register criteria. (___ See continuation sheet for additional comments.)

Signature of commenting or other official/Title Date

State or Federal agency and bureau

4. National Park Service Certification

I hereby certify that this property is: Signature of the Keeper Date of Action

____ entered in the National Register.
___ See continuation sheet.
____ determined eligible for the National Register.
___ See continuation sheet.
____ determined not eligible for the National Register.
____ removed from the National Register.
____ other (explain):

5. Classification

Ownership of Property
(Check as many boxes as apply)

___ private
X public-local
___ public-State
___ public-Federal

Category of Property
(Check only one box)

___ building(s)
___ district
___ site
X structure
___ object

Number of Resources within Property
(Do not include previously listed resources in the count.)

Contributing	Noncontributing	
0	0	buildings
0	0	sites
5	0	structures
0	0	objects
5	0	Total

Name of related multiple property listing
(Enter "N/A" if property is not part of a multiple property listing.)

N/A

Number of contributing resources previously listed in the National Register

0

6. Function or Use

Historic Functions
(Enter categories from instructions)

Category	*Subcategory*
INDUSTRY	waterworks

Current Functions
(Enter categories from instructions)

Category	*Subcategory*
VACANT/NOT IN USE	
LANDSCAPE	park

7. Description

Architectural Classification
(Enter categories from instructions)

No Style

Materials
(Enter categories from instructions)

foundation	Concrete
walls	Concrete
roof	Concrete
other	Terra cotta
	Metal

Narrative Description
(Describe the historic and current condition of the property on one or more continuation sheets.)

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

___ A Property is associated with events that have made a significant contribution to the broad patterns of our history.
___ B Property is associated with the lives of persons significant in our past.
X C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
___ D Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations
(Mark "X" in all the boxes that apply.)

Property is:

___ A owned by a religious institution or used for religious purposes.
___ B removed from its original location.
___ C a birthplace or a grave.
___ D a cemetery.
___ E a reconstructed building, object, or structure.
___ F a commemorative property.
___ G less than 50 years of age or achieved significance within the past fifty years.

Areas of Significance
(Enter categories from instructions)

ENGINEERING

Period of Significance

Ca. 1924

Significant Dates

Ca. 1924

Significant Person
(Complete if Criterion B is marked above)

N/A

Cultural Affiliation

N/A

Architect/Builder

unknown

Narrative Statement of Significance
(Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographical References

Bibliography
(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS):

___ preliminary determination of individual listing (36 CFR 67) has been requested
___ previously listed in the National Register
___ previously determined eligible by the National Register
___ designated a National Historic Landmark
___ recorded by Historic American Buildings Survey # _____
___ recorded by Historic American Engineering Record # _____

Primary location of additional data:

X State Historic Preservation Office
___ Other State agency
___ Federal agency
___ Local government
___ University
___ Other

Name of repository:

_____

10. Geographical Data

Acreage of Property approximately 3 acres

UTM References
(Place additional UTM references on a continuation sheet)

	Zone	Easting	Northing		Zone	Easting	Northing
1	17	523910	4068920	3	17		
2	17			4	17		

___ See continuation sheet.

Verbal Boundary Description
(Describe the boundaries of the property on a continuation sheet.)

Boundary Justification
(Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title	David E. Rotenizer and J. Daniel Pezzoni				
organization	Landmark Preservation Associates			date	June 30, 2002
street & number	6 Houston St.			telephone	(540) 464-5315
city or town	Lexington	state	VA	zip code	24450

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A **USGS map** (7.5 or 15 minute series) indicating the property's location.

A **Sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs

Representative **black and white photographs** of the property.

Additional items
(Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of the SHPO or FPO.)

name	Board of Supervisors of Carroll County c/o Jonathan Sweet, Director, Carroll County Office of Economic Development				
street & number	605-1 Pine Street			telephone	(276) 728-3331
city or town	Hillsville	state	VA	zip code	24343

NARRATIVE DESCRIPTION

Summary

The Carter Hydraulic Rams are located along a largely intermittent stream drainage to the east of and downhill from the center of Hillsville, Virginia. A hydraulic ram, often referred to simply as a ram, uses the power of flowing water to pump water (operating details are explained in section 8). The rams are contained in four small, square or rectangular-plan, concrete housings with concrete shed roofs. Each ram is distinguished by its bulbous cast-iron compression chamber, a smaller escape (or waste) valve housing, and a series of pipes leading to and from the apparatus. Downstream from the rams stands a tile block pumphouse above a concrete reservoir. The rams, ram housings, and pumphouse date to ca. 1924 and are located in a remnant of the Carter Pines, a white pine grove planted in 1938. The rams are situated at an elevation of between 2,400 and 2,500 feet above sea level, and the branch on which they are located flows into Beaverdam Creek, a tributary of the New and Mississippi River systems. There are plans to develop the area around the rams as the Carter Pines Community Park.

Inventory

1. Ram Housing 1. Ca. 1924. Contributing structure.
2. Ram Housing 2. Ca. 1924. Contributing structure.
3. Ram Housing 3. Ca. 1924. Contributing structure.
4. Ram Housing 4. Ca. 1924. Contributing structure.
5. Pumphouse. Ca. 1924. Contributing structure.

Description

The poured concrete enclosures of ram housings 1 and 2, located downstream, are essentially square in plan, measuring 1.92 meters to 1.94 meters to a side. Ram housings 3 and 4 are slightly smaller, measuring 1.67 meters across the front and 1.88 meters on the sides. The housings vary in height above grade from 80 centimeters to 1.40 meters. The majority of each housing extends below grade approximately three meters. Each housing has a front access hatch or manhole measuring 60 centimeters wide and 73 centimeters tall. The housing walls measure 20 centimeters in thickness. The impressions of the circular-sawn board forms used to pour the enclosures are visible. The shed roofs project slightly over the front elevations. The hatchways lack doors but retain the iron pintels and loop-like staples that were used to hang and secure the doors.

Description (continued)

Of the four ram housings, the interior of Ram Housing 2 was most accessible and informative at the time of survey, and therefore it is described. A ladder with iron hand holds descends from the manhole to a concrete floor on which is mounted the ram itself--two rams in the case of Ram Housing 2. Each ram is distinguished by its bulbous cast-iron compression chamber and a smaller escape (or waste) valve with a curled metal flange or spring resting on its top. A pipe brings spring water into the base of the apparatus and a second, curved delivery pipe feeds pressurized water into a larger collector pipe that crosses the breadth of the interior and that formerly ran underground and uphill to the other rams and to a storage tank. Cast onto the compression chambers is the numeral 3, industry standard notation indicating the one-inch diameter of the delivery pipe leading out of the rams. The pipes have turn cocks inscribed "Fairbanks," probably a reference to a Chicago-based windmill manufacturer in operation from the 1890s to the 1940s that also apparently manufactured pump components. One side of the concrete floor is depressed below the rest creating a reservoir that presumably served to collect and drain excess water that may have interrupted the operation of the rams.

Downstream from the rams stands a one-story pumphouse of tile block construction. The building measures approximately four meters by four and a half meters in plan and has a foundation and flat roof of poured concrete, brick quoins, two metal-grated windows with a rowlock brick lintel over one and projecting rowlock sills, and a sheet-metal door with a covered window opening. The foundation is actually the top of an underground reservoir, and its walls, which are suffering deterioration, are constructed with a quartzite aggregate. The reservoir measures approximately four meters deep.

The pumphouse interior, which has exposed tile block walls and a concrete floor and ceiling, contains a two-cycle gasoline-powered engine. On the engine are metal labels that identify the manufacturers of the engine's components, the Novo Engine Company of Lansing, Michigan, and the Platt Iron Works of Dayton, Ohio. Another label reminds the attendant to oil the machinery every 200 hours. The exhaust pipe, which extends through the ceiling, is stenciled with the delivery address "Carter Coal Co., Galax, Virginia." The engine rests on a concrete pad; a second pad has a manhole that leads down into the reservoir. The reservoir was supplied with water by three springs.

The pumphouse and ram housings are surrounded by a three to five-acre stand of mature white pines, a preserved remnant of a twenty-four-acre stand. The pines were planted in 1938 on a twenty-five-foot grid surveyed by transit.

Description (continued)

Integrity Statement

The Carter Hydraulic Rams possess good overall integrity. The ram housings, some of the ram machinery, and the pumphouse are extant. However, some structural elements (for example, the concrete foundation of the pumphouse) are experiencing deterioration. Missing from the system is the water tank that formerly stood on the hill above the rams. The post-1924 forested setting of the rams has been modified by recent preparation of the area for development as a park, but a remnant of the 1938 grove of white pines that surrounded the rams has been preserved.

NARRATIVE STATEMENT OF SIGNIFICANCE

Summary

The Carter Hydraulic Rams, located in Hillsville, Virginia, represent a relatively complete 1920s water supply system that uses the once common but now little known hydraulic ram technology. The rams were installed about 1924 by industrialist George L. Carter to supply water for his and his wife Mayetta's summer residence and other buildings in Hillsville. The system consists of four concrete ram housings located along a spring branch below town and formerly connected to water tanks uphill. A tile block pumphouse containing a gas-powered engine supplied backup capacity. The Carter rams supplied water to combat a 1931 fire that destroyed the heart of downtown Hillsville, but they were gradually rendered obsolete by a competing electric-powered system and abandoned in the late 1950s. There are plans to interpret the rams as part of the Carter Pines Community Park.

Applicable Criteria

The Carter Hydraulic Rams meet Criterion C and are eligible in the engineering area of significance for their association with the development of water supply technology and sanitation in rural Virginia. According to National Register Database Manager John Byrne, one other resource with the words "ram" or "hydraulic ram" in its name has been listed in the National Register of Historic Places: Priestly's Hydraulic Ram, located in Gooding County, Idaho. The period of significance corresponds to the apparent date of construction, ca. 1924. The Carter Hydraulic Rams are eligible at the local level of significance. Information in support of eligibility appears throughout the historic context.

Acknowledgments

A number of individuals and organizations assisted in the preparation of this report. Foremost among these was the owner of the property, the Board of Supervisors of Carroll County, and the nomination's sponsor, the Industrial Development Authority of Carroll County. Others who provided assistance included Gary Larrowe, former county Educational Resource Development Coordinator; Industrial Development Authority of Carroll County Chairman Richard Slate Sr.; Jonathan Sweet, Director of the county Office of Economic Development; Mava Vass, Chairperson of the Carter Pines Committee; Ronald Newman, Carroll County Administrator; Larry South, Hillsville Town Manager; Ivan Taylor, Mayor of Hillsville; Carolyn Honeycutt, Clerk of Carroll County Circuit Court; Judy Bolt, Treasurer of the Town of Hillsville; former Hillsville Mayor and Manager of the Mountain Meadow Preserve Sebert L. Sisson; the Blue Ridge Area Chapter of the Archeological Society of Virginia; the Carroll County Historical

Statement of Significance (continued)

Society; the Carroll County Office of the Virginia Cooperative Extension; ram historian and restorer Donald Burger of Laytonville, California; and June Ellis, Mike Pulice, and Marc Wagner of the Virginia Department of Historic Resources.

Historic Context

A hydraulic ram is "a device which can use the power available from a flowing stream to pump a small proportion of the water up a considerable height above the stream." A ram uses a pair of valves, the only moving parts in the apparatus, to feed water into the bottom of a compression chamber (also known as an air dome or an air vessel). Through the action of the valves and in-flowing water a bubble of air at the top of the compression chamber is repeatedly pressurized and works like a piston to push water up a delivery pipe (also known as an outlet pipe) to a storage tank. Each cycle takes about a second and creates a pulsing sound. About a quarter of the water is actually pumped; the remainder passes out of the ram.[1]

The first rams were manufactured in England and France during the late eighteenth century, with Joseph Michel Montgolfier of hot air balloon fame credited for developing the first self-acting ram pump in the 1790s. Americans imported rams from Europe until domestic manufacture began in the mid-nineteenth century, and the inexpensive apparatus had become a common fixture on American farms by the early twentieth century as an alternative to windmills, gravity-fed systems, and traditional wells and springs. As modern ram manufacturer and historian Dick Fleming has written: "For more than 100 years rams were major movers of water to homes, farms, industries, railroads and towns. They contributed to improved crop production, the introduction of extensive landscaping and gardening and, perhaps most importantly, to health and sanitation." Hydraulic rams were manufactured in Virginia by W. A. Rife of Waynesboro who at first distributed his rams primarily in western Virginia but eventually sold models to customers as far away as Freeport, Illinois. So popular were rams that Sears, Roebuck & Company included them in its catalogues (the most affordable Sears model cost $4.80 in 1908). Interest in rams decreased in the middle decades of the twentieth century as the enhanced availability of electric power made electric pumps more practical.[2]

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[1] Center for Alternative Technology, "Hydraulic Ram;" All About Pumps, "Ram Pump."

[2] Fleming, "Fleming Hydro-Ram," 3; Sebert L. Sisson personal communication; Argow and Propst, "Baseline Resource Inventory;" Hawke, *History of Waynesboro*, 140-142; and Schroeder,

Statement of Significance (continued)

Ram technology interested Carroll County native George LaFayette Carter (1857-1936) of Johnson City, Tennessee. In the late nineteenth and early twentieth centuries Carter built an empire on coal, iron, and railroad development in Southwest Virginia and eastern Tennessee. His projects included the formation of the Carter Coal & Iron Company and the Virginia Iron, Coal & Coke Company; the construction of rail lines including the Clinchfield Railroad from Elkhorn City, Kentucky, to Spartanburg, South Carolina; ownership of banks and newspapers; and a role in the development of Bristol, Johnson City, and especially Kingsport, Tennessee.[3]

In 1914 Carter's wife Mayetta Wilkinson Carter (1871-1957) acquired her father's home in Hillsville, a substantial antebellum brick house built for Fielden L. Hale. The Carters remodeled the house in the mid-1920s for use as a summer home, a project that coincided with George's temporary retirement from the obligations of his far-flung industrial activities. George Carter personally involved himself in developing a water supply system for the house. A visitor to Carter in Hillsville in the 1920s recalled: "I found him interested in 'picking up' spring heads and pumping the water into a central point and then into a reservoir he had placed near the old Wilkinson home. He had found fourteen such points in the meadow back of the old homestead." In June and July 1924 Carter asked county sanitation officer James W. Smith to assist him in identifying springs in the draw behind his wife's house that could provide a safe water supply. The springs were selected and Carter employed a Dexter Vass to build concrete spring boxes. Presumably the ram system was installed at about the same time, for in 1924 Mayetta Carter agreed to furnish water to the Texas House Hotel in Hillsville. Other buildings and structures supplied by the system included the Carroll Citizens Bank (controlled by the Carters) as well as several farm outbuildings and watering troughs. The pumped water was stored in two redwood-stave tanks, one on timber supports and the other on metal, that formerly stood north of the Carter House in the southeast corner of Pine Street and Edgewood Drive.[4]

Sears, Roebuck & Co. 1908 Catalogue, 618.

[3] Harkrader, "'George L.' started area development."

[4] "Carter House;" Barbery, "Late George L. Carter;" Carroll County Deed Book 51, p. 269, and Deed Book 66, p. 494; Argow and Propst, "Baseline Resource Inventory;" and Sebert L. Sisson personal communication. Some evidence suggests the system was not operational in 1924. It seems likely that Dexter Vass also built the concrete ram housings for Carter. The Carter ram system was not the first in Hillsville; a local doctor operated an earlier one for private use. The

Statement of Significance (continued)

The hydraulic ram system was partly a consequence of George L. Carter's interest in the social betterment movement of the Progressive era. Carter was influential in the development of the 1915 new town of Kingsport, Tennessee, with its innovative radial plan implemented by nationally acclaimed urban planners John Nolen and Earl Draper. His philanthropy included the donation of land and funds that secured East Tennessee State College (now University) for Johnson City in 1901. He is known to have installed water systems on tenant farms along Reed Creek in neighboring Wythe County. Carter's reliance on county sanitation engineer James W. Smith for advice placed him in direct contact with Virginia's public health campaign of the early 1920s. Smith was the local administrator of the Co-Operative Demonstrations in Rural Sanitation program, funded by the State Board of Health, the U.S. Public Health Service, and Carroll County. The program focused on the protection of water supplies, sewage control and disposal, and educational outreach. At roughly the same time Carter built his ram system he also constructed a septic system for his and his wife's Hillsville residence, and he installed tile drains to improve drainage in a low-lying section of his property.[5]

Concrete, the material Carter chose for his ram housings, was popular for utilitarian construction during the 1920s, especially for the types of mining and transportation-related structures with which Carter was acquainted. A British authority on rams had recommended the use of concrete for ram emplacements as early as 1900, and concrete was touted for its sanitation benefits by the State Board of Health in the early 1920s. The cubic, slope-roofed form of the Carter ram housings is very similar to housings illustrated in a 1939 report by the state's Bureau of Sanitary Engineering, suggesting Carter or his builder was familiar with up-to-date sanitation facility design. Tile block, the material of the pumphouse, was also a popular and somewhat more novel construction material of the period.[6]

Carroll Citizens Bank (also known as the Carroll County Bank) was supplied by the ram system until shortly after it was sold by Mayetta Carter in July 1937 (Carroll County Deed Book 66, p. 494-495).

[5] Newton, *Design on the Land*, 479, 487; Eller and Sisson, "George Lafayette Carter," 6; Spiker, *Max Meadows*, 107; Linda McHone Spiker personal communication; and Carroll County sanitation records.

[6] Clarke, *Hydraulic Rams*, 73-74; "First Steps in Sanitation;" and *Public Water Supplies in Virginia*.

Statement of Significance (continued)

While Carter was developing his water system, the Town of Hillsville explored options for a municipal system. In 1925 an engineer with the State Board of Health provided the town with suggestions for "the most practical and economical source and system for a public water supply, not only for domestic use, but for fire protection." (Interestingly, the engineer noted that eleven wells served the populace of Hillsville, but he failed to note the existence of Carter's system.) In December 1926 Hillsville merchant Dr. C. B. Nuckolls began laying pipe for a small system that used well water and electric pumps. In operation by August 1927, Nuckolls's system was primarily intended to provide water for his store, but it also supplied the Carroll County Court House (located next door to the Carter House), the Farmers Bank Building, and presumably other buildings. The Nuckolls system was expanded on at least two occasions in the 1930s and developed into a de facto town water system. In 1952 the Town of Hillsville formally arranged for the use of the Nuckolls system, and in July 1971 it purchased the system. Prior to the 1971 purchase it was said that Hillsville was the only town in the state that did not have a municipally-owned water system.[7]

Unfortunately for the citizens of Hillsville, its town fathers did not immediately heed the advice given by the state water engineer in 1925. In January 1931 a fire devastated the heart of town, causing an estimated $200,000 in damage. A 1971 newspaper account noted that "The only water source during the fire was that made available by George L. Carter from a small reservoir." Despite its service to the town in the 1931 fire, the Carter hydraulic ram system failed to develop as a community water source. Community ram systems were a rarity in Virginia during the 1930s. By 1939 only five Virginia communities, all of them small--Damascus, Jonesville, Newbern, Reedville, and Scotland Wharf--used rams to supplement their water systems. Other systems such as gravity flow and electric and gas-powered pumps provided greater capacity, and Virginia communities eventually lost interest in ram technology. The Carter rams are known to have continued in limited use until 1957 or 1958. The ram system and the surrounding Carter Pines, planted as a private reforestation initiative in 1938, were acquired by the Nature Conservancy in 1969 and named the Mountain Meadow Preserve. The tract came under county control in 1995. Plans are now underway to convert the area into the Carter Pines Community Park and to stabilize the rams. Also under consideration is trail-side signage that will interpret

[7] A. Wagner to the Town of Hillsville, Town of Hillsville records; Hillsville Minute Book 1, pp. 177; *Galax Gazette*, 1970 newspaper clipping; and *Carroll News*, June 17, 1971.

Statement of Significance (continued)

the historic significance of the rams.[8]

[8] Padgett, "Big fire in Hillsville;" Beckett, "Hillsville Historic District;" Larrowe, "The Carter Pines;" "Carter Pines Community Park;" Argow and Propst, "Baseline Resource Inventory;" and Brooke, "Divining Water."

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"Title Map of Land owned by Mayetta W. Carter (Mrs. Geo. L. Carter) at or near Hillsville, Virginia." January 1, 1939.

Verbal Boundary Description

The nominated parcel boundaries are portrayed on the 1:200-scale map that accompanies the nomination.

Boundary Justification

The boundaries of the nominated parcel are defined so as to encompass the four ram housings and the pumphouse that are the principal surviving resources associated with the system.

PHOTOGRAPHS

1. 1. Subject: Carter Hydraulic Rams (same for all photos)
   2. Location: Carroll Co., Va. (same for all photos)
   3. Photographer: J. Daniel Pezzoni (same for all photos)
   4. Photo date: June 2000 (same for all photos)
   5. Original negative (VDHR # 18328) archived at the Virginia Department of Historic Resources, Richmond (same for all photos)
   6. Description of view: Interior of Ram Housing 2.
   7. Photograph number appears at beginning of entry (same for all photos)

2. 6. Ram Housing 1. View looking west.

3. 6. Pumphouse. View looking north.

4. 6. Pumphouse engine.

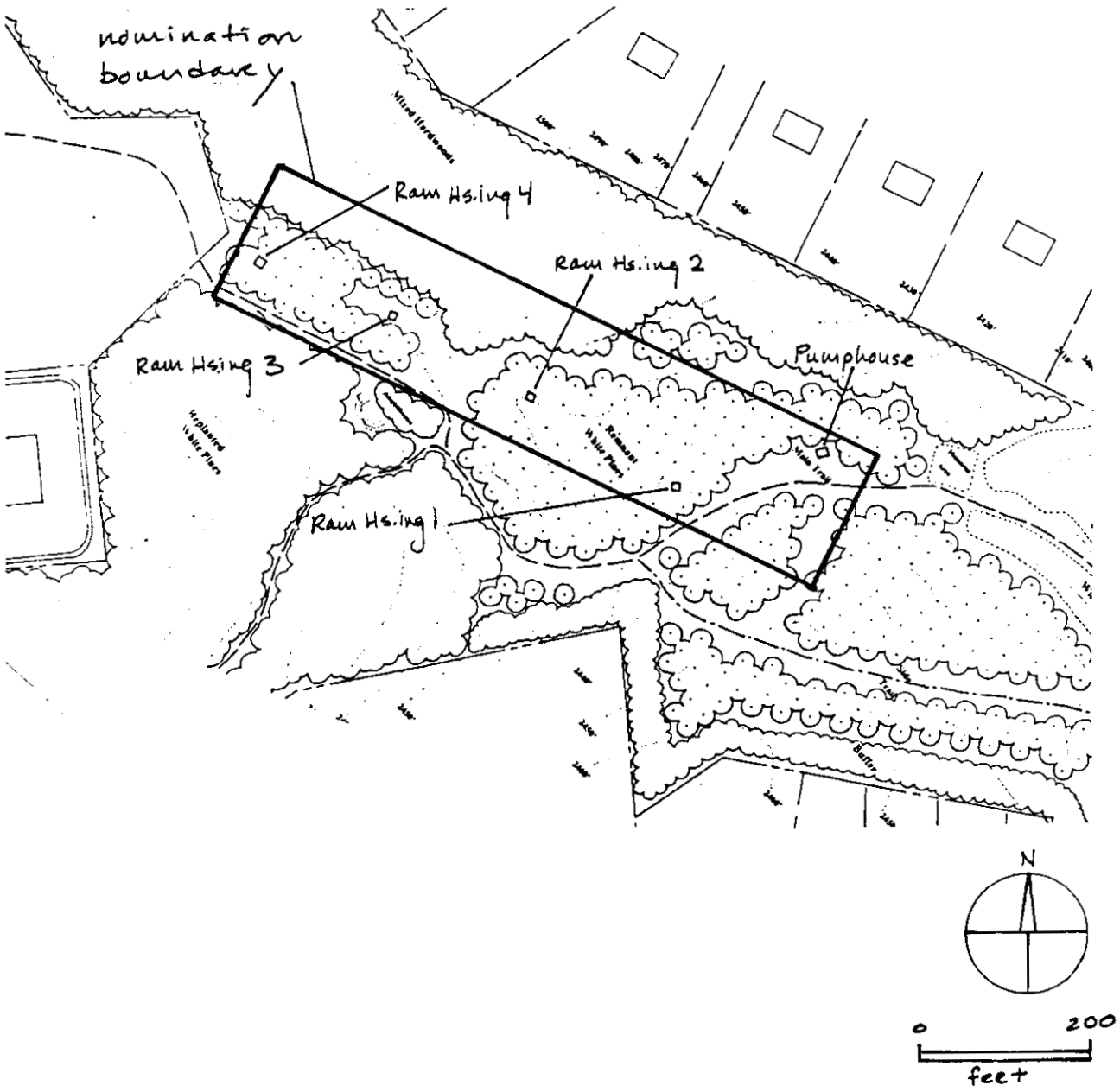
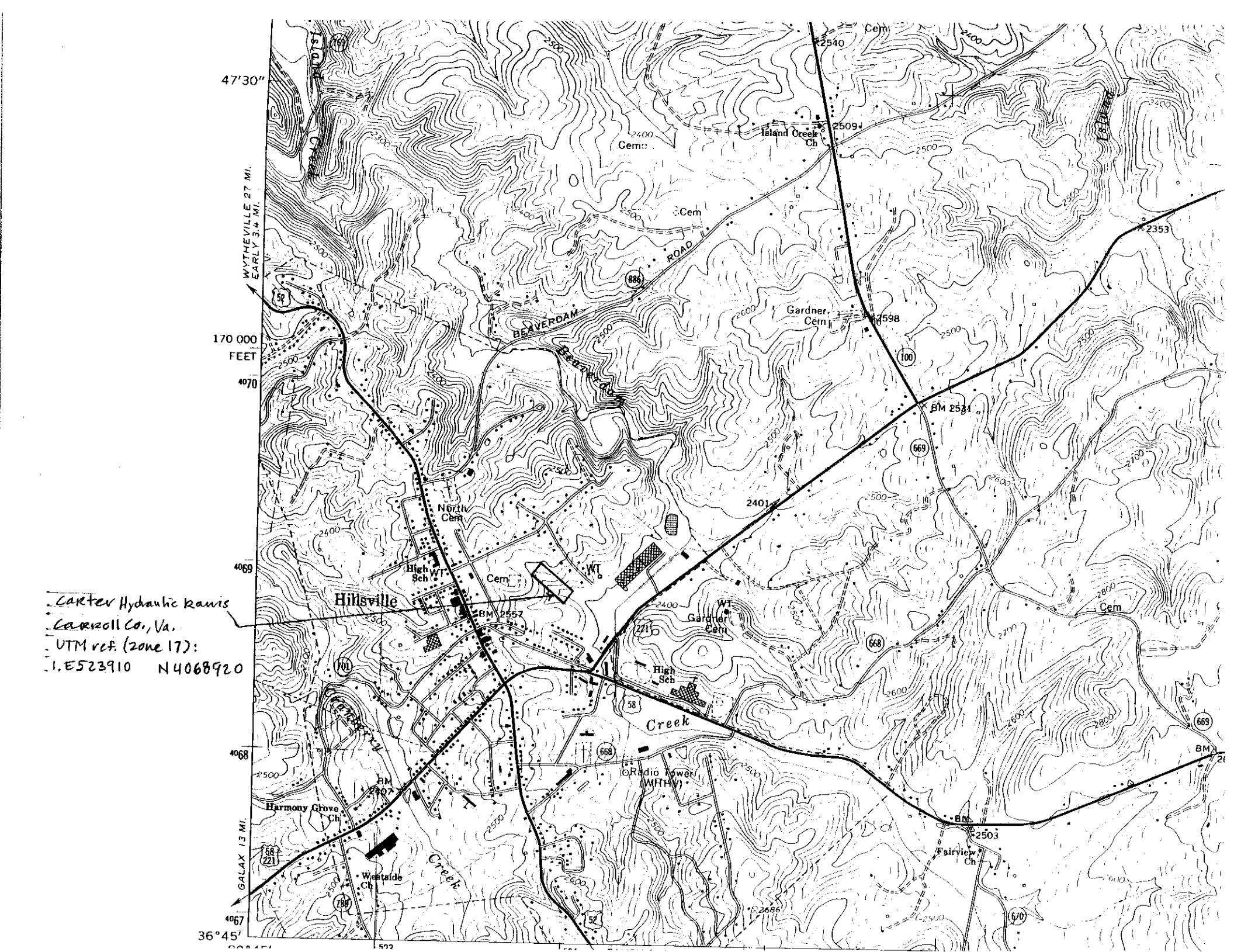


Exhibit A: Carter Hydraulic Rams. Scale: 1 inch equals approximately 200 feet. Scale and location of resources approximate. Number and direction of view of exterior photographs indicated by triangular markers.



Carter Hydraulic Ram is
Carroll Co., Va.
UTM ref. (zone 17):
1. E523910 N4068920