NPS Form 10-900
(Oct. 1990)

OMB No. 10024-0018 94

United States Department of the Interior
National Park Service

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NATIONAL REGISTER

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 an 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 HAYWARD AND KIBBY MILL

other names/site number Hayward and Noble Mill, Tunbridge Mill

2. Location

street & number Spring Road N/A☐ not for publication

city or town Tunbridge N/A☐ vicinity

state Vermont code VT county Orange code 017 zip code 05077

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this ☒ 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 ☒ meets ☐ does not meet the National Register criteria. I recommend that this property be considered significant ☐ nationally ☒ statewide ☐ locally. (☐ See continuation sheet for additional comments.)

Eric Sakstrom, DSHPO January 23, 1992
Signature of certifying official/Title Date

Vermont Division for Historic Preservation
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 certifying official/Title Date

State or Federal agency and bureau

4. National Park Service Certification

I hereby certify that the property is:

☒ 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:) _____

Signature of the Keeper Date of Action

for Robert L. Savage 3/12/92

Hayward and Kibby Mill
Name of Property

Orange County, Vermont
County and State

5. Classification

Ownership of Property
(Check as many boxes as apply)

- [x] private
- [x] public-local
- [ ] public-State
- [ ] public-Federal

Category of Property
(Check only one box)

- [ ] building(s)
- [x] district
- [ ] site
- [ ] structure
- [ ] object

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

Contributing	Noncontributing	
1	1	buildings
1		sites
2		structures
		objects
4	1	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

1

6. Function or Use

Historic Functions
(Enter categories from instructions)

Industry--manufacturing facility
Industry--waterworks
Commerce--specialty store
Transportation--road-related

Current Functions
(Enter categories from instructions)

Work in Progress
Domestic--single dwelling
Transportation--road-related

7. Description

Architectural Classification
(Enter categories from instructions)

Other: grist and saw mill
Other: dam

Materials
(Enter categories from instructions)

foundation stone
walls brick
weatherboard
roof metal
other concrete

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

Situated next to the cascades of the First Branch of the White River at Tunbridge village and classified as an historic district, the Hayward and Kibby Mill property includes the mill building (#1), a gravity dam and related hydraulic system (#2), a former blacksmith shop (#4), and a shed foundation (#3). The mill building incorporates a c. 1820, one-and-one-half-story, brick grist mill banked on its east gable facade above a mostly exposed basement and a c. 1870, two-and-three-quarters-story, wood-framed saw mill attached to the brick block's south side: a high gable roof spans both blocks. The mill retains much historic grinding, bolting, and sawing machinery powered by two turbines placed in the basement. The hydraulic system includes a 1928 concrete gravity dam, concrete headworks, an open canal with rubble walls, a box culvert under Spring Road, a concrete conduit and steel penstock, and tailraces. The c. 1803, one-and-one-half-story, brick, gable-roofed former blacksmith shop was severely altered while being converted to a residence about 1950, and is now considered noncontributing owing to the alterations. This nomination also includes the closely adjacent, single-span, gable-roofed Mill Covered Bridge (#5) with multiple kingpost trusses that was built in 1883 and listed in the National Register on July 30, 1974. Excepting the blacksmith shop's loss of architectural integrity, these historic resources possess an unusually high degree of integrity in regard to location, setting, design, materials, workmanship, feeling, and association.

The Hayward and Kibby Grist and Saw Mill property is located near the north edge of Tunbridge village along the southeast side of the First Branch of the White River. The river flows here through a narrow constriction of its valley formed by rounded hills. The mostly forested hills rise steeply from the valley bottom lying at about 550 feet to elevations of 1070 feet on the northwest side and 1240 feet on the southeast side. The valley broadens downstream from the mill site, and there the river meanders along a floodplain occupied by agricultural fields.

The river curves around the mill site from an east-west course immediately upstream to a north-south course downstream. The dam stands at the head of a short cascade where the river flows over exposed bedrock. The covered bridge crosses the river perpendicularly about 150 feet downstream of the dam. Downstream of the bridge, the river continues on a gentler gradient in shallow rapids with numerous boulders being exposed at normal water level.

The main street of Tunbridge village, Vermont Route 110, follows a generally northeast-southwest direction, and crosses the river at the north edge of the village over the small pool behind the mill dam. The perpendicular Spring Road intersects Route 110 on the northwest side, and descends abruptly a short distance to cross the river on the Mill Covered Bridge. At the north portal of the bridge, the paved Spring Road intersects a narrow gravel road that extends eastward along the river to Route 110, providing a bypass of the covered bridge for oversized vehicles.

The mill property flanks both sides of Spring Road. The mill itself stands on the southwest side while the former blacksmith shop stands at the edge of the pavement on the opposite side. From an intake structure at the southwest end of the dam, the open headrace extends southwestward and then passes under the road to deliver water to two turbines in the basement of the mill. Two tailraces discharge from the rear (west) foundation of the mill to the river. A low retaining wall built of unmortared rubble extends along the river bank upstream from the tailraces to the concrete south abutment of the covered bridge.

The north facade of the former blacksmith shop rests atop a concrete retaining wall at the edge of the river. The wall connects to the covered bridge's south abutment, and the building and bridge themselves are separated only by about ten feet. A retaining wall built of unmortared rubble extends upstream from the concrete wall to the headworks abutting the dam. A trabeated tailrace opening exists at the base of the rubble wall below a filled area next to the east side of the former shop. (This tailrace was probably part of the hydraulic system that powered a trip hammer during the early nineteenth century.)

1. Hayward and Kibby Grist and Saw Mill; c. 1820, c. 1870

The mill building measures 53 (north-south) by 43 (east-west) feet in overall dimensions exclusive of appendages. The original brick grist mill block is banked against its main (east) gable facade while an entire ground story is exposed on its north and west facades, revealing its height of two and one-half stories above river level. The brick masonry is laid in seven-course American bond. Only the north slope of its original gable roof

remains exposed. The eaves treatment varies by facade, the front (east) raking eaves being distinguished by a projecting wood cornice (apparently added to match that on the attached saw mill), the north horizontal being projecting and boxed, and the rear (west) raking closely cropped.

Distinguished by its wood construction, the saw mill addition stands on the ground level at the front of the building and rises two and three-quarter stories above a basement exposed only on the rear (west) facade. The north slope of its gable roof extends upward to the ridge in the same plane as the brick block's roof. The south slope parallels the pitch of the brick block's former south slope but it terminates at horizontal eaves a full story higher than the north eaves. The east and south eaves carry a projecting cornice; the only cornice return on the building marks the southeast corner. The entire roof is sheathed with standing-seam sheet metal laid over the wood shingles that were the previous exterior surface. A brick stove chimney straddles the ridge in an off-central position.

The main (east) gable facade of the building incorporates both the one-and-one-half-story original brick portion on the right and the two-and-three-quarter-story added wood portion on the left. The first story includes the main entrance of the brick portion in its left bay; a large hinged door made of diagonal flush boards with edge beading opens over a granite sill. Next to the right of the door is a window bay fitted with twelve-over-twelve sash. Below the window, a small rectangular opening serves the wood chute that passes downward through the wall; this was apparently used for the delivery of grain. A row of iron tie-rod ends delineates the first story below two bays of twelve-over-twelves in the brick gable.

The post-and-beam-framed left (saw mill) side of the first story is open to facilitate the handling of lumber around the saw carriage. A two-bay, shed-roofed loading dock with square posts shelters both that trabeated opening and the main entrance. A concrete deck on the right half of the loading dock spans the underground headrace while a depressed ramp on the left enabled vehicles to load directly from the level of the saw carriage. The second story of the saw mill addition includes a freight entrance in the left-end bay with double-leaf, diagonal-boarded, hinged doors and a plain surround; it opens onto the loading dock roof. Two window bays with twelve-over-twelve sash and plain

surrounds light both this story and the next upper (attic) level, and a single bay occupies the gable peak.

The only facade of the building not enlarged by the wood addition, the brick north eaves facade rests on a rubble foundation capped by massive sill slabs that show the marks of having been cut by wedges. The two-bay ground story is entered in the right-center position by a matchboard hinged door (now in poor condition) below a transom with partly missing glazing, both enframed by a plain surround. The left bay is lighted by a two-over-two sash, and windows of the same division light the three-bay second story. Three hand-forged anchor heads are evenly spaced at lintel level on the first story; the anchors are hooked into the ends of the massive transverse beams that span the interior at main-floor level.

The rear (west) gable facade ascends the maximum height of the building, being punctuated asymmetrically by openings at five levels. The brick (left) block rests on a rubble foundation like that under the north facade but having two heights. Matching the foundation level on the north facade, the wider left section underlies a two-bay portion of the facade; a small trabeated tailrace opening passes through this section of the foundation below a former window opening now boarded over. The narrower right portion of the brick block's foundation rises an additional story to the sill level of the wood addition. The windows in the brick block include two-over-two and twelve-over-twelve sash, the latter being on the second and gable levels.

The wood addition forms the right side and upper gable portion of the west facade. A high rubble foundation underlies the right two-thirds (11 feet) of the addition next to a two-story (equivalent) vertical opening for the south tailrace; this space may have been provided originally to accommodate a vertical water wheel. Both the first and second stories of the addition have been sheathed (c. 1960) with boards-and-battens while the gable retains horizontal flush boards. Flanking the gable of the brick block, the two-bay second story includes a twelve-over-twelve sash on the right side; a wood conveyor passes through the wall and projects diagonally upward from the left side. Two bays of twelve-over-twelve sash light the gable of the addition.

The clapboarded south eaves facade of the building belongs solely to the saw mill enlargement. Apart from the right section (18 feet) concealed by the later southeast wing, the first story

consists entirely of a trabeated log rollway opening with a concrete foundation/sill and a canted upper corner at the left end. The fully exposed second story is lighted by four bays of twelve-over-twelve sash with plain surrounds.

The southeast wing connects to the right (east) half of the south facade and extends eastward past the loading dock on the east facade. Constructed probably during the 1920s, the one-story wing of 12 by 39 feet rests on a concrete foundation and is partly sheathed with horizontal flush boards. The wing is built into the bank on its south side, where the concrete foundation rises about half the height of the wall; four small window openings in the upper wall have been boarded over on the inside. The wing's east end is enclosed only by a wood-framed gate while the north side is open. The shallow-pitched shed roof is covered with standing-seam metal.

The interior of the brick block includes a basement the equivalent of two stories in depth. Stone foundation walls constructed of large wedge-cut slabs and rubble enclose the entire lower half; those along the north and west facades have been reinforced on the inside by a massive concrete wall poured in 1990.

A plank deck forms a partial ground floor in the northwest quadrant of the basement, corresponding to the lower brick walls of the north and west facades and lighted by their first-story windows. Elsewhere, historic concrete piers rise from the basement's dirt floor to support timber posts at deck level that support in turn massive hand-hewn transverse beams. One such beam has been replaced by a composite of four sawn timbers that are bolted together; the individual timbers are drilled with holes in a pattern indicating that they were formerly used in a Town lattice truss from a covered bridge. (These pieces were not used in the adjacent Mill Covered Bridge, it being supported by multiple kingpost trusses.)

A mostly dismantled system of shafts, pulleys, and belts that formerly supplied power from the turbine occupies part of the space south of the deck. The main vertical shaft with a wood-toothed bevel gear has been removed from operating position along with the turbine itself. The connecting main horizontal line shaft with a steel-toothed bevel gear and pulleys that delivered power to the millstones and other machinery remains in place although most of the canvas belts are missing. Other components

formerly extended through a trabeated opening in the south basement wall to deliver power to machinery in the saw mill; in 1990, that opening was mostly infilled by a concrete pier built to reinforce the wall.

Occupying the northwest corner of the deck, two vertical posts carry a horizontal tenoning beam whose position is adjustable by means of wedges. The beam supports a vertical shaft fitted with a pulley (formerly driven by a belt from the line shaft described above) and, mounted horizontally in an opening in the main floor, the millstones. A wood chute of rectangular section descends diagonally from the millstones to deliver material to the bottom of a vertical elevator next to the north wall. A wood case of rectangular section encloses a canvas belt studded with multiple metal buckets to form the elevator, which ascends to a bolter on the main floor.

Mounted above the southeast corner of the deck, a small grinder with a flared cylindrical cast-iron case is loaded through a trap door in the main floor. The belt-driven grinder was manufactured by the Sullivan Machinery Co. of Chicago and Claremont, New Hampshire, and patented in 1888 and 1890. From the grinder, material flowed by chute to an elevator that ascends to the main floor. Other chutes and elevators also pass between the ground and main floor levels.

Directly above the pressure case, curved cuts of appropriate arc in the main floor's subfloor boards indicate that the millstones were previously mounted in that position and driven by a vertical shaft from the turbine.

The main floor lacks interior partitions; two partial longitudinal rows of chamfered sawn posts support the hand-hewn ceiling joists. The walls are finished with plaster applied directly to the brickwork. The window openings have plastered splayed reveals that are enframed by plain wood surrounds. Hanging next to the left side of the window in the east wall, a vertical wood sign listing the various products ground or sold at the mill and some of their prices . Farther to the left on the same wall, the stenciled inscription "A. N. King & Son, Tunbridge, Vt." records the names of early twentieth-century owners.

The millstones are placed near the northwest corner of the main floor. A low circular wood case encloses the stones; the upper

stone is attached to the vertical shaft from the basement while the bed stone rests in a plaster-of-Paris mold. Mounted atop the case, a wood framework with single-belly turned vertical members supports the rectangular wood hopper with flared sides that delivers material to the stones. Standing next to the case, a crane for lifting stones incorporates a room-height tapered and chamfered wood post with a cross arm supported by a curved bracket; a vertical lead screw with a hand-forged turnbuckle passes through the cross arm and raises or lowers a hand-forged iron picker of horseshoe form.

A small two-section bolter cabinet stands near the case against the north wall, served by an elevator and chute mentioned above and driven by a vertical shaft from the basement. A much larger room-height bolter cabinet subdivided into four sections, each with a horizontal two-panel door, spans most of the west wall; this bolter is driven by a vertical shaft and supplied by an elevator in the northwest corner. The opposite (southwest) corner is partitioned with boards and battens into a small supply room or office with shelves on its south wall. The room is heated by an elaborately decorated cast-iron Elmwood stove whose smoke pipe passes through the upper half of the window opening in the west wall. Other chutes and elevators occupy the central area of the main floor. Closer to the main entrance in the southeast corner, a platform scale for weighing sacks is embedded in the floor (which incorporates at least three layers of flush boards); the Model No. 10 scale was manufactured by the Howe Scale Co. of Rutland, Vt.

Near the middle of the south wall, a line shaft carrying three large pulleys is suspended by hangers from the ceiling joists. The floor area below the line shaft now lacks machinery, and it is not known how the power was used.

Abutting the south wall near the main entrance, a two-flight, open-string stair ascends to the attic. The attic floor is partly partitioned by a small room adjoining each (east and west) end. The stair emerges into the small east room. This room was enclosed during the 1960s with stud walls and gypsum-board sheathing inappropriate to the mill's historic character.

Presenting a marked contrast, the nineteenth-century room at the west end is enclosed with flush horizontal boards whose joints are covered partly with hand-split battens. This room may have been built when a separating machine was installed in the

adjacent space. A horizontal wood chute of rectangular section connects the room with the "Eureka" Smut & Separating Machine, made by Howes, Babcock & Co. of Silver Creek, New York. The U. S. patent for the machine was issued in 1859 and 1864 and then reissued in 1865 while the British patent was issued in 1868 and the French patent in 1869, indicating that the machine was manufactured during the 1870s or later. A line shaft and pulley driven by a belt from the main floor supplied power to the machine. Most of the other space between the small rooms is occupied by elevators, chutes, and hoppers.

A partition extends the entire east-west length of the building to subdivide what was originally the longitudinal south third of the brick block's attic. West of an east-central stair to the saw mill's attic, this partition is sheathed with plaster-over-lath on its south side. The original southwest half-gable is also plastered over the brickwork. The historic usage of this finished space under the brick block's former south roof slope is unknown. The floorboards of the main attic now form the raised ceiling of this space.

Under the central portion of the saw mill, a partial basement is reached either by a trap door from the first floor or through the wheel pit/tailrace opening in the west foundation. In addition to the concrete conduit and pressure case, various shafts with gears and pulleys as well as other equipment are fitted into the limited space. The vertical shaft from the turbine has been raised out of position; it carries a wood-toothed bevel gear that engaged a steel-toothed counterpart on a line shaft with pulleys; a canvas belt from the latter to a first-floor pulley provided power for the circular saw. The shafts driving the smaller machinery in the saw mill were apparently powered by the grist mill turbine, although parts of the power train that passed through the intermediate foundation wall have been removed. A sawdust blower is suspended from the middle of the basement ceiling; the split-case No. 1 blower was manufactured by the Rochester Foundry and Machine Co. of Rochester, New Hampshire. A sawdust discharge pipe extends through the adjoining basement and north facade of the brick block.

The main floor of the saw mill is entirely open with heavy posts and beams providing structural support. Along the north side, the original brick south wall of the grist mill remains exposed, complete with a twelve-over-twelve sash in the right (east) bay and a plank door hung on hand-forged, strap-iron hinges in the

central bay. The west wall of the main floor formerly included a broad central opening to accommodate the saw carriage at the limit of its travel; the opening has been covered by the boards-and-battens applied to the exterior of that facade.

The travelway for the saw carriage extends the entire east-west length of the building, consisting of parallel timbers laid into the floor and fitted with individual rollers. A raised plank platform along the south side of the west half of the travelway served to deliver logs from the rollway to the carriage.

The primary piece of machinery, a Model No. 1 circular saw mill, was fabricated by the Lane Manufacturing Co. of Montpelier, Vermont. The saw mechanism was patented in 1864, and the patent was renewed in 1872, indicating that the machine was made during the 1870s. It is a left-hand saw with a rack-drive carriage; a foot-operated friction brake acts on the carriage. Although the saw may have been originally equipped with a file-tooth blank blade, a 52-inch (diameter) blade with replaceable teeth was used during the last period of its commercial operation (pre-1940). That blade has been removed and is now stored in the brick block.

Next to the south wall of the brick block, a belt-driven circular cut-off saw is served by a wood swing table. Waste wood from this saw fell directly onto a chain-driven conveyor with wood cleats. The conveyor ascends diagonally westward to the second-floor level, and passes through the mill's west wall. The waste material then fell from the conveyor into the tailrace and was carried into the river as a means of disposal.

An electric-powered cut-off saw stands on the south side of the saw carriage next to the southeast wing of the building. The motor that drives this small-diameter circular saw - if not the entire machine - was made by The Master Electric Co., Dayton, Ohio.

Another belt-driven circular saw exists in the southeast wing next to its south wall. This rip saw, or edger, is mounted on a hardwood frame that carries a traveling table on steel rollers. A broad horizontal slot with a hinged door at table height in the wing's west wall exists apparently for the passage of lumber to or from this saw.

The second floor of the saw mill is divided into a larger (three-bay) east room and a smaller (one-bay) west room by a crude

vertical flush-boarded partition; two hinged doors of the same material provide access between the rooms. Another vertical-boarded partition separates the west room from the attic of the brick block. The west room now contains some bedroom furniture although its historic usage is not known.

The east room has been used historically as a woodworking shop, and several pieces of early twentieth-century equipment remain in place. In contrast to the hydromechanical power used elsewhere in the mill, the source of power is an electric motor placed on the plank floor next to the west partition. The two-horsepower, single-phase electric motor was manufactured by the Century Electric Co. of St. Louis, and was patented in 1903, 1914, and 1915. A canvas belt from the motor drives a line shaft with pulleys that is suspended by hangers from the ceiling joists. Canvas belts from the line shaft drive in turn two pieces of sawing machinery: a large band saw made by The Crescent Machine Co. of [illegible], Ohio, and a table saw of unknown origin. A hand-cranked No. 1 drill press made by Canedy Otto Mfg. Co. of Chicago Heights, Illinois, is attached to a central post. Extending along the east wall, a heavily worn plank work bench bears a cast-iron vise made by The Columbian Hardware Co. of Cleveland on its left end. A less-worn plank work bench abuts the south wall.

A single-flight, closed-well stair ascends from the partly plastered north wall of the woodworking shop to the main attic. Laid with overlapping rough-sawn boards, this attic floor extends northward over about half of the brick block's attic level. The post-and-beam, mortise-and-tenon frame exposed above the attic floor is pegged together except for bolted scarf joints in the purlins; the timbers are mostly circular-sawn.

The underside of the mill's entire roof is visible from the upper attic floor. The original north slope of the brick block's roof remains in place, supported by peeled half-log rafters. The original south slope has been removed but its rafters apparently were reused to support the lower south slope of the enlarged (saw mill) roof. Both upper slopes of the roof have rafters made of sawn timbers that meet at the ridge.

Stored next to its east wall, the attic contains a quantity of one of the products apparently made in the woodworking shop. The uncompleted handles of bull rakes - used for raking hay - have been bent into the proper form but have not been turned.

2. Dam and Related Hydraulic Structures

A. Dam; 1928

The gravity dam extends diagonally across the river channel in a northeast-southwest alignment. The structure is constructed of reinforced concrete resting on exposed bedrock. It measures 102 feet along the crest, and rises a maximum of 8.5 feet above the irregular surface of the riverbed. A drain gate of about four by four feet penetrates the base of the dam about halfway along its length. Provision exists atop the dam for the installation of flashboards; the historic two-foot-high plank flashboards have been either removed or swept away.

The dam impounds only a small pool extending about 1,200 feet upstream with a surface area of about 2.5 acres. River-born sediment deposited in the pool results in a shallow depth that provides only 6.5 acre-feet of gross storage capacity. The estimated average flow of the river amounts to 64 cubic feet per second.

B. Headworks; 1928

The headworks extend west-southwestward from the southwest end of the dam. The dam abuts a roughly perpendicular concrete intake wall 23 feet in length, 10 feet in height, and 18 inches thick with a 5-by-14-foot intake opening. Severely spalled next to the river, this wall forms the easterly side of an irregular four-sided structure that encloses the forebay; its southerly side extends 29 feet while the northerly side is only 10 feet in length. The latter wall is penetrated by a waste gate; an iron hand wheel on a vertical lead screw controls the four-by-four-foot plank gate.

Partitioning the interior of the structure, a trash rack support wall is placed at an acute angle to the headgate wall; the iron trash rack and operator's platform were removed at an unknown time. Placed in turn at an acute angle to the trash rack wall and forming the westerly side of the intake structure, the floodwall measures 26 feet in length, 12 feet in height, and two feet in thickness. The floodwall incorporates twin five-by-five-foot plank headgates, separated on the west side by a counterfort wall, that are now closed to prevent water from entering the

perpendicular headrace. The year 1928 is inscribed in the west face of the floodwall; both the dam and the headworks were rebuilt during the winter of 1927-28 following the destructive flood of November, 1927.

C. Headrace Canal; 19th century

The headrace continues 73 feet west-southwestward from the floodwall as an excavated open canal about 12 feet in width with sidewalls built mostly of rubble stone laid without mortar. Part of the stonework has collapsed into the canal bed. The north side has been reinforced (possibly in 1928) by a concrete retaining wall along the westernmost 32 feet of its length. An earth-filled dike about 15 feet in width extends along the north side of the canal; another partly collapsed rubble wall (and short section of concrete wall) retains the north side of the dike.

Along the south side of the canal, the rubble wall serves also as a building foundation. The foundation supports the rear (north) eaves facade of a nineteenth-century, one-and-one-half-story, wood-framed, horizontal-boarded shed of elongated rectangular plan; its gable roof is covered with standing-seam corrugated sheet metal. The shed relates primarily to an adjacent house that was occupied by an owner of the mill, Henry Hayward, during the last third of the nineteenth century; the shed was then used for the storage of grain. Now under separate ownership, the shed and house are excluded from this National Register nomination.

D. Headrace Culvert; 19th century, rebuilt c. 1928?

Next to the east side of Spring Road, the headrace passes through a perpendicular concrete crown wall and enters a box culvert under the roadway. The culvert is constructed of reinforced concrete except for the floor where timber mudsills are laid directly on the exposed ground; the mudsills were formerly covered with planks that formed the actual floor. The culvert is 10 feet wide for a length of 58 feet to a point under the front yard of the mill on the west side of the road. There it broadens northward for a length of 12 additional feet to accommodate two intake portals in the concrete wall that forms its west end. A hinged plank hatch door provides access through the roof of this broader chamber.

E. Turbines and Related Structures; pre-1940

The intake portals direct water to the turbines that drive the milling machinery. The south portal opens to a concrete conduit about four feet square in section and 18 feet in length that slopes downward to a concrete pressure case containing the saw mill turbine. The pressure case is eight feet square in section and stands about ten feet in height. The difference in elevation between the intake structure and the turbine yields a nominal head of about 14 feet. Rated at 43 horsepower, this 21-inch, Francis-type vertical turbine was manufactured by S. Morgan Smith Co. probably during the early 1900s.

The pressure case for this (saw mill) turbine stands within the spacious former wheel pit, an opening ten feet in width flanked by rubble foundation walls a full basement story in height and extending 22 feet beneath the mill to its rear (west) facade. From that point, an excavated tailrace extends westward about 47 feet to the near bank of the river; its low rubble walls have mostly collapsed into its bed.

The north portal enters what appears to have been the original headrace opening in the mill's rubble foundation. The trabeated opening has been infilled with concrete around the end of a single-seam, riveted-shell steel penstock 40 inches in diameter. The penstock descends diagonally for a length of about 21 feet into the basement of the brick block and connects to a short rectangular concrete conduit attached to the pressure case of the grist mill turbine, yielding a nominal head of about 16 feet. The pressure case is about seven feet square in section and stands about nine feet in height.

Rated at 25 horsepower, this 17-inch Leffel Sampson vertical turbine was patented in 1913 and installed probably during the 1920s. The turbine has been extracted from the pressure case for inspection. Not having been used in recent decades, its runner and wicket gate assembly have corroded to the extent of being beyond repair.

An older turbine - probably the predecessor of the Leffel unit and likely the original turbine installed to replace a water wheel - lies partly buried in the ground near the northeast corner of the basement. It has a scroll case with single-entrance gates, and remains connected to a shaft.

The (grist mill) turbine pressure case stands in what appears to have been the former wheel pit. Bounded by a low rubble wall along its south side, the tailrace extends 15 feet from the pressure case to the mill's west foundation. The original tailrace opening through the foundation has apparently been blocked for decades (possibly since the present turbine was installed); its stone lintel remains visible on the exterior although barely above the ground level of the backfilled area beyond the foundation. The present tailrace opening passes through the north end of the foundation, and beyond that point the tailrace is covered with stone slabs over most of its 23-foot length to the river bank.

3. Shed Foundation; c. 1870

A five-foot-long retaining wall connects the northeast corner of the mill's foundation and the southwest corner of the partly disturbed foundation of a former shed. Measuring 23 by 23 feet, the shed foundation consists of basement-height rubble walls on the south and east sides, the latter being faced with concrete for two-thirds of its height. The west side is bounded only by a concrete sill at ground level. The north side has been either removed or buried by fill for a construction driveway providing access to the north side of the mill.

Photographs taken in 1979 show the shed standing on this site. Oriented perpendicular to the mill, the gable-roofed shed was one and one-half stories in height. It was sheathed with flush vertical boards, and the roof was then covered with asphalt shingles on the east slope and standing-seam sheet metal on the west slope. The south gable facade was entered in the right-central position by a vertical-boarded door while a multi-light window was centered in the gable. The three-bay rear (west) eaves facade was fenestrated symmetrically by twelve-light fixed sash. The deteriorating shed was removed during the early 1980s.

The shed almost certainly existed in 1877; a symbol appears at its location on the Beers map of Tunbridge village published in that year. The building was probably constructed about 1870, during the early period of Henry Hayward's ownership of the mill.

4. ex-Blacksmith Shop/Residence; c. 1803, converted c. 1950

The present character of the former blacksmith shop reflects its conversion about 1950 to a residence for the contemporary owner (George Towle) of the mill property. The building was extensively altered at that time, being reoriented from the road to the river and losing much of its original exterior and interior design as well as its function. Therefore the former blacksmith shop is considered noncontributing to the historic character of the mill property.

Measuring 31 (east-west) by 39 (north-south) feet, the one-and-one-half-story building is constructed of red brick. The original masonry is laid in seven-course American bond; a substantial portion of the structure, however, was rebuilt in stretcher bond during the c. 1950 project. Oriented parallel to the road, the expansive gable roof is sheathed with wood shingles that were applied about 1980. The horizontal eaves project only slightly more than the closely cropped raking eaves. A short interior brick chimney also erected about 1950 straddles the ridge in an off-central position.

The original main (west) eaves facade next to the road was then reworked as the three-bay rear facade without an entrance. The wall was entirely rebuilt in stretcher bond. Three window bays were provided; the central bay contains a single six-light fixed sash while the side bays have coupled sash of the same division. The lower part of the wall has been concealed behind fill placed to elevate the road surface; this was done during the late 1970s when the adjacent covered bridge was raised about one and one-half feet.

The present five-bay main (east) eaves facade facing the river was rearranged symmetrically with an entrance in the second-left and second-right bays while each end bay contains a window with multiple diamond lights over two rectangular lights. Added at the same time, a four-bay, shed-roofed porch with boxed posts, a stick balustrade, and flagstone deck spans the facade between the entrances. Emerging from the porch and main roofs, a central three-bay, clapboarded shed dormer is illuminated by six-light fixed sash.

The brick masonry of the two-bay south gable facade was relaid on much of the first story. Added to the left-center bay, a small

one-bay, gabled, brick entrance vestibule of eight by seven feet has a two-light-over-four-panel door on its west face and a multi-diamond-light fixed window on the south. Closely adjacent to the vestibule, a twelve-over-twelve sash lights the right-center bay. The former full-size window opening in the half-story was partly infilled with brick around small double-leaf, six-light casement sash. At the gable peak, an original vertical elliptical ventilator with a header surround contains a wood louver.

Only the opposite (north) gable facade retains its historic appearance. Both the left- and right-center bays on the first story and the single half-story bay are fitted with twelve-over-twelve sash. Below the brick masonry, a concrete retaining wall built probably c. 1928 descends the equivalent of a full basement story to the level of the river. The retaining wall serves also as a southeast wing wall for the adjacent south abutment of the covered bridge.

A photograph taken probably in 1880 records the original main (west) facade with a three-bay arrangement. Each bay was slightly recessed and crowned by a shallow semielliptical blind arch. A broad central entrance was fitted probably with double-leaf hinged doors below a heavy lintel. Each side bay was illuminated by pairs of sixteen-light sash within a single opening; the sash appear to have been horizontally sliding in order to provide desirable ventilation.

A photograph taken about 1870 shows the south gable facade probably in its original appearance. A central entrance with a single-leaf door was flanked closely on each side by a window with twelve-over-twelve sash. Another twelve-over-twelve sash was centered in the gable below a small oval opening (probably a ventilator) at the peak.

The same c. 1870 photograph shows that the appearance of the roof differed somewhat from its present state. The horizontal eaves projected over the main (west) facade while the raking eaves were closely cropped. A short return of the simple cornice occurred at each front corner. A prominent brick chimney rose from the interior of the front roof slope while a slender counterpart marked the rear (east) slope. By 1904, another photograph shows that the chimney on the front slope had been moved to the north end next to the ridge.

5. Mill Covered Bridge; 1883

The northwest corner of the former blacksmith shop is only about ten feet from the southeast corner of the Mill Covered Bridge. Named for the adjacent grist and saw mill, the covered bridge was constructed in 1883 to replace an earlier covered-truss bridge on the site. In order to reduce the risk of damage by river ice, the bridge was raised about one and one-half feet in the late 1970s. The Mill Covered Bridge was listed in the National Register on July 30, 1974.

The single-span bridge extends 72.5 feet in length at deck level and 19 feet in overall width. It rests on abutments that have been either rebuilt or faced with concrete; the north abutment was treated during the 1970s project. The structure is supported by two multiple kingpost timber trusses that also form the side walls; these are sheathed on the exterior with flush boards hung vertically. The gable roof is covered with standing-seam corrugated sheet metal. The deck is covered with planks laid longitudinally.

Archeological Resources

Since the construction of the first mill(s) here in the 1780s, the mill property has been the locus of continuous activity related primarily to small water-powered mills and road transport. The industrial activity had ceased by the close of the historic period in 1940, and was succeeded about 1950 by residential use of the former blacksmith shop. The road has remained in active use to the present; a bridge has spanned the First Branch at this site since 1797.

Major disturbances have occurred repeatedly during the historic occupation. The proximity of the river, compounded by the existence of the dam and millraces intended to divert water, has brought recurring flooding with varying amounts of damage. The highest twentieth-century flood, that of November, 1927, caused substantial damage to the property, including the destruction of the dam and headworks and erosion of soil from the site. The residential conversion of the blacksmith shop was accompanied by the installation of a septic system and leach field in the east

yard where a nineteenth-century, two-story shop building or shed stood previously. Repair and improvement of the road has brought cutting and filling along the right-of-way. A significant project in the late 1970s involved raising the covered bridge and the contiguous road surface; an excavation made next to the former blacksmith shop uncovered several horseshoes undoubtedly made at the shop.

Despite these disturbances, various remains probably survive at the subsurface level. Several small industrial enterprises are known to have existed here during the early 1800s, including a fulling mill, oil mill, carding machine, nail-cutting shop, and trip hammer. Contemporary land records indicate that another mill building stood in the now-vacant area between the north side of the extant mill and the river. Latter nineteenth-century photographs show a potential shop or mill building standing next to the river at the rear (east) of the blacksmith shop. While surface evidence of these buildings and activities has disappeared, artifacts or even parts of foundations are likely to exist below ground level at their sites.

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.)

- [X] **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 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 50 years.

Areas of Significance
(Enter categories from instructions)

Architecture
Industry

Period of Significance

c.1820-1928

Significant Dates

c.1820
c.1870
1883

Significant Person
(Complete if Criterion B is marked above)

N/A

Cultural Affiliation

N/A

Architect/Builder

Adams, A. C.

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:

_____

Hayward and Kibby Mill
Name of Property

Orange County, Vermont
County and State

10. Geographical Data

Acreage of Property approx. 1.25

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

	Zone	Easting	Northing
1	18	701450	4862640
2			
3			
4			

☐ 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 Hugh H. Henry, Historic Preservation Consultant

organization N/A date January 6, 1992

street & number RD #2, Box 229, Green Mountain Turnpike telephone 802-875-3379

city or town Chester state Vermont zip code 05143

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 SHPO or FPO.)

name Henry Joseph

street & number 312 Haywood Place telephone

city or town Wallington state New Jersey zip code 07057

The Hayward and Kibby Mill possesses exceptional significance for embodying the unique characteristics of a nineteenth-century, water-powered mill that combines a c. 1820 brick grist mill and a c. 1870 wood-framed addition containing a saw mill. Furthermore, the mill holds additional significance for retaining its hydromechanical power system and much historic milling machinery and equipment, including a circular saw mill made in the 1870s by the renowned Lane Manufacturing Co. of Montpelier, Vermont. The Tunbridge mill constitutes an exceptionally well-preserved representative of the grist and saw mills whose functions were essential to the initial settlement and subsequent development in rural Vermont communities during the late eighteenth and nineteenth centuries. Although lacking formal architectural style, the mill building displays a vernacular design highly expressive of its utilitarian functions and virtually unaltered from its original appearance.

The irregular topography and dense river network of Vermont have historically provided numerous appropriate sites for small water-powered industries. The difficulty of transporting goods compelled the initial settlers in the late eighteenth century to establish grist and saw mills soon after their arrival. The rapid increase in population during the early decades of the nineteenth century brought the need both for more mills and a greater variety of types, such as fulling mills, oil mills, carding machines, trip hammers, and tanneries. Small water-powered mills became common throughout most of the state, being sited wherever falls or cascades provided sufficient head, and villages coalesced around many of these sites. During the latter half of the century, marked improvement in the means of transport - especially the extensive development of railroads - undercut much local mill production. Many small mills were abandoned or replaced by larger mills and factories producing goods such as textiles for export from the state.

Only a small number of nineteenth-century, water-powered mill buildings continue to survive in Vermont. Most of these buildings were designed specifically for a single major milling activity, i.e., sawing lumber or grinding grain. A majority of the extant examples are saw mills, reflecting the traditional economic importance of the timber industry in this largely forested state, but these have been almost universally converted to electric power. Few of the mill buildings have not been altered from their historic architectural appearance. Excepting

the saw mills, most have been converted to other uses. Only a handful have retained milling machinery and equipment driven by hydromechanical power.

The Tunbridge mill holds the distinction of being possibly the last extant example in Vermont that combines both saw and grist mills, and retains its original architectural character together with a nearly intact array of water-powered machinery. The mill, therefore, has become an exceptionally significant representative of mill design and technology spanning a century from its original construction as a brick grist mill in the 1820s through the c. 1870 addition of the wood-framed saw mill to the final renovation of its hydromechanical power system in 1928. Its machinery includes an operational Model No. 1 Circular Saw Mill made by the Lane Manufacturing Co. of Montpelier, Vt., and patented in 1864 (renewed in 1872); the Lane firm became one of the largest producers of saw mill machinery in the world by the 1890s but ceased operation in the 1960s.

The period of significance begins c. 1820 with the construction of the brick grist mill. (The former blacksmith shop was constructed probably c. 1803 but has been altered to the extent of being considered noncontributing.) The period concludes in 1928 when the dam and headworks were reconstructed following the disastrous flood of November, 1927.

The initial Euro-American settlement in what became the contiguous townships of Tunbridge and Royalton began during the 1770s. Elias Curtis was among the earliest settlers of Royalton, and the proprietors of that township both granted him a piece of land and loaned him 233 pounds for the purpose of building a grist and saw mill there; he completed the mill by the beginning of 1777. The onset of the American Revolution, however, exposed the Vermont frontier to British attack from adjoining Canada. In October, 1780, a raiding party of Native Americans organized by the British in Quebec descended the valley of the First Branch of the White River through Tunbridge and attacked the settlement in Royalton. The invaders destroyed many buildings, including Elias Curtis' mill, and took twenty-six prisoners, including Curtis, back to Quebec. He and most of the others were released within a year, but his absence had enabled other persons to rebuild the Royalton mill.

Curtis then shifted his field of activity to Tunbridge. The origin of the grist and saw mill at what became Tunbridge village

relates to a meeting held by the proprietors of Tunbridge on May 28, 1783, the first meeting for which the written minutes are known to survive. Elias Curtis served as the clerk of the proprietors, who, among other decisions taken at that meeting, "Voted, provided Elias Curtis will build a good saw-mill within eighteen months, and a good grist-mill within two years and six months, to give him a deed of hundred acres of land above Mr. Jonathan Walden's lower pitch, with the privilege of the stream forever." This occurred three years prior to the formal organization of the town in 1786.

Elias Curtis apparently was able to meet the proprietors' terms, and build the two "good" mills. Accordingly, he was awarded on December 18, 1785, the deed to Mill Lot 66, spanning the cascades of the First Branch where the grist and saw mill now stands, and Mill Lot 38, located about one mile to the southeast. In September of the next year, the residents of Tunbridge were notified of a meeting that would occur at the grist mill. That mill building was almost certainly wood-framed and probably stood on the site of the present brick counterpart. The site of Curtis' saw mill is less certain; he may have constructed it on Lot 38.

Eighteen years after gaining title to the mill lots, Elias Curtis granted three leases on successive days in April 1803 for small parcels flanking his grist mill. Two of these parcels were already occupied by other water-powered businesses, a blacksmith shop and a saw mill, that belonged by other persons. The third parcel would become the site of a multi-purpose mill. Curtis granted very favorable terms to these lessees. He stipulated for each lease a subsequent payment of "one ear of corn annually if demanded on the first day of December" in addition to "all lawful assessments and taxes made on the premises." The leases appear to have been intended primarily to define water rights for the individual users, who were drawing water from the same pond.

On April 5, 1803, Curtis leased to Samuel Bement of Tunbridge a parcel "on which he the said Bement hath erected a smithy shop with a trip hammer...." This shop apparently preceded the extant brick former blacksmith shop on the site. The lease also involved "a road to and from the same two rods wide in a direct line from the aforesaid smithy shop to the present highway [now Route 110] by the side of which ground to set a cole house thereon." The reference to a "cole" house is apparently a misspelling of "coal," and means a building for the burning of

charcoal in a forge, i.e., a blacksmith shop. This indicates that Bement leased the land partly for the purpose of constructing a new blacksmith shop, presumably the extant brick building. The lease also defined Bement's water rights via a "floom" [flume] and included the right to repair the dam; Curtis, however, retained "the right to draw the water down to the bottom of the pond" for his grist mill.

Elias Curtis' second lease of the same date conveyed to Stephen Mack of Tunbridge "a certain tract of land ... on which he hath lately erected a saw mill ...." Built apparently about 1800, this may have been the first saw mill on Lot 66, or it may have replaced a saw mill that Curtis built in the 1780s to fulfill his obligation. In any case, the mill would have been equipped with an up-and-down saw and powered probably by a flutter wheel. This lease granted the same water rights and road access as the Bement lease. Additionally, Mack obtained "a sufficient mill yard for the purpose of laying logs and stacking up boards ...." The specific site was probably next to the south side of the extant brick mill, where the extant saw mill was erected about 1870. Indeed, the possibility exists that part of the stone foundation and the wheel pit under the present saw mill may have been constructed for Mack's predecessor.

The same parties, Elias Curtis and Stephen Mack, were the principals in a lease signed the next day, April 6, 1803. This involved "so much of the following piece of land as will be necessary for the purpose of erecting an oil Mill Fulling Mill Cloathers Shop and Tainter bars and also a shop for cutting and heading nails with two hammers all on a flat of ground west of Samuel Bement's [blacksmith] shop in Tunbridge aforesaid between the road and branch also for a carding machine in the upper part of the oil mill..." Mack paid Curtis $40 for this lease of land, and was required to build the multi-purpose mill within one year and six months. Two years later (1805), Mack sold both the saw mill and the new oil mill and carding machine to Micah Barron for the amount of $5,000. The multi-purpose mill building apparently stood between the north side of the extant brick mill and the river, directly across Spring Road from the blacksmith shop; nothing now survives above ground of the building.

By a transaction in 1805, Elias Curtis sold outright to Elisha Pierce a lot "lying between Curtis's Mills so called and the bridge" [now Route 110]. This lot was the site of a tan house and tanyard along with a bark mill (the latter crushed bark into

an astringent solution for use in the tanning process). The tannery was apparently served by a separate raceway from the pond.

The final transaction in this series occurred April 25, 1805, when Elias Curtis sold his farm of about one hundred acres in Lot 67, including the grist mill, to Amos and Sarah Felton of Massachusetts for the amount of $3,000. (This conveyance encluded all of the leases described above.) By that time, Curtis was residing at Hartford in Windsor County, about 25 miles downstream along the White River where it joins the Connecticut River. He subsequently lived until 1827.

The Feltons retained possession until December 1821, when they sold to Jacob Celley. Several other transactions involving the mill, blacksmith, and related property occurred during the 1820s with Celley as a principal. He seems to have consolidated ownership of the various buildings, parcels, and water rights during the first half of the decade. Then between 1826 and 1830, he proceeded to subdivide in part and sell the land and buildings to other persons. Celley may have been involved in the construction of the extant brick mill building although its origin remains uncertain.

Several other buildings in Tunbridge village were constructed of brick during the period 1820-40. The nearest brickyard was located about one mile south of the village, and owned by Solomon Cushman. The bricks for the village buildings, including the grist mill, were undoubtedly made at that yard. Ownership of the mill passed in 1839 to another member of the Cushman family, Benjamin H., whose wife was the sister of Elias Curtis (Sr. or Jr. ?). The possibility exists that the brick mill was erected at that time although its appearance suggests an earlier date. Another of these brick buildings, a Cape Cod-type house standing diagonally across Spring Road from the mill at the intersection of the present Route 110, was constructed in 1836, notably late for its type; this house was occupied by an owner (Will Noble) of the mill during the early twentieth century.

The industrial enterprises around the First Branch cascades became the focus of the village that emerged here during the rapid development of Tunbridge township in the early 1800s. (The township's population increased from 487 in 1791 to 2003, its historical maximum, by 1820.) Eventually the village became known as the Market Village or simply the Market, reflecting the

commercial and industrial activities that were concentrated here. By the publication of Zadock Thompson's history and gazetteer of Vermont in 1842, the village was the largest of the three in Tunbridge township, "containing 1 meeting house [built in 1797], 2 stores, 1 tavern, 1 grist, 1 saw and 1 fulling mill, trip hammer &c." These served the basic needs of the overwhelmingly agrarian township.

Thompson notes that along the First Branch within the borders of Tunbridge are "several very good mill seats, which are already occupied." At that time, there were altogether in the township "2 grist 10 saw and 3 fulling mills, 2 carding machines, 4 stores, 1 tavern, 2 tanneries, 1 woollen factory, besides the usual mechanics." These enterprises were supplied directly from local sources with the grains, timber, wool, and skins, and other products needed for their operation. Thompson provides statistics for such production in 1840, illustrating the diversity of agriculture then being conducted in the township. The livestock population included 2,185 cattle, 8,890 sheep, 1,345 swine, and 376 horses. The principal crops were potatoes (67,705 bushels), oats (13,305), Indian corn (7,620), wheat (3,310), buckwheat (1,415), and rye (655) together with 3,430 tons of hay. The wool clip amounted to 18,905 pounds and the maple sugar output was 31,670 pounds.

An inset map of Tunbridge village appears on the wall map of Orange County published in 1858 by H. F. Walling. The village map records individual buildings and, in most cases, identifies the owners. Along the west side of Spring Road, there appear two separate symbols; the one closer to the river (and diagonally opposite the blacksmith shop shown on the east side of the road) is labeled "Grist Mill" while the one farther from the river is labeled "Saw Mill." This indicates strongly the existence of detached buildings rather than the present combination of original brick block (grist mill) and wood-framed addition (saw mill). Owing to the slope of the ground and the level of the required head race, the saw mill shown on the map must have stood close to the south side of the brick grist mill. The owner(s) of these mills are not identified but J. L. Hall then owned the blacksmith shop next to the bridge.

The Walling map shows that two other small industries existed a short distance upstream of the grist and saw mills to take advantage of the available water power or at least water supply. A tannery was situated on the same side of the river about half-

way between Spring Road and the road (now Route 110) north to Chelsea. (The present road along the north side of the river connecting Spring Road and the Chelsea road did not then exist.) A wheelwright shop was situated along the river.upstream of the Chelsea road bridge.

Partly in response to the economic activity generated by these small industries, the village itself had already expanded virtually to its historical limits along the single main street. A relatively high proportion of the buildings contained commercial enterprises providing various goods and services. Three enterprises - one store, one shop and one of unspecified type - were engaged in boots and shoes, an inexplicable anomaly given the small total number that also included a "sadler's" [sic] shop and a woodworking shop. Two stores - presumably selling general merchandise - and a hotel completed the commercial roster. A modest Congregational Church and two one-room brick schoolhouses served the religious and educational needs of the village.

A significant change of ownership in the grist and saw mills on Spring Road occurred in 1864. After being discharged from military service in the Civil War, Henry R. Hayward resisted the tide of emigration that was then flowing from Vermont to the Middle Western states. (The population of Tunbridge had declined to 1,811 in 1840, and further to 1,546 by 1860.) Instead, Hayward returned to his native Tunbridge, married Susan Farnham, and, together with Earl Cushman (a relative of his mother), acquired the mill property. Two years later, Cushman's interest was purchased by Aaron N. King, a prominent local businessman, banker, and landowner. In 1871, a longer-term partner, John M. Kibby, joined Hayward, and the firm's name became Hayward and Kibby; King retained his interest as an apparently silent partner.

The new partners soon began to make improvements in the mill. In September, 1871, they purchased three "Turbine water wheels Gearing Pulleys & Boxes" from the firm of Smith, Whitcomb, and Cook in Barre, Vt. The equipment cost in the range of $1,000; two promissory notes, for $597 and $400, are entered in the Tunbridge town records. The notes state that the turbines were for the "gristmill." Considering, however, that the grist mill proper would have needed only one or two turbines, the third was apparently purchased for the saw mill.

This purchase of turbines indicates that Hayward and Kibby undertook about the same time the major enlargement of the building to accommodate a new saw mill. The wood-framed addition was placed at ground level on the uphill (south) side of the brick block. The brick south wall was left in place to become the interior partition at the main floor level. The original south roof slope was removed and the half-log rafters were recycled into the higher south slope of a gable roof whose north slope extended upward in the plane of the original north slope to the new ridge, the equivalent of two stories higher than the original ridge.

A circular saw mill made by the Lane Manufacturing Co. of Montpelier, Vt. may have been installed in the addition upon its completion. The saw mill machinery now extant in the building was patented in 1864, and that patent was renewed in 1872, the latest year embossed in the metal. The following year, 1873, the corporate name was changed from Lane, Pitkin, and Brock to the Lane Manufacturing Co., the version of the name embossed on the machinery. Hayward and Kibby may have purchased the saw mill machinery not long after the change of name.

A "descriptive pamphlet" published by the Lane firm in 1873 describes the saw mill machinery and the several patented improvements incorporated in its design. Dennis Lane received four separate patents for his saw mill during the 1860s. The first was issued on July 9, 1861, to cover "improved Set Works for the Circular Saw Mill." The second was granted on January 12, 1864, for "improvements in the Saw Mill Carriage." Later the same year, a patent issued on September 6 applied to "improvements in the setting arrangement." The fourth patent, dated November 20, 1866, covered the friction feed. "Lane's Patent Improved Lever Set Single Circular Saw Mill with Patent Friction Feed," the full title used by the firm, became highly popular among mill owners in the northeastern United States during the 1860s and 1870s. The Lane firm had sold about five hundred of the saw mills by the publication of the 1873 pamphlet, and several of its pages are devoted to testimonials from satisfied purchasers.

The map of Tunbridge village in F. W. Beers' Orange County atlas published in 1877 indicates some of the changes brought about by Henry Hayward and his partners in the mill. A single symbol is labeled "S&G. Mill," in contrast to the separate symbols shown on the Walling map of 1858. Furthermore, Beers' symbol is

subdivided into north and south parts by an interior line that suggests the division between the original brick block and the wood-framed saw mill added by Hayward. The symbol also incorporates what appears to have been a smaller wing centered on the west facade. (Nothing more is known about the wing, and the mill building does not bear any discernible traces of its possible existence.) Immediately next to the northeast corner of the mill, the symbol for a barn or shed records the existence of the one-and-one-half-story building of that type that survived until the early 1980s. Across the road from the latter building, J. L. Hall continued to own the blacksmith shop as in 1858.

The Beers map shows that the other industrial and commercial enterprises in Tunbridge had also undergone major changes in the two decades since the Walling map was published. The tannery upstream of the blacksmith shop had become a shop of unspecified type owned by S. Noyes while the wheelwright shop farther upstream had been replaced by the Gay Brothers Woolen Factory, actually a small industry with some twenty-five employees. The Beers map identifies only three commercial enterprises in the village, those being two stores and a hotel. A. N. King & Son owned one of the stores; the same firm would acquire the grist and saw mill at the end of the century. The geographical extent of the village remained constant between 1858 and 1877, reflecting the continuing decline in the population of Tunbridge township from 1546 in 1860 to 1252 in 1880.

A new structure was constructed near the mill in 1883, and the lumber used in it was sawn by Hayward and Kibby. Replacing an open bridge with covered trusses, the new single-span bridge across the First Branch was entirely covered to protect both its multiple-kingpost trusses and plank deck. The gable-roofed bridge was erected by A. C. Adams at a cost of $532.93. The bill from Hayward and Kibby for 22,124 board feet of lumber sawn at the mill amounted to $226.40. (The Mill Covered Bridge was listed in the National Register on July 30, 1974.)

The firm of Hayward and Kibby continued to operate the grist and saw mill through the 1880s. (The silent partner, Aaron N. King, sold half of his interest to his son, Millard J., in 1882.) In his Orange County gazetteer and business directory published in 1888, Hamilton Child records that the firm was then producing annually about 300,000 [board] feet of rough lumber. That quantity was twice the amount generally being produced by the three saw mills elsewhere in Tunbridge township that Child lists.

Those mills were also situated along the First Branch and water-powered; unlike Hayward and Kibby's mill, however, two of the others produced shingles and/or did turning or planing in addition to sawing.

Logging and lumbering were important economic activities for nineteenth-century Vermont farmers. They were usually conducted during the winter when most other agricultural activities were suspended. The frozen ground and snow facilitated the transport of logs by horse-drawn sledge, and quantities of logs were delivered to the local saw mills. Much of the sawing was done during the spring when melting snow and rains provided the largest and most reliable volume of water for driving mill machinery.

Child does not give any statistics regarding the output of Hayward and Kibby's grist mill but it probably surpassed the single other grist mill listed in town. The typical small farms of the period each needed between two and three tons of grain to carry their livestock through the winter. By that point in time, John L. Hall had reached the age of 82 and was engaged in farming. He had sold the blacksmith shop three years earlier (1885) to Aaron N. King.

A remarkable photograph taken in the spring of 1890 from the then-treeless hill across the river from the village illustrates the physical extent of the saw mill operation. The entire sloping area between the mill and the village's main street was covered with logs and lumber. Apparently unloaded from the street, the logs were arranged in an elongated pile aligned with the rollway on the south side of the mill, through which they were moved to the saw carriage. Stacks of sawn lumber flanked the logs, placed there to dry prior to delivery.

Henry Hayward remained in the business until 1898, his thirty-fourth year of activity. On the last day of that year, Aaron and Millard King purchased Hayward's interest to become the sole owners of the mill property. The Kings proceeded to operate the business under the firm name of A. N. King & Son; a stencil of that name remains readily visible on an interior plastered wall of the grist mill's main floor. The King ownership continued for nearly two decades into the twentieth century. During part of that period, Will T. Noble of Tunbridge operated a wood-working shop on the second floor of the saw mill.

Following the death of Millard King in 1917, the administrator of his estate sold the consolidated mill property in 1920 to the partnership of Will Noble and Frank H. Hayward of Somerville, Massachusetts (a relative of Henry Hayward), who became the last commercial operators. Hayward and Noble, as the firm was known, paid the depressed price of $2,250 for "a saw-mill, a grist-mill, a barn westerly of the grist-mill, a storehouse used for storage of feed and grain, and a shed adjoining and northerly of the storehouse, together with the dam privilege and all rights in connecting [sic] therewith and all land used in connection with said mills..., and including all machinery and equipment now in or belonging to said mills. Also another piece of land just northerly of said mills on which stands the brick blacksmith shop, formerly known as the coal house, together with the water privilege in connection therewith and such equipment as pertain to said shop...." The contents of the mill included the wood-working shop where the firm subsequently made bull rakes and handles for other tools.

It seems probable that Hayward and Noble proceeded to make several significant changes especially in the means of powering the grist and saw mills. The extant Leffel Sampson turbine in the grist mill was patented in 1913, indicating that it was installed during the Hayward and Noble ownership. It apparently replaced an older turbine now half-buried in the basement that may have replaced a wheel. The S. Morgan Smith turbine that drives the saw mill may also have been installed by the Hayward and Noble firm. Complementing the hydromechanical power supplied by these turbines, the firm also installed a hydroelectrical generator in the building. The position of the generator and the use of the electricity are not known although the latter was probably for a low-voltage lighting system rather than for motors to drive machinery.

Hayward and Noble's accomplishments during the early years of their ownership were interrupted by a natural disaster that occurred in November, 1927. The greatest flood of this century struck Vermont the first week of that month and caused enormous damage. Like most other rivers in the state, the First Branch of the White River rampaged through its valley. At Tunbridge village, the log-crib dam and the headworks for the Hayward and Noble mill were destroyed. The buildings themselves and the adjacent covered bridge survived apparently intact.

Reconstruction of the dam and related hydraulic structures took place during the winter of 1927-28 in order to enable the mill to resume operation during the spring high water. A local contractor named Spaulding constructed a new dam and intake structure of concrete (despite the problems of pouring the material in cold weather), and the headrace canal was partly lined next to a new crown wall at Spring Road. The concrete conduit and steel penstock that deliver water to the two turbines in the basement of the mill building may have been built or repaired at the same time along with the concrete pressure cases for the turbines.

Barely a year after rebuilding from the disastrous flood, Hayward and Noble were confronted in 1929 by the onset of the national economic disaster, the Great Depression. The effect on their business, already dependent on a declining agricultural economy, must have become severe during the 1930s. Indicative of those financial problems, an extant Hayward and Noble billhead dated February 6, 1933, for the modest amount of $2.37 worth of grain bears the note, "Hold check until Thursday." The bill specifies three kinds of grain - provender (feed for horses), corn, and bran. The prices were only about one cent per pound, suggesting that the purchaser may have brought the grain to the mill and paid only the cost of the grinding. Hayward and Noble finally ceased operation about 1940 - when Tunbridge's population dwindled to 882 - thus ending nearly one and one-half centuries of milling activity at the First Branch cascades. (Other mills at North and South Tunbridge continued to operate until about 1960). Hayward and Noble relinquished possession of the mill property in 1943, selling it to George Towle.

The blacksmith shop had lost its original use probably during the late 1920s. During the Towle ownership, the shop also lost much of its historic character, being severely altered and converted to a house about 1950. The original main facade facing Spring Road was entirely rebuilt without an entrance, and the building was reoriented toward the river with the opposite facade being given twin entries and a broad porch.

The former blacksmith shop was subjected to another deleterious change in the late 1970s. The covered bridge was then raised about one and one-half feet to provide greater clearance for ice jams that occur occasionally in the river. At the same time, the surface of Spring Road approaching the bridge was raised to match the level of the portals. The latter involved the placing of

fill against the lower part of the building's west facade, resulting in a marked reduction of its exposed height and potential water problems on the portion now below grade.

Following other short-term owners of the mill property, Henry F. Joseph, a farrier and blacksmith from North Carolina, acquired it in 1978, complete with most of the historic machinery and equipment in the saw and grist mills. Joseph has subsequently maintained the buildings without visible alteration and has preserved the contents in place. Cracks in the brickwork of the grist mill that indicate settling in its stone foundation caused him in 1990 to undertake stabilization of the foundation. A reinforcing concrete wall was poured against the inside surface of the north and west sides, and some deteriorated structural timbers were replaced.

The foundation work is the prelude to a much more extensive project that will bring both revived industrial use of the building and its future rehabilitation. In January, 1991, Henry Joseph submitted an application to the Federal Energy Regulatory Commission for a permit to install a small hydroelectric generating unit at the site. The semi-automatic unit would generate 100 kilowatts on a run-of-the-river basis (instantaneous inflow equals instantaneous outflow). The electricity would be sold to the Central Vermont Public Service Corp., the electric utility serving the Tunbridge region. Joseph plans to use a portion of the revenue to rehabilitate the mill building and restore the mechanical equipment.

Installation of the hydroelectric generating equipment would require removal of part of the extant hydromechanical system that provides power for the grist mill as well as alteration of the headrace and the north tailrace. The dam and intake structure would receive minor repair of presently spalled concrete, the restoration of two-foot wood flashboards, and the installation of a fish passage for anadromous species as required by Federal regulations. A new steel penstock 4.5 feet in diameter would extend 187 feet in length from the present floodwall into the basement of the grist mill; it would be laid in the present headrace and covered with earth fill. A bifurcation beneath the building's front loading dock would supply the hydromechanical saw mill system that would remain in place.

The penstock would connect to a new double-regulated Kaplan turbine-generator that would replace the present grist mill

turbine and pressure case. The new generator would have a rating of 100 kilowatts under the gross head of 17.2 feet and the maximum hydraulic capacity of 115 cubic feet per second. A draft tube would discharge from the turbine into a widened north tailrace. Electric cables would extend from the generator to a transformer placed on a concrete pad next to the south side of the building, and then continue underground to the nearest utility pole, delivering 7200-volt, three-phase current to the distribution system.

The partial conversion from hydromechanical power to hydroelectric generation will have only minor visual effects on the historic mill building and its setting. The distinctive architectural qualities of the building will remain unaltered; they will continue to evoke strongly the character of both the early nineteenth-century brick grist mill and the latter nineteenth-century wood saw mill. Furthermore, the sale of electricity will provide revenue for a sympathetic rehabilitation of the presently under-maintained building and restoration of the milling machinery to operational condition. This will both preserve the building's historic fabric and enable the active interpretation of its historic industrial functions. The Hayward and Kibby Mill will thereby secure its status as the outstanding representative in Vermont of small water-powered, nineteenth-century mill buildings.

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BOUNDARY DESCRIPTION

The property being nominated consists of the Hayward and Kibby Mill, the former blacksmith shop, the dam across the First Branch of the White River, related hydraulic structures, and the lot of approximately 0.75 acre of land together with an adjoining stretch (about 0.5 acre) of the First Branch and the Mill Covered Bridge. The boundary begins at a Point A located at the northeast corner of the dam on the north bank of the First Branch; thence the boundary extends southerly along the upstream (east) face of the dam to a Point B located at the intersection of that face and the northeast property line of the mill property on the south bank of said river; thence the boundary turns easterly and follows said property line to a Point C located at the east corner of the mill property; thence the boundary turns southwesterly and follows the southeast property line of the mill property along the southeast side of the headrace canal and a southwestward extension of that line across the Spring Road right-of-way to a Point D located at the intersection of saidextension and the west edge of the Spring Road right-of-way; thence the boundary turns southerly and follows the west edge of said right-of-way, and then curves southwesterly along the northwest edge of the intersecting Route 110 right-of-way to a Point E located at the southwest corner of the mill property; thence the boundary turns northerly and follows the west property line of the mill property to its intersection with the southeast bank of the First Branch, and then continues northeasterly along the southeast bank of said river to a Point F located at its intersection with the west edge of the Spring Road right-of-way near the southwest corner of the Mill Covered Bridge; thence the boundary turns northerly and follows the west edge of said right-of-way to a Point G located at the northwest corner of said bridge's north abutment; thence the boundary turns easterly, crosses said right-of-way, and continues along the north bank of the First Branch to Point A, the point of beginning. The deeds to the mill property are recorded in Book 36, Pages 189 and 195-96 of the Tunbridge Land Records.

BOUNDARY JUSTIFICATION

The boundary encompasses the land and the river privilege that have been associated with the mill and the blacksmith shop or

their predecessors since the late eighteenth century. The Mill Covered Bridge is included owing to its position spanning the First Branch contiguous to the mill property and its historic association with the same.

The following information repeats for all photographs:

Hayward and Kibby Mill
Tunbridge, Vermont
Credit: Hugh H. Henry
Negative filed at Vermont Division for Historic Preservation

Photograph 1
Date: May 1991
Overview of mill and related structures along First Branch of White River; view looking southwest.

Photograph 2
Date: June 1991
Grist and saw mill (#1) - main (east) facade; view looking southwest.

Photograph 3
Date: June 1991
Grist and saw mill (#1) - north facade; view looking south.

Photograph 4
Date: June 1991
Grist and saw mill (#1) - north and west facades; view looking southeast.

Photograph 5
Date: May 1991
Grist and saw mill (#1) - south facade; view looking north.

Photograph 6
Date: June 1991
Grist mill interior showing millstone case and bolter cabinet; view looking west.

Photograph 7
Date: June 1991
Grist mill basement showing Leffel Sampson turbine; view looking east.

Photograph 8
Date: June 1991
Saw mill interior showing Lane saw mill machinery; view looking southwest.

Photograph 9
Date: June 1991
Saw mill wheel pit showing turbine pressure case; view looking east.

Photograph 10
Date: June 1991
Dam (#2) and mill pond; view looking east.

Photograph 11
Date: May 1991
Intake structure; view looking west.

Photograph 12
Date: June 1991
Headrace canal; view looking northeast.

Photograph 13
Date: June 1991
Shed foundation (#3); view looking southeast.

Photograph 14
Date: May 1991
Covered bridge (#5) - south portal; ex-Blacksmith shop (#4) - west and south facades; view looking north.

Photograph 15
Date: May 1991
ex-Blacksmith shop (#4) - south and east facades; view looking northwest.