

PERMIT TO RECONSTRUCT AN EXISTING HYDROPOWER PROJECT at SCRIBNER'S MILL

1. Nature of Activity

Reconstruction of an existing hydro-power project.

Scribner's Mill Preservation, Inc. is submitting this permit application to reestablish the authentic water driven operations at the historic 1847 Scribner sawmill, located on the Crooked River in the Town of Harrison. The restoration at Scribner's Mill is the only known site in North America, that is located on its original site, has original buildings, and has the potential to use its authentic power source for the operation of its original equipment. This is a new application which represent significant changes and should not be confused or compared with the 2007 permit application.

Our goals are: to preserve the mill's authenticity, to provide a museum quality interpretation of the social, economical, and political factors relating to the time and place of Scribner's Mill and to have it recognized as a site of national significance. Only by using water power can the mill provide an accurate educational experience for visitors while producing wood products economically, and in an environmentally sound way, for the restoration market. The income from the sale of these products will be used to maintain the mill's operation and provide funds for staff to manage the site.

To accomplish these goals Scribner's Mill Preservation is proposing to install a minimal dam (3') with a rock ramp nature-like fish passage system to reestablish water power for the mills 19th century equipment.

2. EXISTING ENVIRONMENT

The river data used in this application is from the "Flood Hazard Analyses, Crooked River Town of Harrison, Town of Otisfield." report. This 1975 study area begins 1,200 feet upstream of Route 117 and ends at Scribner's Mill. The river conditions during the 1975 study were highwater with a minimal breach of approximately 16' in width. This report is available at the Cumberland County Soil and Water Conservation District Office, Federal Building, Portland, Maine.

The Crooked River is approximately 49 miles long and has a drainage area of 107.5 square miles above the Scribner Mill site. It lies in the south-central portion of Oxford County and the north-central portion of Cumberland County. The Crooked River flows out of Songo Pond in a southerly direction until it merges with the Songo River and then flows into the Sabago Lake at the State Park. The Crooked River drops in elevation a total 388' and contains a mixture of rapids, riffles, deep pools, and slow stretches. Scribner's Mill is located approximately 21 miles north of the confluence with Songo River.

The soil composition at the project site is a deposit of glacial till over granite bedrock. The glacial till provides for river bed substrates ranging from exposed bedrock, sand, gravels, cobbles, rocks and boulders.

The small parcel on which the mill is located is in the Town of Harrison and has 145 feet of river front. (See Attachment A - Town of Harrison Tax Map 16, Lot 5) (Property Deed/ Title1) The mill is built on the edge of the river with a granite barrier dividing the river from the flume, penstock, wheel pit and tail race areas of the mill.

The riverbanks are quite steep, wooded and covered with dense vegetation.

Water flow figures, as provided by the Maine Department of Inland Fisheries and Wildlife are as follows:

Minimum seven day flow	24.7 cfs	
Mean annual	207 cfs	
Monthly average flow in cfs		
Jan. 135	May 440	Sept. 94
Feb. 134	June 177	Oct. 105
Mar. 252	July 94	Nov. 231
April 647	Aug 57	Dec. 235

Within the project boundaries, there is one small seasonal brook which enters the river just above the existing dam on the Otisfield side of the river.

3. Project Description:

A. Physical composition, dimensions, and general configurations of all project structures whether existing or proposed.

The mill's original infrastructure was constructed at Carsley's Rips in 1846-47. The granite dam was topped by a wooden cap and flash boards, was set at 336msl and held a 10' working head of water. This 10' head created an impoundment of 27.5 acres and extended up river approximately 2 miles. This head of water flooded an area in front of the Scribner Homestead to create what was known as the mill pond where the logs were stored prior to being hauled into the saw mill.

EXISTING

The remaining elements of the mill's infrastructure are as follows:

1. The Historic Saw Mill Structure- This is a rectangular two level structure totaling approximately 2,500 sq. ft. in size and includes the 1847 original structure, a west addition, ramp, and ell. A south addition is to be reconstructed in the future and will add another 625 sq. ft. to the mill. Its composition is of timber frame construction. (Attachments B & C - Mill Site Footprint & Granite Footings)

2. Granite Barrier - the original granite barrier separated the river from the tail race. It was significantly reinforced during the 1990's to defend the site from new hydraulic conditions created by the breach and the subsequent removal of the west dam.

3. Tail Race - The tailrace is used to expel water away from the water wheels. The tailrace leads out from under the south end of the mill, is bordered by a granite wall and the river barrier. It runs 155' at which time the water rejoins the river.

4. Dam Structure - The dam is located on a granite ledge just before a natural fall. The bridge and road are an integral part of the dam structure. The dam is divided into two sections, East and West with a bridge support pier separating them. The piers are granite crib works incased by concrete. The bridge is set at 340.6msl. (Attachments G1, 2, & 3 -

Dam Elevations - East, West, & Flume)

a. East section - this section of granite crib work abuts the east bank. Water flows over this section of the dam during high water events. This section will have its original wooden cap replaced to allow debris to pass over it without damaging the granite structure.

b. West section - The west side is adjacent to the barrier wall. It was breached in 1972 by MDIFW to facilitate salmon passage. Unfortunately, this rupture was done in such a manner that it made the mill and the remaining dam structure vulnerable to high water with ice flows during spring run off. It appears that this was done without consultation of a structural engineer. The easily predicted result of this negligent breach happened in 1977 when large blocks of ice crashed through the opening into the supporting column of the mill, causing the river side of the mill to collapse into the river. (Attachment E & F - Photographs of the breach and the collapsed mill) The ice also shattered the remaining portion of the breached West dam section. In 1979 the remains of the west dam were removed to make way for the reconstruction of the dam and the installation of a fishpassage system which was to be designed by IF&W staff engineer Clayton Grant. The promised design was never produced. It is the replacement of this section of dam with a nature-like rock ramp fishway which is the focal point of this permit application.

c. Road - The road on the west side of the bridge is an extension of the dam and was the southern boundary of the mill pond. With a lower head of water this area will not be flooded for use as a pond.

Existing Dam Dimensions:

Granite East Dam - 332msl, 36' in length

West dam - 28' opening

Flume - 21' opening

Earthen Road - 340msl, 166' in length

5. Miscellaneous Outbuildings - Although not directly relevant to this permit application, other original infrastructure currently in place includes the sawdust shed, blacksmith shop and the "long shed". Other original infrastructures located on the homestead property are the 1849 residence, wood shed, barn, chicken house, corn house and ice house. The homestead is listed on the National Register of Historic Places.

PROPOSED

The proposed elements of the mills infrastructure are as follows:

1. West dam section - This section will contain a minimal dam with an integrated Rock Ramp Nature-Like Fish Passage System - (Attachment H - Lakeside Engineering, Fish Passage2)

This permit application is for a nature-like rock ramp fishway which incorporates a seal core at its upstream end to create an impoundment set at 329msl (3'). This proposal is one (1) foot lower in height than what was previously requested. This lower height is made possible by adopting the next generation of water wheel technology instead of using the original flutter wheel design. The rock ramp will be 135' long at a 1.9% slope.

2. Log Insertion Area - The log insertion area will be located in the south east corner of the homestead property. It will be integrated into the bank starting at the west bridge

abutment running northward 30'. Scribner's Mill Preservation, Inc. holds a lease on the previous mill pond area and this use of the area is allowed under the lease. (Attachment J - Log Insertion Design) The main feature of the log insertion area will be a granite ramp for use in lowering logs into a small section of the river controlled by boom logs. The logs will then be winched from this location up a ramp and into the mill building with the use of the original 1847 haul-in wheel.

3. Flume - Water is fed to the hydro-mechanical works via the flume. The flume contains the mud sills, a trash rack, and the log haul-in ramp. The size of the chamber will be, 11' in height, 21' in width, and 40' in length. The flume is constructed of a wooden frame with double planking to create a water tight structure. The north, or up river entry of the flume, has stop logs which will be set for the operating head of water. [Water enters the flume by the weir effect and will not admit water unless river elevation is sufficiently above 329msl. This is to insure that there will be a constant flow of water through the fish passage system during periods of low water.] The up river stop log wall is part of a barrier which prevents debris and fish entry into the flume. It will include a trash rack and 1" screening. It is extremely important to prevent debris from entering the flume and blocking or damaging the water wheels. The trash rack is cleaned daily to remove debris especially leaves during the fall season. Additional stop logs can be added to close the flume for repairs.

4. Gates and Penstocks - there are three penstocks in the mill varying in length from 5' to 15'. Each is fed through a gate built into the southern flume wall and is designed to meet the requirements for the hydro-mechanical equipment they must feed. Materials to be used in their construction will be wooden timber and planks.

5. Hydro-mechanical power source - to operate the mill there will be three independent mechanical systems all located south of the flume wall which will be fed by dedicated penstocks. There is no interconnection between these systems. A detailed description of each system follows.

Cross Flow Water Wheel - this water wheel is a compromise from the original proposal. It is an integral part of the sash saw and carriage feed. When in operation, it works to operate the saw and to advance the log carriage forward simultaneously. This wheel operates during the cut phase of the saw. It is at idle while the log is being loaded, returned to its original position in preparation of its next cut, or adjusted for the cut width on the carriage. This wheel intermittently pulls approximately 34cfs of water.

The proposed lower head of water will require that the design of the water wheel be as efficient as possible to utilize the maximum potential of the fall or velocity of the water. The improved design of the wheel will use curved blades as opposed to straight paddles as in the flutter wheel design. The closer tolerances in this improved design allows the wheel to be lengthened from 5' to 9'. This upgrade in technology is an acceptable compromise resulting in a one foot reduction in impoundment elevation.

Despite the fact that this proposal represents a deviation from the exact technology original to this site, this compromise will still allow an authentic operation of a 19th century water powered sawmill.

Tub wheel - This tub wheel is integral with a shaft which turns a "haul-in" wheel which is used to bring logs up a ramp and into the mill. It was one of the mill's original piece of equipment and was used throughout the mill's operating history from 1847 to 1962.

Wooden turbine - This wheel is to be used to operate the line shaft during high water periods. The line shaft equipment will include the cut-off saw or "Great Circular Dagon". This piece of equipment was used throughout the mill's operation and was used to cut bolts for stock in manufacturing products such as shingles, peavey handles, etc.

6. Tailrace and River Barrier Alterations - To maximize the reduction of impoundment

elevation two bulges in the tailrace bed rock, (which is approximately 15 cubic yards of material), must be removed. An extension of the granite barrier by 25' in length will allow the expelled water from the water wheel to flow out the tail race without resistance. (Attachment D - Down River Profile and Tailrace)

7. Impoundment - "By constructing a more efficient wheel of a proper size and putting the water on the wheel in a proper manner, it is possible to operate the sash saw with a 5' head." (Oliver Evans reference for saw mill's with low heads.)

To achieve a five foot head, a 1.9% nature-like rock ramp fishway would be set at 329msl creating a 3' impoundment. By adding the natural fall in the bedrock under the mill of approximately 2', and the alteration of the tail race, a 5' head of water is possible.

Discussion:

The upper limit of the proposed impoundment, where it breaks to 0, will be slightly above cross section (CS) 246 giving a distance of 1,595 feet (.3 mile) from the proposed rock ramp at CS 249. (Attachment K - River Cross Sections) (Attachment L-Woodlot Alternatives Fisheries Report3) In the Woodlot report, Appendix A Table 1 "Crooked River Habitat Reaches and Characteristics" and Map Figure 3, this area includes reaches B, C, and the majority of reach D.

This is a reduction of back-watering, as proposed in the previous application, of 4220', or over .8 of a mile, and is well below the confluence of Russell Brook.

Referring to Attachment K, pg. 2 of 6, this rise of water level in the impoundment will be 2' 6". The discrepancy between the three foot dam and the 2' 6" rise in water level is accounted for by the dam being constructed in a 6" depression in the bedrock.

The acreage of the river within the project area will be approximately 2.6 acres or 113,256 sq. ft.. (Attachment: K, Cross Sections).

B. Normal maximum surface area and elevation, gross storage capacity, and usable storage capacity of any project impoundments, whether existing or proposed.

	Existing	Proposed
Maximum Surface Area -	2.2 acres	2.6 acres
Existing Typical Elevation -	328.4msl	329msl
Gross storage capacity -		3.38 acre ft.

Usable storage capacity - The usable storage capacity is run-of-the-river. Once the pondage has been established the run of the river will be uninterrupted.

C. The number, type, and voltage of any primary project turbines or generators. N/A

D. The number, length and voltage of any primary project transmission lines. N/A

4. Construction Activities - Provide a detailed construction schedule and a description of all proposed construction activities.

Phase I - Log Insertion Area, Skeletal Flume Frame, and Tailrace Modification

The work begins with the construction of a coffer dam to isolate this area from the river.

Dredged/excavated materials: Starting from the down river (south) end of the flume area all loose material will be removed leaving clear ledge under the mud sill footprints. The material is comprised of loose cobble and rocks with pockets of coarse sand and gravel. All unused material around the mud sills will be transported Northward and will be removed from the site as part of the bank excavation to create the log insertion area. Total volume is approximately 45 cubic yards of material to be removed.. All materials (rock, stone and

gravel) will be removed from the site.

METHOD OF WORK FOR SEDIMENT CONTROL

Construction in the log insertion area and tailrace.

1. The use of natural eddies in conjunction with barriers, will create small pools of still water in which all silt will be contained.
2. The barrier used for containment will consist of wooden cofferdams separating the work area from the river. A silt fence backed with hay bales, placed end to end, will sit directly upon the exposed granite ledges.
3. Construction will occur during low water conditions.
4. Upon completion of the stone masonry work, all gravel, sand, and silt will be removed from within the barrier leaving the exposed ledge.
5. The final step will be the removal of the barrier.

Once the site has been prepared for construction by the placement of the coffer dam, silt control measures and removal of unwanted materials, the flume and log insertions will proceed.

Flume - The mud sills are the starting place for the flume construction. They are shimmed to level on the bedrock and pinned in location. The remainder of the structure is constructed on top of the mud sills providing support for the flume walls as well as the main mill structure above. It is this need for structural support of the mill building that has led DEP to give permission for the construction of this skeletal structure regardless of permit approval.

Log Insertion Area

Location is in the southeast corner of the homestead property. - (Attachment J - Log Insertion Design).

Dimensions - 30' x 22'

The bank exposed by preparatory excavation will be reshaped and protected by the use of geotextile material, covered with flat faced granite slabs fitted to facilitate the rolling of logs into the log haul-in ramp area. The granite is presently on site. The granite will be bedded into pea stone or $\frac{3}{4}$ " stone to compensate for varying granite thickness. The slope of the granite ramp will be between 40 and 50 degrees. This bank alteration will require little or no maintenance.

Construction dates - Construction will occur during the summer months when the water level is traditionally low.

Tailrace and Barrier - The tail race, which begins as the water exits the wheel pit (323.6), must slope to an end elevation of 322msl. (Attachment D - Down River Profile and Tailrace)

The present 155' tail race has an acceptable downward slope except for two areas where the bed rock bulges up. These two bulges are 6" and 18" in height. Since the flutter wheel is 9' in width, the channel in the tail race need not be greater than ten feet. The tail race is also cluttered with large stones and debris which must be removed to prevent opposition of the water as it exits the mill wheels.

Location - The tail race is located at the southern end of the mill and is separated from the river by a granite barrier. At the end of the barrier there is a natural drop back toward the tail race which causes a back flow of water into the tail race. To avoid this back flow, the barrier will need to be extended 25'. This will allow the water from the tail race to join the river without opposition.

Data for Attachment D : Elevations for this chart, were taken from a rough survey of the tail race to a point 180' down river from the flutter wheel location. The channel width will be

cleared to 10'.

Chart scale: Length = 1/4 inch = 10'

Height = 1/4 inch = 6" Note that this scale creates a distorted view of the tail race
All volume figures are in cubic yards.

The minimum amount of material to be removed/excavated is approximately 15 cubic yards. Note: Scribner's Mill reserves the right to take additional excavation if removal conditions of the bed rock are favorable.

All work which requires mechanical equipment will be operated from the bank. The bulges in the bed rock are fractured and should be able to be removed without blasting. The stone, removed from the tailrace, will be used to extend the barrier island.

Construction dates - Work will be done at the same time as the flume and log insertion area.

Phase II - Construction of the Nature-like Rock Ramp Fish Passage System.

Please refer to Fish Passage Report prepared by Lakeside Engineering, Inc. (Attachment H)

The base dimension for a 1.9% slope ramp, will be 28' in width and 135' in length. Its effective height will be 329msl.

Location - The portion of the dam to be reconstructed is located between the two center bridge piers.

By using the Rock Ramp design the ramp itself creates the dam with the utilization of a seal core barrier to provide an elevation of 329msl.

Water will be excluded from the construction area by the installation of the steel clad wooden seal core. The area of construction is on exposed ledge, so there will be no soil disturbance. A silt barrier will be put in place using filter fabric backed by hay bales running around the project area to the existing barrier island. This will create a stagnant pool in which all silt will be trapped as the rock ramp is being constructed. All silt will be removed from within the barrier before its removal.

Materials to be excavated - The area in which the dam is to be reconstructed is on bedrock. There will be no excavation or dredging to remove materials during this phase. All excavation will be limited to the importation and installation of the material components of the nature-like rock ramp fishway (boulders, rock, and gravel). All materials will be transported across the tailrace using a temporary bridge.

Construction dates - Within two to three years of receiving permit approval and with favorable river conditions.

The completion of Phase II will be the installation of the flume wall planking to allow normal run of the river.

Phase III - Hydro-mechanical Equipment - Installation will occur above the sills and will not create erosion or sedimentation.

Construction dates - Once all construction in the river is completed.

5. Project Operation

A. The mode of project operation for the hydro-mechanical equipment will be run-of-the-river.

B. Not applicable - There are no plans to produce energy except for that used to operate the antique mill machinery.

C. Estimate of minimum, mean, and maximum flows and the flow duration curve. (Attachment O - Water Flowage and Flow Duration Curve Summary4)

D. The maximum hydraulic capacities is in April at 647cfs. The minimum is in August at 57cfs. The mean is 207 cfs.

To determine the CFS of water required to operate Scribner's Mill, the 1836 Oliver Evans 9th edition was referenced. The gate size and head requirements for the hydro-mechanical system will require 34 cfs of water at a minimum head of 5 ft. This head is calculated from the top of the impoundment to the center of the axle. With the total diameter of the cross flow wheel being 2.6 feet, a minimum of a 5' fall is required.

The mathematical formula used for calculating cfs is taken from "Rodney Hunt Water and Sewage Control Equipment." Q (Quantity) = C (Coefficient of discharge .70) x A (area of opening in sq. ft.) x Square root of $2g(32.2 \text{ fps}) h$ (head in feet).

Water flows needed to operate the mill during low water periods. Based on the Crooked river flow data, it will only be during extreme drought conditions (when the flow becomes less than 54cfs) that operation of the mill will have to be scaled back or suspended to maintain adequate cfs over the fish-passage system. The mill would operate only for brief demonstrations if there is enough water in the flume. This suspension of operation is common at all water powered mills and is a condition which was historically encountered at the historic Scribner Mill site.

E. The power generated by the head of water is used to operate the historic 1847 Scribner saw mill as a working saw mill museum open to the public. To produce self sustaining funds, it will manufacture specialty wood products for the restoration market. Research has identified strong markets for this type of product in the restoration of historic sites. Its operations will be six days a week for a six month period (May through October).

Note: This operating schedule will not be possible with the head box water pumped alternative. The cost of operation using this alternative will erode the value of product production.

6. Project Plans

A. Overhead Views

Attachment B - Mill Footprint
Attachment C - Granite Footings
Attachment J - Log Insertion Design
Attachment K1 - Impoundment Area
Attachment S - Mill Site
Attachment Q - Project Boundaries

B. Elevations

Attachment G1 - Dam Elevations - East Dam
Attachment G2 - West Dam
Attachment G3 - Flume

C. Profiles

Attachment O - Water Flowage and Flow Duration Curve Summary
Attachment K - River Profile and Flood Data, pgs. 1& 2
Attachment D - Down River Profile and Tailrace

D. Sections
Attachment K - River Cross Section, pgs. 3 - 6

7. Project Maps

- A. Attachment P - USGS Topographical Map, Casco, Maine
- B. Attachment A - Town of Harrison Tax Map #16, Lot 5

8. Title, Right or Interest - On file at MDEP

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Section II

9. Financial Capability - Title 38, 636, Approval Criteria 1

Scribner's Mill Preservation, Inc. is a not-for-profit 501 (c) (3) public benefit corporation which relies on membership, donations, fund raising, and grants. The restoration of the mill to date has been accomplished, for the most part, through donations of materials and with staff labor. A considerable portion of the work required as outlined in this application will continue to be accomplished with materials on hand, such as granite, timbers, and rock, as well as with staff labor.

The heavy equipment needed to handle materials is on hand from organization members. Scribner's Mill has its own crane.

Scribner's Mill Preservation will be financing this work through fund raising and private grants. This budget reflects a nature-like rock ramp fishway set at 329msl.

(Attachment - O - Scribner's Mill 2008 - 09 Financial Report)

MDEP, has on file, a video produced by LRTV Bridgton, which chronicles the raising of the mill in 2002. It includes the volunteer force, donation of materials and services which made this stage of the restoration project possible. This has been a grass root project that has caused an up swelling of support from many sources.

Budget

Phases of Work:

Phase I - Log Insertion Area

Labor & Excavation	\$3,600
Materials	\$400
Tailrace & Barrier	
Labor & Machinery	\$5,200
Materials	\$350

Phase II - Dam and Fish Passage System

Seal Core	
Labor & Machinery	\$2,200
Materials	\$1,245
Pre-Formed Concrete Wall	
Labor & Machinery	\$6,400
Materials	\$2,680

1.9% Rock Ramp		
Labor & Machinery		\$12,000
Materials	\$5,000	
Stabilizer Beam		
Labor & Machinery		\$900
Materials	\$800	
Bridge to access site		
Labor & Machinery		\$500
Materials	\$1,500	
Misc	\$5,000	
Initial maintenance escrow fund		\$5,000
Installation Consultant		\$10,000
 Total Budget		 \$62,775

Scribner's Mill Preservation will be solely responsible for the financing of this project. There will be no cost to the public except for voluntary contributions.

10. Technical Ability - Title 38, 636, Approval Criteria 1 - sub category

A. Applicant's prior experience and/or appropriate training related to the nature of the proposed activity.

Scott Hatch - Associates Degree in Forestry, owns and operates a barn restoration business specializing in the restoration of timber framed barns including repair of stone foundations and structural framing. He has been involved in the reconstruction of the mill structure, long shed, blacksmith shop, the installation of the granite barrier wall, and silt basins. He has previous experience with forestry management and landscaping.

In addition, Scribner's Mill Preservation has on its board of trustees or as consultants the following types of professional expertise:

Engineer - Gerald Smith, Jon Truebe - Owner, Lakeside Engineering, Inc.
 Lumbermen/logger - Barry Sturdivant, Dale Scribner
 Timber Framers - Ed Somers, Scott Hatch
 Master Woodworker - John Hatch, Matt Charlevois, Ed Somers
 Hydro-Mechanical Specialist - Ralph Hatt,
 Restoration Specialist - John Hatch, Marilyn Hatch, Scott Hatch, Ed Somers, Matt Charlebois
 Sawyer - Barry Sturdivant
 Administrator - Roy Clark, Marilyn Hatch, Cynthia Abbott
 Equipment/Heavy Machine Operators - Scott Hatch, Barry Sturdivant, Ralph Hatt
 Stone workers - Scott Hatch
 Machinist - Richard Jackson

B. Description of the qualifications of personnel who would be employed to provide technical oversight of the project:

Steven L. Shepard, Certified Fisheries Professional, Aquatic Science Associates, Inc. Has experience with the installation of nature-like fish passage systems.

(Attachment - U - Resume)

11. Public Safety - Title 38, 636, Approval Criteria 2

The majority of the project's work will occur out of the normal flow of the general public, except for the intermittent use of equipment to move materials.

The work area will be cordoned off and hazard signs placed for each phase of the work to warn onlookers, fishermen and recreational users of the river. An upstream take out area with directional signs and a portage path will be available for canoeists.

To minimize water hazards, all work in the river will take place during low water periods.

12. Public Benefits: Title 38, 636, Approval Criteria 3

The project will result in significant economic benefits to the public, including, but not limited to, creation of employment opportunities for workers of the State. It will also engender historical, social and educational benefits.

Benefits described by Scribner's Mill Preservation are real.

Premise: It is tempting for review personnel and opponents of Scribner's Mill Preservation (SMP) to consider our benefits of \$409,000 as not being real as defined by the statute. "To meet this criteria, the applicant must demonstrate the benefits claimed from the proposed project are real, in that these benefits would not result but for the project." It is easy to assume, that because some of the benefits currently exist, that these benefits would continue if the project is not permitted. What is not considered when making these assumptions is that the current benefit is tied to a knowledge of the past with a vision for the future. If the future envisioned by the volunteers at Scribner's Mill is unattainable due to a failure to receive a permit, our current existing benefits will be placed at risk.

The volunteers working to restore Scribner's Mill bring specific skill sets to the restoration project. The inspiration driving their volunteerism is an opportunity to apply their skills while creating a special representation of early hydro-mechanical technology. Our volunteers consider it an honor to expend their energy and resources working on the last and only opportunity to complete a restoration of this magnitude, scale and importance.

For three reasons, failure to receive a permit to proceed as proposed will place our current benefits at risk.

1. Any and all alternatives require skill sets above and beyond those brought to the project by our volunteers. Their volunteerism will be rendered useless in implementing pumping strategies or other alternatives.

2. Motivation to proceed will be compromised if our volunteers are forced to create a false representation of the historic hydro-mechanical system. A direct comparison would be to force an automobile restoration expert to use Ford Pinto parts while restoring a classic Thunderbird.

Given this circumstance, that restoration specialist would likely abandon the Thunderbird to seek a more inspiring project.

3. Only with low cost hydro-power can the production of restoration grade materials be profitable providing for financial stability.

Conclusion: SMP has been able to maintain its current level of public benefits and its volunteer base due to a specific vision for the future. If this vision is denied, along with this permit, our ability to sustain existing benefits will be lost.

In consultation with a number of sources, including but not limited to the Smithsonian and the National Historic Trust, it was determined that the cash value of Scribner's Mill's role as the last site in North America retaining all four defining characteristics is incalculable. Therefore, the historic and social value can only be described as priceless. It can also be said that the Sebago Lake fishery has a regional historic and social value.

The only place where the relative social values of these two priceless resources can be directly compared is in the Maine Department of Tourism statistics.

Request for information on museums ranked #8 as compared to information request for fishing which ranked 18. Therefore, it cannot be said that the unquantifiable social value of the fishery exceeds the unquantifiable social value of the historic sawmill museum. This leaves only economic benefits and cost that have quantifiable weights or values left for comparison in a cost benefit analysis. (Attachment V - Tourism Documentation)

A. Production of specialty wood products.

It should be remembered that the intent of the mill is to become a production facility, as well as a working saw mill museum and an educational facility. The production plan is for the mill to pay its own way and to contribute to the economy of the local area and State.

Restoration quality wood products:

The values shown below represent minimal production for demonstration purposes during for low flow mid summer months. Significantly higher production will take place during spring and fall high flow periods.

Sash sawn lumber: It is expected that the mill with a water powered sash saw could produce about 8 boards each demonstration day. With dedicated production volume being significantly higher. SMP has verification from restoration specialists and State Historic Preservation personnel that this specialty lumber would be in demand for use in restoration projects. Sash sawn lumber simply is not available. The selling price of a 1 x12 inch wide pine board 10 feet long today is \$36.95. (Source Home Depot) A 16 inch wide board 16 feet long simply is not available other than by special order. Using the market price above, Scribner's Mill could produce as many as 30 sash sawn boards each week and sell them for \$74 each. Over 20 weeks the market value of this one type of specialized lumber would be: $30 \times 20 \times \$74 = \$44,400$ + State tax of \$2,220.

The demand is even greater for sash sawn timbers. Cost would vary on size and thickness and would be double the cost of standard lumber materials. A rough conservative estimate of possible income could range from: \$80,000 to \$100,000 + State tax of \$4,000 to \$5,000.

Barrels: In August, 2008, over \$700 was realized from barrel making. A barrel head, stave or hoop does not sell by itself, but when all the components are put together, especially with the help of the visitor to the mill, a valuable commodity as well as an educational experience is created. It is conservatively estimated that eventually the mill could make and sell 500 barrels each operating season. 500 barrels @ \$40 each for sales of \$20,000 + State tax of \$1,000

Shingles: Pricing from Home Depot for white cedar shingles was from \$23 to \$42 depending on the quality. Scribner's Mill has recently received an inquiry from the State of NH for pine shingles for use in their restoration projects. It is estimated that the mill could produce and sell an average of ten bundles a week during a 24 week period. 10 x 24 @ \$45 a bundle for annual sales of \$10,800 + State tax of \$520.

Clapboards: A clapboard saw cuts clapboards radially, sometimes referred to as quarter sawn and produces a very desirable clapboard for siding on houses. The clapboards are very durable and weather very slowly. They are in great demand and are very difficult to find. Donnell's Clapboard Mill in Sedgewick, Maine has been producing these clapboards for over thirty years and he sells all he can make. His customers all come to him - no advertising or promoting. He has always worked alone and never became a production mill. He prices a

job based on linear footage - \$1.05 for 4 1/2", \$1.25 for 5 1/2" and \$1.50 for 6". Prices are for premium grade - no knots and no splits. He offers a lower grade priced about 10% less.

This is an excellent potential market for Scribner's Mill and it is not unreasonable that we could sell all that can be produce. The annual sale of clapboards could approach \$44,800 + State tax of \$2,240.

Estimated total annual income from sale of wood products = \$200,000 + State tax of \$10,000.

B. Educational and internship opportunities:

This is an income benefit to Scribner's Mill Preservation with a set fee of \$250 per class visit. The fees collected are used in part to pay for our expenses, and reimburse artisans and mill workers for their time in providing this educational experience. College students can broaden their educational experience with a semester spent at Scribner's Mill. In the spring of 2009, eight classes were hosted at the mill netting \$2,000. As the restoration continues and the mill becomes fully operational this educational potential will increase as well as for college/forestry student internships. The value of the educational experience provided to tourist and residents of Maine can not be directly quantified, however, it is a real benefit that will be provided directly to the public.

20 class/year @ \$250 = \$5,000

C. Enhanced tourist attraction:

Events: "Back to the Past at Scribner's Mill": In August, 2008 at the two-day Back to the Past Event at Scribner's Mill, over 700 people paid to attend the Event plus over an additional 100 were on the site as volunteers, exhibitors, etc. Gross sales for this event were \$7,941 and expenses were approximately \$4,837. Maine Tourism provided the figure of \$325/day/member of a party staying for multiple days and visiting multiple attractions. If even if one tenth of the attendees came in from afar the economy of the area would benefit by an additional $70 \times \$325 = \$22,750$.

Scribner's Mill is a non-profit entity, and all profits generated are put back into the improvement and reconstruction of the facility. It has been this way for years, and will undoubtedly be this way in the foreseeable future. Some of the profits from this year's event were used to purchase new roofing for the long shed, putting this money back into the local economy.

Profit generated spent for restoration \$3,104

Gross sales reinvested into the community \$4,837

Out of area attendee economic impact \$22,750

Total public economic impact per event - \$30,691

Furthermore, if during regular operating hours, 5 persons meeting this classification visiting Scribner's Mill per week this would generate an additional \$39,000. It can also be stated that if 20 people come to Maine specifically to visit Scribner's Mill and they stay for a week, visiting other sites while in the area, it is an addition \$45,500 of economic community value. This tourism benefit has been verified by Phil Savignano, Senior Tourism Officer, Maine office of Tourism. (Attachment V - E-letter from Senior Tourism Officer) Maine Department of Tourism has certified that "The "Enhanced tourist attraction" provides a fair assessment of tourism economic impact from the operation of Scribner's Mill. Potential visitorship of the facility is not overstated and the average visitor expenditures are in line with the demographics of a cultural tourist."

D. Benefit by the creation of employment opportunities.

Personnel Salaries:

Staff stipends: Scribner's Mill is being restored primarily with all volunteer labor. Once fully

restored SMPI will require a paid Executive Director supported by volunteer labor. It is anticipated that the facility will be sufficiently lucrative that key volunteers, probably retired craftsmen, can be paid a seasonal stipend of \$5,000 to \$10,000 each. Using the most conservative numbers:

Director - Full time, beginning salary per year. - \$35,000 to \$40,000

This salary range came from several not-for-profit organizations who have full time directors.

Sawyer - Seasonal per year- \$24,000 to \$27,000

This is calculated on a salary range provided by an industrial sawmill and is for a six month operating season.

Minimum out lay in salaries = \$79,000 + associated State and Federal income tax.

Estimated total annual income from sale of wood products = \$200,000

State of Maine income tax = \$10,000

Total income from educational benefits = \$5,000

Total tourism value = \$84,500

Total public economic impact per event = \$30,691

Total income benefit to Scribner's Mill (a public benefit corporation) and the Maine's Tourism economy = \$320,191

Creation of employment opportunities for the workers of the State = \$79,000

Total economic benefit for the public = \$409,191

Compared to a total value lost to the fishery of \$25.66 or .2 % of river to lake recruitment value , this economic benefit more than offsets any cumulative fishery loss.1 (See Water Quality Section)

In conclusion: The use of hydro-mechanical power allows all of our economic benefits to be felt by the public and is the only way to maintain an authentic representation of the mill site with all four of its historical criteria intact.

Is located on its original mill site,

Retains original mill buildings,

Has its original 1847 mill equipment, and

Has the potential to be operated by its original source of power directed to the machinery by the original means.

Public Benefit: This proposal makes Scribner's Mill self reliant. To consider an alternative which would limit capacity of production due to the cost factor created by ongoing purchase of fuel, increased maintenance, and the requirement for additional power sources for numerous independent mechanical systems is not reasonable.

The above benefits are in fact real and not achievable with the alternative of pumping water. All proposals for pumping have been limited in scope to the needs of the sash saw. At no time in our operating season will we be able to pump sufficient water to run the sash saw and line shafting simultaneously. Pumping will eliminate potential increases in production that could be achieved during high flow periods with the nature-like rock ramp fishway. To increase the capacity of a pump system would require additional pumps or a separate diesel power supply that would be dedicated solely to the line shafting.

Cost	Benefit
Fishery \$25.66	Public benefit \$409,000

(Reference Section 20, Fish and Wildlife Resources)

Cost benefit ratio - \$1 loss to the public = \$15,939 in public benefit. This cost benefit ratio demonstrates a significant benefit as described by statute.

Is Scribner's Mill permit application in the spirit of the Maine Rivers Policy? "Title 12, 402, Declaration of Policy: In its role as public trustee of the public waters, the legislature declares that the well being of the citizens of this State depends on striking a carefully considered and well reasoned balance among the competing uses of State's rivers and streams. Further, the legislature declares that such a balance shall:

1. Restoration of water. Restore waters to a condition clean enough to allow fishing and swimming in all our rivers and streams; Scribner's Mill will have no cost or benefit and is therefore neutral on achieving the legislature's policy.

2. Revitalization of water fronts. Revitalize water fronts and ports; Scribner's Mill is a historic waterfront that will be directly revitalized by issuance of this permit and is therefore a benefit to achieving the legislature's policy.

3. Maintenance of scenic beauty. Maintain, even in areas where development occurs, the scenic beauty and character of our rivers; Scribner's Mill is arguably the most photographed and painted site on the Crooked River. Issuance of this permit will guarantee maintenance of scenic beauty and is therefore a benefit to achieving the legislature's policy.

4. Interest of riparian owners. Recognize and respect the rightful interest of riparian owners; Scribner's Mill is a riparian owner and an issuance of this permit is therefore a benefit to achieving the legislature's policy.

5. Increase hydroelectric power. Increase the hydroelectric power available to replace foreign oil in the State; Issuance of this permit will eliminate the need for 3,600 gallons of foreign oil needed in the alternative of pumping water into a headbox, and therefore a benefit to achieving the legislature's policy.

6. Hydropower development. Streamline procedures to facilitate hydropower development under reasoned environmental, technical and public safety constraints; This permit is reasonable from an environmental and technical standpoint and poses no public safety constraints it is therefore a benefit to achieving the legislature's policy.

7. Fisheries. Restore anadromous fisheries and improve the productivity of inland fisheries; The mitigations proposed by Scribner's Mill within this permit application will more than offset the impact on the fishery, therefore, permit issuance will be no less than neutral in achieving the legislature's policy.

8. Recreation. Expand the opportunities for outdoor recreation; Scribner's Mill will have no impact on tradition outdoor recreation, the museum in itself will be a recreational asset and those persons visiting Scribner's Mill will be brought into proximity with the traditional outdoor recreational opportunities adjacent to the mill site. Therefore, permit issuance will be a benefit to achieving the legislature's policy.

9. Outstanding river stretches. Scribner's Mill is not on the list of outstanding river stretches subject to special protection under the law, therefore, issuance of this permit will be neutral to achieving the legislature's policy.

While issuance of this permit may be contradictory to the MDIFW's policy, as stated in their Fishery Management Plan, the legislature's policy takes precedent over agency policy and issuance of this permit is a benefit to legislative policy in six of nine categories while remaining neutral on the other three.

13. Traffic Movement (During construction)

A. The only vehicle access is by a narrow two lane unpaved road in the towns of Harrison and Otisfield. Both towns own the one lane bridge which crosses over the Crooked River and are responsible for road maintenance from the bridge to Town paved roads.

B. There will be no impact to Scribner Mill Rd. except minor traffic delays might occur during the movement of materials and equipment.

C. No appreciable change in volume or type of traffic is anticipated through this site which is at present sporadic.

14. LURC Zoning - Not applicable.

15. Environmental Mitigation: The applicant has made reasonable provisions to realize the environmental benefits of the project if any and to mitigate its adverse environmental impacts.

To realize the environmental benefits of the project

Scribner's Mill will be installing a nature-like rock ramp fishway which will improve juvenile fish passage over existing conditions.

The proposed rock ramp has been designed for a 329msl impoundment. It will be 135' long at a 1.9% slope. Modeling shows its design will pass adult fish 100% and 3" parr 36.4% of possible water flow conditions. However, due to factors not taken into account by the modeling, fish passage of parr will exceed the existing 45% passage rate.

Note: Mr. Truebe's testimony that factors not taken in to account by the modeling will improve passage results has now been corroborated by other experts who share the same opinion and a case study has been provided. (Attachment H - Lakeside Engineering, Fish Passage2) (Attachment I- GEI Report pg. 3 & 4) (Attachment M - Aquatic Science Associates, Inc. Report)

To mitigate any adverse environment impacts on the Crooked River and the Fishery Scribner's Mill Preservation proposes the following:

Reducing the impoundment level from the previous proposal of 4' to a 3' (329msl) needed to provide sufficient "head" to operate the historic sawmill equipment with a second generation technology water wheel;

Meet minimum flow requirements for fish passage at all times;

Creating nursery habitat suitable for fry and parr salmon within the rock ramp system.

Total habitat created 1,350 sq. ft. This habitat will be created in an area of exposed ledge with little or no current habitat value;

Constructing the mill intake to provide protection for fish during downstream migration;

Controlling erosion and sedimentation during construction;

Controlling the release of bark, sawdust, sand and soil during sawmill operation;

Setting up and adding to an escrow account to a set amount to preserve and maintain the rock ramp fishway over the life of the project. This escrow fund will be adequate to remove the rock ramp if the mill ceases operation. The initial escrow amount will be \$5000 and will

be added to on an annual basses.

To minimize the effects of warmer water temperatures in the impoundment during the summer, the un-forested west bank of the impoundment will be managed to encourage shade trees. This technique of leaving a buffer zone next to the river has proven beneficial in maintaining lower water temperatures and the health of the water way.

Scribner's Mill Preservation is in the process of constructing and maintaining siltation basins to control sedimentation into the river from the public roads in and around the mill site;

Scribner's Mill Preservation is willing to compensate for any real loss in natural recruitment to the fishery based on factual data. This mitigation will be implemented through the purchase of hatchery raised smolt for release into Sebago Lake. Scribner's Mill Preservation welcomes IF&W's input as to the appropriate ratio of hatchery to natural smolt based on their relative value to the people.

Scribner's Mill Preservation is willing to participate in fish census and research projects;

Scribner's Mill is willing to provide support for any effort to improve fish passage at Bolsters Mills and or Edes Falls. Note: Mr. Shepherd, in his report (Attachment N) pg. 2 & 3, states that he visited the Bolsters Mills dam and elaborates on its design as "an artificial passage structure". It was his opinion that "spawning salmon can only pass the Bolsters Mills structure at intermediate flows, perhaps a rather narrow range of flows." It would be to the fisheries benefit for all parties to work cooperatively to improve fish passage at this site.

16. Water Quality There is reasonable assurance that the project will not violate applicable state water quality standards, including the provisions of section 464, subsection 4, paragraph F, as required for water quality certification under the United States Water Pollution Control Act, Section 401. This finding is required for both the proposed impoundment and any affected classified water bodies downstream of the proposed impoundment.

A. Applicable water quality standards at the mill site are classified as being Class A, with designated uses of drinking water (after disinfection), recreation (in and on the water), fishing, industrial process and cooling water supply, hydroelectric power generation, navigation, and as habitat for fish and other aquatic life. The habitat shall be characterized as natural. The classification upstream (above the impoundment) and downstream is AA.

B. Water quality standards meet the A classification.

Title 38 M.R.S.A., Section. 464, Sub-section 4. General Provisions, paragraph F does not place an inherent preference for fishery uses over historic and social uses. The only place where a direct comparison of how society in general views these two important assets is Maine Department of Tourism statistics on requests for information. In the 2007 Maine Tourism statistics for the Lakes and Mountains region, which includes Sebago Lake and the Crooked River, Museums and Theaters ranked 8th in popularity with 16,251 requests for information. Fishing ranked 18th in popularity with 10,615 requests for information. Therefore it cannot be declared by the Department that the fishery is inherently more valuable than the historic and social significance of Scribner's Mill.

In section 464, 4, F, (1-A) (a) the applicant has demonstrated that the proposed activity would not have a significant impact on the fishery. For the purpose of this division, significant impact means: (i) impairing the viability of the existing population, including significant impairment to growth and reproduction or an alteration of the habitat which impairs viability of the existing population. There is a clear difference between the viability of the Sebago Lake and the Crooked River salmon fishery and maximizing the production of fish for harvest. Issuance of this permit will have no impact on the viability of the

fishery.

For section 464, 4, F, (1-A) (b) the applicant has demonstrated that the proposed activity will result in a significant benefit to the historic and social significance of Scribner's Mill.

There is no expiration date on historical and social significance. Thousands of dollars have been spent marking the locations of historic and socially important sites where no evidence remains of the structures that brought the historic and social significance into being. In the case of Scribner's Mill, its historic and social significance begins with the diary of Dr. Horace A. Barrows, and continues to accumulate to this date without interruption. The presence or absence of any individual piece of the sites complete context has no bearing on "Title 38, 464, 4, paragraph F, (1) (e), Any other evidence that, for division (d) demonstrates its historical or social significance." Dana Murch, MDEP, acknowledged this fact by mentioning the historic nature of Scribner's Mill five times in his denial of the 2007 Scribner's Mill permit application.

In summary, a minimal impact that has no significance to the viability of one use, is outweighed by a proposed activity that will have a significant and real benefit to another use. Therefore, the public will be best served by issuance of a water quality certification.

C. Anticipated and other possible impacts of the proposed project on the existing water quality is minimal.

As to Fish Passage and Spawning and Nursery Habitat

Engineer, Jon Truebe, in his updated report (Attachment H) states that fish passage will meet or exceed efficiency levels with 100% adult salmon passage over all flows.

Using the Woodlot Report (Appendix A, Table 1), Stanley & Trail Suitability Habitat Model, and the Crooked River-Description of Habitat Based Modeling, habitat suitability calculations were made to determine the existing and projected conditions for parr density. It was found that under existing conditions that the estimated annual parr production would be 607.9. The total estimated annual parr in the proposed impoundment would be 409.8. A difference of 198.1. With a parr survival to smolt rate of 5.1% 10.1 smolt would be lost to fishery recruitment. At a fish hatchery production cost of \$2.54 per smolt the total value lost to the fishery would be \$25.66 or .2 % of river to lake recruitment value. 3

Steven L. Shepard, of Aquatic Science Associates. Inc., (Attachment N) speaks to fish passage and habitat changes. Regarding fish passage, Mr. Shepard compares the down river conditions and the condition in the river at Bolster's Mills. He states that there is no doubt that the structure proposed for Scribner's Mill would provide superior passage conditions.

As to habitat changes, Mr Shepard states "that a rock-ramp fishway with a 329' crest will create minor changes in habitat characteristics that may result in a small loss of salmon production."

As to spawning habitat found by Woodlott, he states that the depth changes in this reach will be relatively small and that it appears that the habitat in this reach would not change significantly. (Attachment N - Aquatic Science Associates. Inc. Report) (Attachment M - Habitat Suitability Calculations) Also refer to Permit Section I, #3 Project Description.

With respect to predators, Mr. Shepard expresses the opinion "that the project related changes will not make much difference in predator abundance." He suggests that if needed he could do some additional analysis to support this conclusion.

Additional efforts taken to maintain the quality of water will include:

1. Cleaning the logs of loose bark, sand and soil prior to placement in the river at the log insertion area.
2. Saw dust will be kept from the river by the use of a double floor on the lower level of the mill with a silt control material installed between the layers.
3. The original sawdust conveyor system will be enclosed and re-installed for removal of the bulk of the saw dust into the saw dust shed. Any residual saw dust will be swept and removed by hand from the building.
4. Any organic material which might escape diligent efforts to capture, will be offset by the removal of materials with like chemical composition during the process of cleaning the trash rack at the mill intake.

17. Soil Stability

A. The soils in the project area are glacial till over granite bedrock. Predominantly sand and gravel.

B. There are no anticipated impacts of the proposed project.

The banks in the impounded section of the river are sufficiently steep, well established, and quite stable as revealed by patterns of vegetation which will minimize any potential of bank erosion.

Water over the rock ramp will fall over the fish passage system and onto bedrock and will have no greater erosive effect than the same flowage in open river.

The water flowing through the tailrace has bedrock for a base and granite walls to contain the flow.

There will be no alteration of the downstream river. The combined flowage of water exiting the mill as well as going over the rock ramp will be the same as the input above the mill.

18. Coastal/Inland Wetlands

A. The Scribner's Mill impoundment will not effect any designated wetlands.

19. Natural Environment -

A. The river, in the project area, remains in its natural state except for the historic 1847 development at Scribner's Mill. It is well defined by its high wooded banks and undeveloped woodland surroundings. Land use is for timber production and harvesting.

Typical vegetation in the area includes alders, white pine, maple, oak and wild cherry with limited poplars and spruce fir.

Typical bird life includes red-winged blackbirds, crows, blue jays, blacked-capped chickadees, goldfinches, robins, barn and bank swallows, various sparrows, chimney swifts, cardinals, herons, kingfishers, cedar waxwings, ravens, evening grosbeaks, morning doves, water fowl, and hawks.

According to the U.S. Fish and Wildlife Services, there are no known endangered species within the project area.

B. Because of the minimal impact of a 3' impoundment between steep river banks, there will be no impact on existing land uses, geological and topographical features, botanical resources, and aesthetic character. The appearance of the river will not be altered.

20. Fish and Wildlife Resources

A. Description of the existing fish and wildlife.

Fish identified by Woodlot during their electro-fishing in the proposed impoundment area were salmon adult, salmon parr, brook trout, smallmouth bass juvenile, white suckers, and

American eel. Salmon parr observations were limited to 1 small section of the proposed impoundment. All other sections contained only warm water species with the exception of adult salmon during the spawning run.

Typical wildlife consist of mice, muskrat, beaver, fisher, squirrel, rabbit, skunk, deer, moose, fox, porcupine, and black bear.

Typical aquatic life includes turtles and frogs.

B. Provide a description of the anticipated and other possible impacts on the proposed project on existing fish and wildlife resources.

1. There will be no negative impact on the wildlife found in the woodlands abutting the proposed impoundment area.
2. All experts consulted are in agreement that the proposed project will have no impact on fish passage.

Discussion

The fish-way is designed to be a segment of the river and will carry the normal run or flow of the river. Thus, the velocity and water depths in the fish-way each month of the year will replicate those seen with the natural existing conditions.

- In the construction of a nature-like rock ramp fish passage system there will be a series of boulder arches separated by resting pools. This system will be self adjusting and therefore require no manual adjustments.
- The water depths in the fish-way will be maintained by using the weir effect on both the west dam and the flume entry. With the flume entry set slightly higher than that of the rock ramp, minimum required flows will be guaranteed at all times.

The construction of this project as proposed relies almost entirely on naturally occurring materials which are available to Scribner's Mill Preservation at no cost. The skills and equipment required for the installation are available by Scribner's Mill Preservation staff. A qualified professional, who has experience installing rock ramps, will oversee the construction.

Lee Bergstedt, from GEI Consultants, Inc. Ecological Division, (Attachment I, pg. 3 and 4) states in his report, "The passage of spawning adult fish is the key to maintaining and/or improving salmon production in the Crooked River. If nearly 100% passage is achieved, then the spawning habitat is available and the rearing habitat will be utilized (since fish will be hatched upstream of the dam) even if juvenile passage upstream is less than 100%." Furthermore, in the previous application, Jon Truebe made the claim that factors not counted for in the culvert rating models created a situation where actual juvenile fish passage would be improved over existing conditions. Lee Bergstedt substantiates Mr. Truebe's claims and has included in his report a case study showing the benefits of rock ramp fishways in improving fish passage under naturally occurring exposed ledge conditions.

In Steven L. Shepard's report (Attachment N) he states " The MDIFW comment letter repeatedly characterizes the original rock-ramp fishway, which was designed with a 5% gradient and a 330msl crest elevation, as a "barrier" and presents the opinion that it will result in significant losses of landlocked salmon spawning opportunity. Similarly, the MDEP findings of Fact and Order on Appeal, state that the rock ramp fishway alternative will negatively impact Crooked River salmon since it "... will reduce up stream passage for adult landlocked salmon from 100% to 98% and for juvenile landlocked salmon from 45% to 16%...". I believe these opinions and statements are incorrect." Mr. Shepard continues in his report and provides a detailed description of why he believes those opinions are incorrect. Furthermore, the 1.9% rock ramp provides even better passage than the 5% rock ramp discussed above.

3. All experts consulted are in agreement that the proposed project will have a minor impact on salmon spawning habitat.

The Stanley Trail Habitat Suitability Index (Stanley and Trail) predicts where spawning habitat should be located. The Woodlot field study verified this model when they did their three electro-fishing direct observations of seasonal flows in 2004 - 2005. Woodlot in their substrate map Figure 1, section I, located in reach D, shows the area where suitable salmon spawning habitat was located equaling 2000 sq. ft. One pair of salmon were observed spawning in the fall of 2004. This area was approximately 2' in depth during the time period specified for collection of depth data by Stanley and Trail. The project, as proposed in this application, will add 6" in water depth in this habitat section, and according to the Stanley and Trail it will remain well within the 4' spawning habitat limit.

In Steven L. Shepard's report (Attachment N) "At least one area of gravel and cobble used by spawning salmon was noted the depth changes in this reach will be relatively small. Based on the flood study elevations and the habitat mapping shown in the Woodlot Alternative 2006, it appears that the habitat in this reach would not change significantly."

4. All experts consulted are in agreement that the proposed project will have a minimal impact on fish nursery habitat.

When calculating the estimated parr densities, using Stanley & Trail to process the raw data collected by Woodlot, (Appendix A, Table 1), and the Crooked River-Description of Habitat Based Modeling, the proposed impoundment footprint was shown to be an average stretch of the river. The adjusted parr density was shown to be exactly 5.7 parr per habitat unit. Calculations showed that under existing conditions that the estimated annual parr production would be 607.9. The total estimated annual parr in the proposed impoundment would be 409.8. A difference of 198.1. With a parr survival to smolt rate of 5.1% 10.1 smolt would be lost to fishery recruitment. At a fish hatchery production cost of \$2.54 per smolt the total value lost to the fishery would be \$25.66 or .2 % of river to lake recruitment value. 4 (Attachment M - Habitat Suitability Calculations)

In Mr. Shepard's report, (Attachment N) he states "In summary, I believe that a rock ramp fishway with a 329msl crest will create minor changes in habitat characteristics that may result in a small loss of salmon production."

5. With respect to predators, Mr. Shepard expresses the opinion "that the project related changes will not make much difference in predator abundance." He suggests that if needed he could do some additional analysis to support this conclusion.

21. Historical/Archeological Resources

The history of the Barrows/Scribner Mill begins in 1846, when the three Barrows brothers, Worthy, George, and Horace, join to build a saw mill "enterprise" at "Carsley's Rips" on the Crooked River in the Town of Harrison. The daily diary of Dr. Horace A.

Barrows, who was the local physician in Bolsters Mills, chronicles the construction of the mill and homestead. This diary is found in the Archives of the Maine Historical Society, Portland, Maine. This primary documentation of the site found in Dr. Barrows diary greatly enhances the significance of the site.

Elijah Scribner, "mill man", worked for Worthy Barrows at his tannery in Bolsters Mills and came to the Barrows' saw mill ca. 1850. In 1851, Elijah and his son Cyrus bought the mill from Worthy with Elijah purchasing the homestead and 1/4 interest in the mill and Cyrus purchasing 3/4 interest in the mill. The mill passed from Cyrus to his two sons when Bourdon was 16 and Jesse 14 in 1884. By 1907, Jesse was the sole owner and operator. He continued its operation until he was 92 in 1962. It was Jesse's long tenure (78 years), from 1884 to 1962, that brought the mill site, intact, into the middle of the 20th century. Jesse, by gaining control of the mill at such a young age, and more importantly at the end of an era, inadvertently made this site available for a culture which would appreciate its past. From a national perspective, this unique circumstance happened along the Crooked River, in the Town of Harrison. Fortunately, the mill site was idle for only 12 years before Scribner's Mill Preservation, Inc. (SMPI) was formed in 1974 - '75 and restoration began.

The mill was deeded to Scribner's Mill Preservation, Inc. on August 23, 1977 with its water rights (On file with DEP).

The mill withstood three major floods in its history, 1890, 1936 and 1956. In 1972, the dam was breached by MDIFW to facilitate the passage of salmon. (Attachment X - Document Signed by Edward J. Scribner) Unfortunately this poorly executed breach directed the river water toward the mill and its supporting columns. In a lesser flood event on March 17, 1977, high water containing large blocks of ice came through the breach in the dam, dislodged the primary granite support column causing the riverside of the mill to collapse.

The reconstruction of the collapsed portion of the mill began that summer by removing the mill debris from the river.

There is a long history of fish passage negotiations and correspondence between Scribner's Mill and MDIFW beginning after the collapse of the mill in 1977, with Commissioner Marsh promising the assistance of Clayton Grant in designing a fishway. In a spirit of cooperation, Scribner's Mill Preservation removed the remaining portion of the west dam to smooth the flow of water, and to allow for the proper installation of a fish passage system. All negotiations ceased once the ruptured dam was cleared to bedrock. MDIFW never designed a fishway and all attempts by Scribner's Mill to obtain approval for one designed by John Hatch were not accepted.

The restoration of the mill site from its collapse in 1977 has been a labor of love and knowledge that this was an unique part of Maine's lumbering history. Help with its reconstruction has come from many sources including one member bringing his crew from Massachusetts to complete the siding and roof of the mill once it was raised. Well over \$300,000 worth of volunteer labor, donations and membership dues have restored this site to date.

In addition to the mill, the site includes a Saw Dust Shed, Long (Shingle and Equipment) Shed, and Blacksmith Shop all of which have undergone restoration/reconstruction.

Scribner's Mill Preservation has in its possession the machinery found in the original 1847 mill, as well as a large collection of antique mill equipment to produce shingles, clapboards, barrels, wood boxes, turned products as well as lumber.

The Scribner homestead, which was listed on the State and National Registers of Historic Places in April 2001, is privately owned. It has been placed in a trust for Scribner's Mill Preservation, Inc. to receive at the end of a life tenancy restriction.

The restoration of the historic Scribner's Mill, along with its homestead, as a working saw mill museum, will be a positive historical asset to Maine's historical resources. This restoration will interpret Maine's early lumbering industry and tell the story of the life and times of a middle 19th to middle 20th century family owned rural lumber business.

An archaeological assessment of the site, including the mill and the impoundment area

was conducted in 2003 by Nathan D. Hamilton, Ph.D. He states in his findings that the pre-industrial landscape was not a likely location for pre-historic habitation, that the ground disturbance lacks stratigraphic integrity regarding archaeology, and that the shore to be extensively reworked and steep in most places. He also found that the former bank of the operation was quite stable as revealed by patterns of vegetation. He concluded that archaeological testing was not required. He also commented that "this is one of the most interesting industrial archaeological projects seen in Maine. In combination with the home listed on the National Register of Historic Places, this operation will be a valuable resource for education and outreach on 19th and 20th century saw mill operations in Maine."

Maine Historic Commission has concluded that this project will have no effect upon historic archaeological or architectural resources. In an e-letter dated December 1, 2008 from Robin Stancampiano, Architectural Historian for Maine Historic Preservation, she states that from "information submitted from John Lovett (National Society for the Preservation of Old Mills), Robert Spoerl (Operator of the Taylor Saw Mill in NH), and you indicate that the Scribner's Mill site may have a special significance from a national standpoint as it appears to be an unusual survival of a 19th century sawmill complex." (Attachment Y - Historic Significance Testimony)

22. Public Access and Uses.

A. Scribner's Mill site with its bridge crossing over the Crooked River offers enticing access to the river and the Crooked River valley. The existing recreational resources are:

Swimming - Just below the east dam there is a deep pool, which has been used by generations of children as a swimming hole.

Tubing - Just below the swimming hole, the river cascades into a lengthy series of rips which offers exceptional tubing opportunities. A footpath along the west bank returns the swimmers to the head of the rips.

Canoeing - Boaters entering the river at Scribner's Mill, park their vehicles at the mill and put their boats into the river at a launching area at the end of the tail race. For boaters coming down river from Bolster's Mill there is a landing and a portage path around the mill to the landing at the foot of the tail race. During high water the canoeists are able to continue over the bedrock at the mill site, on their downstream journey.

Fishing - Fishing is posted as catch and release in this area. Numerous fishermen fish at the mill site. The footpath on the west side of the river offers access to downstream fishing and fishermen are welcomed to cross private property at the homestead to reach upstream reaches. The Russell Brook area seems to be a favorite spot for trout fishing.

Salmon Release Program - Until 2006, local schools in cooperation with LEA (Lakes Environmental Association) used Scribner's Mill as a release area for their annual salmon hatching and release program. This particular program has been halted by MDIFW and is now a trout release program.

Equestrian Activities - Scribner's Mill is a popular starting point for north and south trail heads for cross country rides.

Snowmobiling - Trails for snowmobilers cross the river at Scribner's Mill then proceed north along the river, before it turns west to follow cross country trails.

Nature Trail - There is a hiking trail along the river to Russell Brook. This trail is on private property, and allows the public to experience the river environment, including the plant and wild life up close.

B. Scribner's Mill encourages use and provides public access to this waterway. With 100% adult fish passage and minimal impact on spawning and nursery habitat (Attachments H, M, & N) there is no evidence that the construction and operation of the project as proposed will have an adverse impact on recreational fishing in the Crooked

River. There will be no impacts on public rights or access to the use of the surface waters in the project area. The only restriction to use is set by MDIFW in their fly fishing only and catch and release policy.

23. Flood Control

A. The Flood Hazard Analyses Report (Attachment - K 2 of 6) is used to describe the potential flood conditions within the project area.

This study includes data for 10, 100, and 500 year floods.

Flood	Crest
10 year	339msl
100 year	344msl
500 year	347.6msl

B. There is no existing flood control projects within the Crooked River drainage basin.

C. In reality a 100 and a 500 year flood will take its course no matter what precautions are taken. The steep banks and the undeveloped land up river which lies within the project area will easily accommodate flood waters. The proposed dam at 329msl will have little or no effect on the river.

24. Energy State the following:

- A. Number of generating units proposed 3.
- B. Installed capacity in Kilowatts N/A
- C. Average annual energy output in kilowatt hrs. N/A
- D. Annual plant factor, in percent N/A
- E. Identity of proposed purchaser or user of project power - Scribner's Mill Preservation, Inc., Scribner's Mill will create public benefit with all energy produced.
- F. Amount of non-renewable fuels anticipated to be replaced by the project power. 3,600 gallons

Environmental and energy considerations. The advantages of the project are greater than the direct and cumulative adverse impacts over the life of the project based on the following considerations:

The advantage to the public of eliminating the use of 3,600 gallons in non-renewable fuel out weighs a minimal impact on the landlocked salmon fishery.

Cost benefit ratio:

10.1 smolt @ \$2.54 = \$25.66
3,600 X (8-14-09 market price for diesel fuel @) \$2.65 = \$9,540.00
or a 1 to 372 cost to benefit ratio.