Chapter 3: Eligibility And Classification

The purpose of this chapter is to document National Park Service findings relative to: 1.) the "outstandingly remarkable" natural and cultural resource values associated with the lower Farmington and Salmon Brook Study Area; 2.) the "free-flowing character" of the study segments; and 3.) the preliminary "classifications" which would be appropriate if the segments are included in the National Wild and Scenic Rivers System.

3.A. Eligibility and Classification Criteria

The subsections below describe the relevant eligibility and classification criteria as set forth in the Wild and Scenic Rivers Act, in the USDA/USDI Interagency Guidelines for Eligibility, Classification, and Management of River Areas as published in the Federal Register on September 7, 1982, and in the U.S. Forest Service and National Park Service Technical Report of the Interagency Wild and Scenic Rivers Coordinating Council on the Wild & Scenic Rivers Study Process. IWSRCC, December 1999.

3.A.1 Outstandingly Remarkable Values

To be considered eligible for inclusion in the National Wild and Scenic Rivers System a river segment, together with its adjacent lands, must support one or more "outstandingly remarkable" natural, cultural, or recreational resource values. Such resource values must be directly related to, or dependent upon, the river and its adjacent lands (generally ¼ mile or another geographic area as defined by the study team). The "outstandingly remarkable" threshold within the Act is designed to be interpreted through the professional judgment of the study team during the Wild and Scenic Study.

The descriptions below provide examples to help interpret this "outstandingly remarkable" eligibility requirement.

Nationally Significant Values

Resource values which are nationally significant clearly meet the "outstandingly remarkable" threshold. A nationally significant resource would be rare, unique, or exemplary at a national scale. For example, a recreational boating experience that draws visitors from all over the nation would qualify as a nationally significant recreational resource.

Regionally Significant Values

Based upon the desirability of protecting a regional diversity of rivers through the national system, a river segment may qualify based on regionally rare, unique or exemplary resource values. The area, region, or scale of comparison is not fixed, and should be defined as that which serves as a basis for meaningful comparative analysis; it may vary depending on the value being considered. For example, physiographic regions are appropriate for geologic and biologic resources, while the region occupied by a particular culture is appropriate for archaeological resources.

Values Significant in Aggregate

A river may qualify for a given resource value based upon an aggregate of important values, no one of which would confer eligibility standing alone. For example, a series of unusual and distinctive river-related geologic features may together qualify a segment as exhibiting an "outstandingly remarkable geologic value" even though no one element meets the criteria alone.

Defining "River-Related" Values

The Interagency Wild and Scenic Rivers Coordinating Council (IWSRCC) has characterized the determination as to whether a given resource value is river-related as based on three criteria. To be river-related a resource value should:

1) Be located in the river or in its immediate shorelands (generally within ¼ miles on either side of the river).

2) Contribute substantially to the functioning of the river ecosystem.

3) Owe their location or existence to the presence of the river.

For the purposes of the Lower Farmington River and Salmon Brook Study, the geographic area of consideration for the majority of land-based values was established as those resources located within ¼ mile of the river. The town-wide Study Area was established as the geographic range of consideration of the

potential Geology ORV due to the scale of geologic processes relating to the formation of unique landscape features, as well as outstanding resources directly related to the geologic resources. For example, the Traprock Ridge, a prominent scenic and geologic feature bounding the eastern edge of the Farmington River Valley, influenced the course of the river's path. As the lower Farmington River was redirected north during the period of glacial retreat, it skirted the base of the Traprock Ridge until it was able to punch a path east through the Tariffville Gorge. Another example is the broad floodplain valley of the lower Farmington, with its high quality agricultural soils and abundant life that directly relate to its geological past.

3.A.2 Free-flowing

The National Wild and Scenic Rivers System is designed to protect eligible "free-flowing" rivers and sections of rivers that support significant resource values from the adverse impacts of federally-assisted water resource projects, such as construction of new dams. The Act's definition of "free-flowing" is outlined in Section 16:

> (b) "Free-flowing", as applied to any river or section of a river, means existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway. The existence, however, of low dams, diversion works, and other minor structures at the time any river is proposed for inclusion in the national wild and scenic rivers system shall not automatically bar its consideration for such inclusion: Provided, That this shall not be construed to authorize, intend, or encourage future construction of such structures within components of the national wild and scenic rivers system.

The lower Farmington River and Salmon Brook free-flowing segments are found eligible for designation based on the presence of multiple Outstandingly Remarkable Values.

A river or river segment can be considered for designation if it is above or below a dam or is dependent on releases from a dam. Any section of river with flowing water, even if impounded upstream meets the definition of free-flowing, as long as existing flows are sufficient to support flow-dependent ORVs and water quality.

3.A.3 Classification Criteria

The Wild and Scenic Rivers Act requires that all eligible or designated river segments be classified as Wild, Scenic, or Recreational. These classifications are based solely on the amount of human impact present at the time of classification. The Act defines them as follows.

Wild river areas: Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

Scenic river areas: Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

Recreational river areas: Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

3.B. Eligibility and Preliminary Classification

The lower Farmington River and Salmon Brook free-flowing segments are found eligible for designation based on the presence of multiple Outstandingly Remarkable Values. These segments meet the classification definition of a "recreational river area" due to the level of human impact.

3.B.1 Free-flowing Determination

This subsection presents an inventory of study area remnant and historic dams, and describes the free-flowing character of the study segments.

General Streamflow Conditions

Streamflow conditions on the Lower Farmington River are governed by a complex series of legal and procedural arrangements dating back to the 1800s. Riparian Agreements between the Metropolitan District Commission and local towns and other hydropower users established a system for managing the water flow to serve river users and benefit the river system. During the Upper Farmington River Wild and Scenic Study, prior to the upper river's Wild and Scenic designation in 1994, an in-stream flow study was conducted, in part to assess the effects of dams farther upstream that regulate flow. The flow study documented the multitude of demands for water and determined that the resulting river flows are

adequate to support the in-stream values for which the river was designated. It concluded that the existing flows are regulated through established minimum and optimum flows that support the river's fisheries, biological and recreation resources, and aesthetic qualities. The regulation of flows has helped to sustain and enhance river uses, such as recreation, particularly during low flow periods. In summer, when the natural flows are lowest, recreational flows are supported through stable and predictable releases from upstream dams. In fact, recreation in the Tariffville Gorge is an Outstandingly Remarkable Value (ORV) in part due to its regional significance as a year round paddling destination. Biological productivity is also enhanced by the consistent river flow regime and cold-water releases from upstream dams. The in-stream flow study indicated that the lower Farmington River resources are supported by the current flow regime and as stated in the 1982 Departments of the Interior and Agriculture Interagency Guidelines for Eligibility, Classification and Management of River Areas, *"Flows are sufficient if they sustain or complement the outstandingly remarkable values for which the river would be designated."*

The flow study also considered alternative flow scenarios by taking into consideration the multiple water resource demands (water supply, waste assimilation, flood control, riparian releases, and minimum flow releases) versus protection of studied resources and determined that there is sufficient flow even under dry conditions (though not under severe drought conditions) to protect the resources. The in-stream flow study will continue to serve as a tool in maintaining adequate river flows into the future as it can be used to evaluate whether future water allocation demands are compatible with protection of the resources.

The flows of Salmon Brook and its East and West Branches are not regulated by impoundments or other man-made substantial flow alterations, releases or diversions. The two small dams on the East Branch of Salmon Brook do not regulate flow.

Inventory and Description of Study Area Dams

The Lower Farmington and Salmon Brook Wild and Scenic Study Committee, in cooperation with the Connecticut Department of Environmental Protection, has assessed the existing dams of the lower Farmington River and Salmon Brook to determine whether the structures meet the Act's free-flowing river definition that permits the existence of low dams on Wild and Scenic Rivers provided that affected river reaches remain "generally riverine in appearance." The watercourses have a series of seven historic dams due to the river-powered industries of the past; five dams on the Farmington and two dams on the East Branch of the Salmon Brook. The majority of the dams are low head dams that do not appreciably alter the flow or riverine appearance of the river. Each dam or remnant dam is discussed below.

Lower Farmington River Dams and Remnant Dams

Upper and Lower Collinsville Dams

The Upper Collinsville Dam is located in the historic village of Collinsville, which is part of the Town of Canton, and the Lower Collinsville Dam is located one mile below the Upper Collinsville dam in the Towns of Avon and Burlington. Both the Upper and Lower Collinsville Dams are owned by the CT DEP and classified as recreational use dams. They are low head dams, standing 28 and 20 feet respectively. The upper dam has high aesthetic, historical, and recreational value. Both dams generated power for the historic Collins Company up until 1966. At present, both Collinsville Dams are barriers to upstream fish passage for a number of anadromous (migrating) and resident fish. The dams do create small impoundment areas, but, overall, the river remains "generally riverine in appearance" throughout the area.

Winchell-Smith/Gristmill Dam

The remains of the historic Winchell-Smith/ Gristmill Dam in Farmington was possibly the first gristmill built on the Farmington during the Colonial era and is valued for its scenic qualities and the resulting series of rapids. This historic dam can prevent upstream migration at least to American shad, alewife, and blueback herring at many flow levels. This restricts access for these three species to nearly 12 miles of mainstem habitat, as well as access to the Pequabuck River and its tributaries as far as the King Street Dam in Bristol. A grant to the Farmington River Watershed Association from DEP's Supplemental Environmental Projects fund allowed an engineering firm to review

Spoonville Dam slated for removal pending funding

alternatives and design improved fish passage at this site. Dam removal was considered, but rejected because of the historical nature of the dam and the aesthetic value it provides to nearby property owners. The preferred alternative and final design was for a natural-looking rock ramp that blends visually with the surroundings and provides an incline for fish to surmount the dam. Now that the design is complete, efforts can be made to secure funding for construction. This fish enhancement project is consistent with the goals presented in the Management Plan and the NPS has been supportive of this proposal. This small historic dam in the Town of Farmington does not appreciably alter free-flowing river character.

Spoonville Dam

The Spoonville Dam was breached during the 1955 flood and is considered a safety hazard as well as an impediment to fish passage. Since the dam is breached it is no longer officially listed on DEP's list of dams of the lower Farmington. A Farmington River Enhancement Grant was awarded to the Farmington River Watershed Association by the DEP for an engineering design to improve fish passage. A final plan for the preferred alternative of full removal of the dam and its fragments was completed in April 2010. Funding is currently being sought for dam removal which is estimated to cost 1.4 million dollars. Funding in the amount of $500,000 was just recently awarded through the Connecticut Long Island Sound Fund license plate program. Full dam removal will restore the site for fish passage of a range of diadromous and resident species. The property owner, CT Light and Power Co. (a subsidiary of Northeast Utilities) supports the proposed project. The primary conservation

goal of the project is to enable a larger number of American shad, blueback herring, and alewife to pass upstream of Tariffville Gorge on the Farmington River and to access an additional 20+ miles of mainstem river habitat. This fish enhancement project is consistent with the goals presented in the Management Plan and the NPS has been supportive of this proposal. The breached Spoonville Dam located in East Granby and Bloomfield does not appreciably alter free-flowing river conditions.

Rainbow Dam and Reservoir

The Rainbow Dam stands 59 feet high and is located in the Town of Windsor. The Rainbow Dam is owned by Stanley Black & Decker (SBD) and is run by the Farmington River Power Company (FRPC) as a "run-of-river" hydroelectric facility. According to the United States Securities and Exchange Commission filing for Stanley Works form U-3A-2 for 2004:

> *FRPC owns and operates the Rainbow Dam Hydroelectric Facility located on the Farmington River in Windsor, Connecticut. The hydroelectric facility consists of the Rainbow Dam, a power house with an 8 megawatt generating capacity, switching and transformer equipment, flow and flood rights and various storage and outbuildings all located in Windsor, Connecticut*

Built in 1925, the facility has operated continuously since that time without a Federal Energy Regulatory Commission (FERC) license. The facility was constructed prior to the FERC permitting program and had been grandfathered since. Water is held back over a 24-hour period to maximize power generation and efficiency. If operated as an instantaneous "run-of-river" facility there would be steadier releases, but the release process would result in a reduction of power generation. The flow regime below the Rainbow Dam experiences some fluctuation but is stable with no major changes over time. A 1961 riparian agreement established FRPC's rights to a consistent source of flow for power generation at the Rainbow Dam. The resulting reservoir is utilized for recreation, is lake-like in appearance until a point at approximately the Windsor/Bloomfield/East Granby town line where the Farmington River is again riverine in appearance.

During the Wild and Scenic Study it was uncovered that the exact upstream extent of the Rainbow Reservoir had never been fully determined, and, in the absence of a FERC license, there exists no established regulatory Project Boundary to help define the extent of impoundment. The Stanley Black & Decker (SBD) representative to the Wild and Scenic Study Committee initially defined the extent of impoundment as extending from the Rainbow Dam upstream to the Rt. 187 bridge. This position was later revised based upon additional company research to extend the boundary to approximately a half-mile upstream of the Rt. 187 bridge. In an effort to objectively and independently assess the extent of the impoundment, the Study Committee contracted with a professional engineer to conduct a hydrology study based on the best available data to better define an appropriate upstream boundary. Additional discussion of this topic can be found under the Suitability Chapter.

The fish ladder at the Rainbow Dam was constructed in 1976 by the CT DEP, the U.S. Fish and Wildlife Service, and The Stanley Works (now SBD), and is currently owned and operated by the CT DEP-Inland Fisheries Division. The fishway is in disrepair and does not support the passage of all anadromous (migrating) fish species of the Farmington. The CT DEP has concluded that installation of a "fish lift" design would resolve this issue. At this critical gateway point to the Farmington, it is crucial that this situation be rectified to support the diversity of aquatic life determined to be one of the Outstandingly Remarkable Values. If the river is designated, the Wild and Scenic Committee will take a role in the realization of this project by partnering with the key stakeholders.

The approximately 4.5 mile segment of the Farmington River encompassing the Rainbow Dam, its reservoir, and tailraces does not meet the free-flowing requirement for Wild and Scenic River eligibility because of the slackwater, lake-like impoundment.

East Branch Salmon Brook

Forman Pond Dam

The Forman Pond Dam is located on the East Branch of the Salmon Brook in Granby. It is a small privately owned dam that stands 10.5 feet and was built for recreational purposes. It is not an obstacle to fish passage due to the presence of the Craigsmill Gorge and falls located downstream. The First Pond

Dam (described below) presents a natural impediment to fish migration. There are no dams situated on the Salmon Brook where fish have historically had access. The Forman Pond Dam is low and the stream remains generally riverine in appearance throughout, therefore this segment is compatible with the requirement for Wild and Scenic eligibility.

First Pond Dam

First Pond Dam is located at the Silver Street crossing on the East Branch of the Salmon Brook in Granby. It is a historic dam that stands only one foot high above a 20 feet high natural rock falls within the Craigsmill Gorge. The existing falls are a natural obstacle to fish passage. The dam is just one foot high above the natural falls and therefore does not appreciably alter free-flowing river conditions.

Conclusions

Approximately 37 miles of the lower Farmington River and 26.4 miles of the Salmon Brook meet the free-flowing criteria for Wild and Scenic River eligibility. Due to the presence of several historical, low-head and remnant dams, the segments best meet the free-flowing criteria for "recreational" classification.

The Rainbow Dam and impoundment are significant structures which fail the "generally riverine in appearance" threshold. Therefore, the 4.5 mile segment encompassing the Rainbow Dam and reservoir is not found to be free-flowing. Other than the Rainbow Dam, there are no other significant channel modifications on either stream that would preclude the free-flowing eligibility criteria.

3.C. Outstandingly Remarkable Values

This subsection describes the natural and cultural resource values supported by the lower Farmington River and Salmon Brook that are deemed to meet the "Outstandingly Remarkable" threshold. More detailed information on these resource values can be found in the Lower Farmington River and Salmon Brook Management Plan and on the Study website at www.lowerfarmingtonriver.org. All of the resources cited contribute to the overall eligibility of the Farmington River and Salmon Brook for designation. Not all river reaches in the study area support all noted outstanding values, but there is no stretch of river which does not contribute to the viability of the whole.

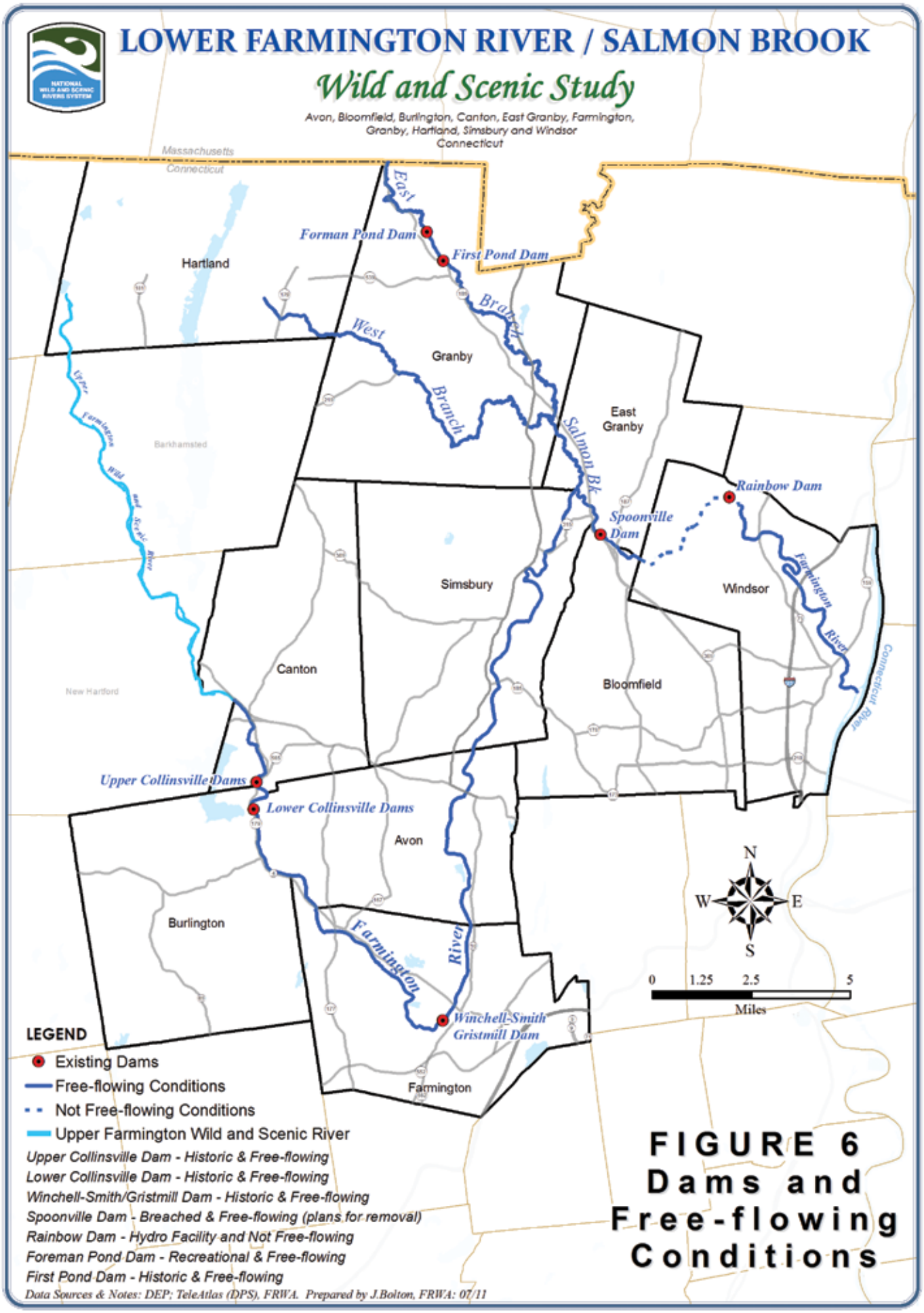
The Wild and Scenic Study Committee was tasked with identifying and researching potential Outstandingly Remarkable Values (ORV) associated with the watercourses as required by the Wild and Scenic Rivers Act. Not just one, but five potential ORVs were identified. The geographic area of consideration for the majority of land-based values was established as those resources located within ¼ mile of the watercourses. The town-wide Study Area was established as the geographic range of consideration of the potential Geology ORV and geologically dependent resources, due to the magnitude of geologic processes. The examination of these resources (as described in detail in the Management Plan and briefly below) was accomplished through substantial research that was conducted prior to and during the Study, and included evaluation of the significance of the resources within a state-wide and regional context by means of consultations with experts and professionals (see Chapter 6.C. for a list of the expert advisors consulted in the documentation of the ORVs). The resources fall within the following categories: **Geology, Water Quality, Biological Diversity, Cultural Landscape, and Recreation.**

NOTE: Maps and in-depth analysis relating to each ORV and can be found in the accompanying document: "Lower Farmington and Salmon Brook Management Plan".

Geology

Geology was considered on a broader scale than the other Outstandingly Remarkable Values (ORVs) due to the scale of the mechanisms that produced the varied geology of the Study Area over a long period of time. The role that watercourses and glaciation had in forming the landscape of the Farmington River Valley is evident in the path of the river, development patterns, and land uses, making geology a defining element that supports some of the other ORVs. The ORVs including Water Quality, Biodiversity, Cultural Landscape, and Recreation are all tied to the region's geology. For example, the chemistry of Traprock provides atypical nutrients to support unique vegetation. Also, spectacular vistas and recreational opportunities are associated with the Traprock Ridges, and gaps in the ridges were historically important because they provided pathways for east-west commerce

…spectacular vistas and recreational opportunities are associated with the Traprock Ridges, and gaps in the ridges were historically important because they provided pathways for east-west commerce before motorized transport.


LOWER FARMINGTON RIVER / SALMON BROOK
Wild and Scenic Study
Avon, Bloomfield, Burlington, Canton, East Granby, Farmington, Granby, Hartland, Simsbury and Windsor
Connecticut
Massachusetts
Connecticut
East Branch
Forman Pond Dam
First Pond Dam
Hartland
West Branch
Granby
East Granby
Salmon Bk
Rainbow Dam
Spoonville Dam
Simsbury
Windsor
Farmington River
Canton
Bloomfield
Connecticut River
Upper Collinsville Dams
Lower Collinsville Dams
Avon
Burlington
Farmington River
Winchell-Smith Gristmill Dam
Farmington
N
W
E
S
0
1.25
2.5
5
Miles
LEGEND
Existing Dams
Free-flowing Conditions
Not Free-flowing Conditions
Upper Farmington Wild and Scenic River
Upper Collinsville Dam - Historic & Free-flowing
Lower Collinsville Dam - Historic & Free-flowing
Winchell-Smith/Gristmill Dam - Historic & Free-flowing
Spoonville Dam - Breached & Free-flowing (plans for removal)
Rainbow Dam - Hydro Facility and Not Free-flowing
Foreman Pond Dam - Recreational & Free-flowing
First Pond Dam - Historic & Free-flowing
Data Sources & Notes: DEP; TeleAtlas (DPS), FRWA. Prepared by J.Bolton, FRWA: 07/11
FIGURE 6
Dams and
Free-flowing
Conditions

before motorized transport. Many of these historic routes are still in use today.

Of particular interest is the distinct turn in the river's course in the Town of Farmington. The river was diverted north from its original southern flowing trajectory due to a classic glacial diversion. The evidence of a glacial process is a unique opportunity for Connecticut residents to witness geologic history as they traverse the river valley and find the river to flow south, north and east; all within a small geographic area. In addition, the river carved a path to the Connecticut River through the Tariffville Gorge and created another public education opportunity for viewing geologic history. The Tariffville Gorge provides for nationally recognized boating use, unique habitat for rare plants, oxygenated water that provides for a diverse array of aquatic life, and the archaeological record indicates that it was a Native American anadromous fishing destination.

Two additional aspects of the geology of the Lower Farmington and Salmon Brook Wild and Scenic Study area contribute to the Outstandingly Remarkable Value of the area's geology. The first aspect is that the land area of the ten Study Area towns is small but contains an unusually large time span of geologic history for its size. A billion years of geologic history is represented by the area's geological features. The oldest bedrock in the Study Area dates back to Proto-North America and is a billion years old. The Study Area also has a significant expanse of the youngest bedrock in Connecticut, the 200 million year old bedrock in the Hartford Basin (Newark Terrane). The Farmington is the only river in Connecticut that flows over both the state's oldest and its youngest bedrock.

The second contributing geologic resource is the large variety of geologic features within the Study Area. The Study Area covers three bedrock terranes, has examples of many glacial features, and has an extensive history of mining and quarrying within a small area. This is exceptional in Connecticut. Some examples of these diverse features include:

- The Newgate Prison and Mine in East Granby which opened in around 1705, was one of the first mines in the British Colonies.

Salmon Brook Photo: Tom Cameron

Photo: Wanda Colman

- Brownstone quarries in Simsbury, which provided building stone for the present town hall, Central School, the Methodist Church, and the buildings of Ensign Bickford, (now Dyno-Nobel).
- The Traprock Ridges that represent lava flows in a rift valley make the Hartford Basin unique in New England. There are few Traprock Ridges found in North America with one other example being the Palisades of New York.
- One of the rare (there are only three) true granites or igneous rocks of Connecticut, the 400 million year old Nonewaug, occupies the northwestern corner of Burlington.
- The metamorphosed remains of the Shelburne Falls Arc, an ancient, Japan-like, volcanic island arc, extend northward from Burlington to the Massachusetts line in Granby.
- Bedrock units that range in age from the billion year old metamorphic gneisses and schists of western Hartland to the 200 million year old dolerites, basalts (traprock), and arkoses (brownstone) of Granby, Simsbury, Avon, East Granby, Bloomfield, and Windsor.

Water Quality

The excellent water quality of Salmon Brook and very high water quality of the lower Farmington River compared to other rivers its size in Connecticut are defining characteristics of these watercourses. The headwaters of both are in largely undeveloped, wooded landscapes. Trees on stream banks provide shade, keeping water temperatures low, and vegetated buffers protect rivers from nonpoint source pollution. The exceptional water quality in the upper Farmington River and in Salmon Brook contributes substantially to the quality of water in the lower Farmington, which supports a diversity of species and habitats, and provides many recreational opportunities including boating, swimming, and fishing. The upper Farmington River Watershed (East Branch) also provides drinking water to over 600,000 people in greater Hartford.

Robust biological indicators show water quality in the study area to be high. The data from the CT DEP demonstrate that water quality and aquatic habitat of the Salmon Brook is excellent and in the Farmington River is very good for a river its size. Salmon Brook is known to be one of the last true cold water fisheries and to have some of the best salmon habitat in the State of Connecticut. Salmon Brook provides an influx of clean cold water to the lower Farmington River. Water temperature is maintained due to the excellence of the Brook's riparian buffers, particularly in the upper segments of both branches of the Brook. There are

Some key findings on the exemplary status of Geology of the lower Farmington and Salmon Brook:

- The glacial diversion of the Farmington River from its probable original path to New Haven northward through the Tariffville Gorge is a classic glacial diversion which is unique in Connecticut.
- Rare plant and animal habitats associated with geologic features such as the Traprock Ridge, the Tariffville Gorge, and the Sandplains.
- A billion year time span of earth history and broad diversity of features within a 35.1 square mile area.
- The alluvial soils that formed under glacial Lake Hitchcock and glacial Lake Farmington which are among the best farmland soils of the United States. Due to the glaciation history it has the highest soil diversity in Connecticut and one of the most complex soil systems in the United States. There are over 200 different soil types in Connecticut, 50 percent are represented in the Farmington River Valley. In turn, the biodiversity and habitat complexity of the Study Area is strongly influenced by this soil complexity. One of the original soil surveys was conducted in 1899 to promote tobacco cultivation in the lower Farmington Valley.

Endangered dwarf wedgemussel
Photo: Ethan Nadeau

Some key findings on the status of Water Quality in the lower Farmington River and Salmon Brook:

- Salmon Brook is considered to exhibit among the highest water quality of any river in Connecticut.
- Due to the excellent water quality of Salmon Brook, it is one of the premier cold-water fisheries of the state and is a top priority targeted stream for salmon restoration. Outstanding recreational opportunities such as boating and fishing in the streams relate directly to the presence of high water quality. The excellent water quality in Salmon Brook provides for swimming opportunities.
- Aquatic insect studies for the Salmon Brook indicate that conditions within the watershed are among the very best in Connecticut. For example, stoneflies, indicative of high water quality, are found throughout the Salmon Brook basin. Overall, both the Farmington and Salmon Brook macroinvertebrate communities are outstanding.
- The variety and abundance of freshwater mussel and fish species is an indicator of high water quality.

Carex davissi, regionally rare plant of Study area
Photo: Bill Moorhead

no wastewater or industrial surface point discharges into the Salmon Brook. Water quality monitoring programs conducted by the USGS, the state, and local organizations produce high quality baseline data that result in effective water resource protection and enhancement of the lower Farmington River and Salmon Brook.

The water quality of the lower Farmington River and Salmon Brook is recognized as an Outstandingly Remarkable Value based on

- The diverse natural communities it supports,
- The enormous recreational resource it provides, and
- The drinking water it supplies to Connecticut.

Biological Diversity

The groundbreaking Farmington Valley Biodiversity Project (FVBP) covering six of the ten Study Towns and published in 2006, laid important groundwork for the Wild and Scenic Study and Management Plan because it documented the exceptional biodiversity of the watershed as an Outstandingly Remarkable Value. A major goal of the FVBP was to provide information to towns that would assist with intermunicipal land and river management. Additional biodiversity information for all ten corridor towns comes from the Biodiversity and Vernal Pool Mapping Project sponsored by the Wild and Scenic Study Committee.

The river itself is the only one known to support all 12 of the freshwater mussel species native to southern New England. The Farmington River may contain one of New England's most—and Connecticut's only—viable dwarf wedgemussel populations, which is the only federally endangered freshwater mussel that occurs in New England. Next to the Connecticut River, the lower Farmington River has the highest fish diversity in the state. At least 35 species of finfish are present, supporting an exceptional recreational fishery including native brown and brook trout. Salmon Brook contributes to the diversity and is one of the last true cold water fisheries in Connecticut supporting 25 fish species.

Migratory fish such as American shad, blueback herring, alewife, American eel, and Atlantic salmon have excellent spawning habitat in the corridor. The Farmington River provides excellent connectivity to the Connecticut River system and is one of the CT DEP's priority rivers for fish restoration due to its exceptional habitat for both resident and diadromous fish species. It is one of two tributary streams in Connecticut that host an annual adult Atlantic salmon run and hosts one of the best shad runs in the state (other than the mainstem Connecticut).

The corridor landscape ranges from low, flat wetland to steep upland and thus supports a diverse array of plants, including 19 state-listed species. It also provides a critical dispersal and migratory route for both terrestrial and

aquatic wildlife. The thriving mammalian community includes bear, fisher, otter, bobcat, coyote, deer, and occasional moose. A brief bird survey conducted along the Farmington in spring 2009 alone yielded a significantly high species diversity (Shannon-Weiner Index of 3.0), totaling 2124 individuals of 105 species, including all state and federally listed raptors as well as a number of other federally listed wading and perching birds. Notable sightings included bald eagle, osprey, American kestrel, northern harrier, American bittern, snowy egret, and great egret.

The watershed as a whole comprises ten ecoregions, or areas with distinctive ecological and physical features. Within the Study Area river corridor, seven ecoregions are either so distinctive or so extensive that they contribute significantly to the corridor's biodiversity. For example, in Granby and Hartland, the upper east and west branches of Salmon Brook traverse two ecoregions known as Highland and Highland Transition. Compared to the lower Farmington's corridor, this ecoregion generally has higher elevations, steeper slopes, and more dramatic stream gradients. About 13.4% of the whole lower Farmington and Salmon Brook corridor consists of "core forest," and much of this is in the Salmon Brook headwater region (Highland and Highland Transition). Here, large tracts of contiguous forests of northern hardwoods and conifers support robust communities of *forest interior* birds including the state-listed Cerulean Warbler. Black bear, fisher, bobcat, otter, and an occasional moose are also characteristic of this part of the corridor.

Within the Traprock Ridge Ecoregion the river skirts the base of the traprock ridge. Steep slopes, moist ravines, and mineral-rich ledges of basalt talus are found within the corridor. These spots have distinctive microclimates that support plant and animal communities uncommon in Connecticut. Spiked false-oats, once thought to be extirpated, is one of the notable species found along the traprock ridges, as well as Virginia copperleaf and blue-spotted salamander.

The Sand Plains Ecoregions support unique *sand plain grassland communities*, including populations of the federally listed Savannah Sparrow and the Pine Barrens Tiger Beetle, whose habitats are at a premium and in need of protection, as well as the state-listed species Low Frostweed.

Some key findings on the status of Biological Diversity in the Farmington and Salmon Brook:

- The river itself is the only one known to support all 12 of the freshwater mussel species native to southern New England. The Farmington River may contain one of the New England's most—and Connecticut's only—viable dwarf wedgemussel populations, which is the only federally endangered freshwater mussel that occurs in New England.
- There are 19 state-listed plant species within the corridor including the only known population of Dwarf bulrush in a river ecosystem, the only known population of Purple giant hyssop in Connecticut and nearly the entire population of starry campion in all of New England is supported by the corridor's floodplain forest.
- At least 25 species of finfish are present in Salmon Brook and 30 species in the lower Farmington River. The Salmon Brook supports an exceptional recreational fishery starring native brown and brook trout. Migratory fish such as American shad, blueback herring, alewife, American eel, and Atlantic salmon have excellent spawning habitat in the lower Farmington corridor.
- Salmon Brook exhibits a basin-wide distribution of high-quality fish communities which is rare in Connecticut.
- The mouth of the Farmington River where it meets the Connecticut River is the most diverse and one of the most important areas within New England in terms of fish resources. All 12 of the diadromous fish species thought to be present in the state are believed to be present at this location.

The many vernal pools of the glacial lake plains provide critical breeding habitat for amphibians, and are very important in maintaining the numbers and diversity of frogs and salamanders that are significant components of the corridor's biological community. The silt of glacial lake plain is also fertile, and thus allowed for the extensive development of agriculture in the lower valley. The resulting large contiguous cleared areas now support outstanding *grassland communities*. Their resident bird populations include the Bobolink and the Eastern Meadowlark, members of a suite of grassland species that are generally in decline statewide.

The wet meadows of the Alluvial Floodplain Ecoregion support the largest reported New England population of the state-listed Davis Sedge. Also, within this ecoregion are the floodplain/levee forests which harbor an especially rich resource of state-listed plant species including the New England grape, Davis sedge, Virginia waterleaf, and starry campion. Levees and floodplain forest also provide habitat for bald eagles and other fish-dependent raptors such as the state listed northern harrier and osprey.

Overall, the combination of natural communities and their associated species make up a biologically diverse ecosystem characterized by an abundance and diversity of species including numerous rare species. In 2005 the Farmington Valley was highlighted in the book, *Nature-Friendly Communities*, recognizing the area for exceptional biodiversity and wildlife habitat and for the success of the Farmington Valley Biodiversity Project.

Cultural Landscape

The cultural landscape of the lower Farmington River and Salmon Brook includes both American Indian and post-contact resources recognized as nationally and regionally significant. Initial human occupation of the area along the lower Farmington River and Salmon Brook dates back to the end of the Pleistocene about 11,000 years ago, and archaeologists have recovered artifacts from at least 103 sites

Archaeological dig Photo: Ken Feder

List of National Register Historic Districts and Historic Places within the Lower Farmington and Salmon Brook Study Area

- Avon Congregational Church
- Broad Street Green Historic District (Windsor)
- Collinsville Historic District
- Drake Hill Road Bridge (Simsbury)
- East Weatogue Historic District
- Ensign Bickford & Co. Fuse Factory (Historic American Engineering Record)
- Farmington Canal (1828-1848) Massachusetts border to New Haven- extended to Northampton in 1835
- Granby Center Historic District
- Heublein Tower
- John Humphrey House (115 East Weatogue Street)
- Judah Holcomb House (Granby)
- Palisado Avenue Historic District (Windsor)
- Simsbury Center Historic District
- Simsbury Railroad Depot
- Tariffville Historic District (includes the Hartford Carpet Company)
- Terry's Plain Historic District
- Windsor River Railroad Bridge

Collinsville Photo: Tom Cameron

along the river and its tributaries. There are sites in the Study Area corridor of long-term, continuous, or repeated human occupation. The *Archaeological Assessment of the Lower Farmington River and Salmon Brook* identifies 11 sites that meet the National Register Criteria as nationally significant. For example the Lewis-Walpole Site located at the confluence of the Farmington and Pequabuck Rivers is a unique, nationally significant site of continuous human occupation. This site is also one of the most important in all of southern New England. Also, Indian Hill is also a nationally significant site, located in Bloomfield. It is an ancient settlement that was situated to take advantage of the anadromous fish resources of the Tariffville Gorge. The 103 sites could be recognized as a nationally significant district or region. In aggregate, the identified archaeological sites reflect a pattern of ancient settlement location along these watercourses, seasonal movement and change in landscape through time. The river and brook were clearly important to the existence of these early settlements as source of water, food, and transportation routes.

…the Farmington Canal represented the height of engineering in its time, and upon completion it was the longest canal in New England.

By the nineteenth century, signs of traditional Native American life were difficult to locate in the Study Area landscape because colonists, immigrants, and their descendants had become established in the area. Significant historical themes exhibited in the Lower Farmington Valley for the post-contact period include early colonial New England settlement patterns, nineteenth century industrialism, and the rise of industrial agriculture as exemplified by tobacco farming. Each of these historical developments introduced new populations of immigrants, whether settlers or migrant laborers, onto the landscape. For example, Irish immigrant laborers made up a large part of the workforce that built the Farmington Canal.

Connecticut's early settlements were based upon English agricultural villages. Rather than individual farms, settlers built their homes in clusters surrounded by the outlying fields and farms, and in this case along the Farmington River and Salmon Brook. Several historic districts along the Farmington River reflect this pattern. These historic districts include hundreds of rural and urban properties that are outstanding examples of historic architectural styles from the eighteenth and nineteenth centuries.

In July, 1899, as part of the first national soil survey, the Secretary of Agriculture authorized the examination of a section of the Connecticut River Valley, including the lower Farmington River as a central feature, and found that the region's sandy, rich, and well drained soils along the river were ideally suited for raising tobacco. Tobacco farming in the Farmington Valley is historically and culturally significant due to the important role the crop played in the economic and demographic development of the state and for the international recognition it gained as an exceptional agricultural product. Numerous National Register nomination forms documenting the region note sites of tobacco cultivation. First grown and used by the region's native peoples, colonists grew and even exported tobacco by the early eighteenth century. The profound growth of the tobacco industry in response to the commercialization of cigar manufacturing through the 1800s changed the Farmington Valley landscape, not only with regard to the types of crops sown in its fertile soil, but also in respect to the architectural landscape.

Some of the best examples of the manufacturing that secured Connecticut's role in the nation's economic history were located along the lower Farmington River to harness the river's energy. Agricultural settlements used the river's waterpower for gristmills, sawmills, and fulling mills, and entrepreneurs established waterpower industries and factories all along the river and its tributaries. The National Register-listed Historic Districts of Unionville, Tariffville, and Collinsville and the Avon Center Historic District have the most significant surviving assemblages of historic buildings. These reflect the river's small-scale rural industrial and manufacturing heritage, and also include examples of workers housing and industrial architecture of the late nineteenth century. For example, the Collins Company, for which Collinsville is named, manufactured sharp edged tools beginning in the 1820s, developing a global market that lasted into the 1960s. The Upper Collinsville Dam and surviving mill complexes form the centerpiece of the National Register-listed Collinsville Historic District which also includes surviving worker housing, stores, and other associated infrastructure from the nineteenth-and-twentieth century. The Farmington Canal was built to provide an

Some key findings on the status of Cultural Landscape Resources in the lower Farmington and Salmon Brook:

Nationally and Regionally Significant Archaeological Record, Settlement Patterns, Industrial and Economic Development, Abolitionism and the Underground Railroad and the Tobacco Valley

Nationally and Regionally Significant Archaeological Record:

- Nationally significant archaeological sites associated with the river, including the Indian Hill site and the Lewis-Walpole site.
- Over 100 prehistoric archaeological sites discovered to date in lower Farmington River and Salmon Brook corridors.
- Continuously occupied human settlement for up to 11,000 years.

Settlement Patterns/Industrial and Economic Development:

- The archaeological resources and some of the structures along the lower Farmington River and Salmon Brook, as described in the Cultural Landscape description, are Outstandingly Remarkable Values because they are exceptional examples of Connecticut's and the New England region's ethnic, cultural, and economic development.
- Farmington Canal represented the height of engineering in its time, and upon completion it was the longest canal in New England.
- Historically river-dependent communities such as Windsor, the first English settlement in Connecticut and the National Register-listed Historic Districts of Unionville, Tariffville, and Collinsville, and the Avon Center Historic District have significant surviving Outstanding Resource Values reflecting the river's agricultural, industrial and manufacturing heritage.

Underground Railroad:

- Cluster of Underground Railroad sites with the Town of Farmington know as the "Grand Central Station" of the Underground Railroad.

Tobacco Valley:

- Nationally noted prime agricultural soils have supported agriculture for over 11,000 years.
- Tobacco farming of historical and cultural significance due to the important role the crop played in the economic and demographic development of the state and for the international recognition it gained as an exceptional agricultural product.

Tariffville Gorge Triple Crown Race Photo: Bill Duncan

effective shipping route on the west side of the Traprock Ridge for goods from the interior of CT headed to New Haven and then on to larger ports such as New York City by ship. For example, with two canal basins, the town of Avon shipped a number of agricultural products, such as cheese and lumber to New Haven via the canal. Following the completion of construction of the Farmington Canal in 1829, the region's economy expanded to include more small-scale manufacturing and eventually commercial and industrial development in the towns of the Study Area. In both its conception as an economic venture and in its technological design, the

Photo: Tom Cameron

Farmington Canal reflects early nineteenth century movements in America to stimulate regional economic growth. Engineered by Benjamin Wright, chief engineer of the Erie Canal, the Farmington Canal represented the height of engineering in its time, and upon completion it was the longest canal in New England.

Because the Farmington River Valley communities had natural resources that allowed for: 1.) agricultural development, 2.) small manufacturing industries, and 3.) had developed infrastructure for commerce, and transportation, it was a thoroughfare for goods, services, and people. Because of these aspects of the area, as well as local anti-slavery sentiments, the Farmington River Valley supported the movement of runaway slaves escaping to the North. Some Farmington homes likely served as Underground Railroad stations. Farmington, then a largely agricultural community, served as a hub for various Underground Railroad routes and abolitionist activism. The town's location and concentration of abolitionists made it a highly trafficked segment of a larger migratory pattern for fugitive slaves, and the town has been referred to as the "Grand Central Station" of the Underground Railroad. There is little documentation of the actual routes and homes that were used as part of the Underground Railroad due to the historic need for concealment of these details for the protection of fugitive slaves and residents of Farmington. The stations there would guide people along the Farmington River or nearby roads through Hartford, Bloomfield, or Avon, then to Simsbury and Granby. There is very little evidence that participants used the Farmington River itself for travel. However this cluster of sites represents a physical network of properties across a shared cultural landscape, one that lay adjacent to the river and owed its development as part of the Underground Railroad to the agricultural, commercial, and manufacturing opportunities located there that the river supported.

Some key findings on the status of Recreational Resources in the Farmington and Salmon Brook:

- The Tariffville Gorge provides a premier whitewater paddling destination and has been the location for world class paddling completion. It is one of very few rivers in the east where there are year-round paddling opportunities.
- There is a broad range of boating activities—from flat-water to mild moving waters to sections of class II and III white water for experienced paddlers. It is easy for people to take advantage of these activities, since there are public access points and parks within every Study Town.
- Regionally significant opportunities for fishing in the lower Farmington River.
- The clean cold-water trout fisheries of the Salmon Brook provide some of the most outstanding opportunities for angling anywhere in Connecticut.
- A conservative estimate of the number of recreational visits to the streams from mid-May to mid-September is over 124,000 per year.
- There is an extensive network of trail systems within the study area including six State of CT officially designated greenways that follow the watercourses: Farmington River Trail, Farmington Canal Heritage Greenway, Metacomet Ridge System, Blue Blazed Trail system, the Shade Swamp Sanctuary, and the West Mountain Trails. The Salmon Brook corridor was recently officially designated as part of the state greenway system.
- Exceptional birding opportunities exist because the State of Connecticut overlaps the southern boundary of northern species and the northern boundary of southern species, so species abundance is unusually high. The river corridor provides good nesting habitat and is a migration corridor as part of the Atlantic flyway.

Recreation

The Farmington River and Salmon Brook provide corridors with exceptional recreational opportunities. The variety of boating, fishing, and water-based recreational activities is unique regionally because of the consistent year-round flows, clean water, and quality of the resources. Boating on the watercourses can be experienced by people of many skill levels due to the diversity of paddling opportunities ranging from flat-water to Class II and III for experienced paddlers. The high quality fisheries of the Farmington and Salmon Brook provide for exceptional fishing. Fishing is a popular recreational pursuit due to the diversity of fishing options and the excellent water quality. Of particular note are the fishing opportunities of the Salmon Brook, which has an abundance of native brown and brook trout and very few warm water species. Trout thrive in cold-water environments, and Salmon Brook offers vegetated riparian buffers that provide shade and maintain water temperatures. It is considered to be one of the best fishing streams of New England. People are easily able to take advantage of these activities since there are many public access points to the streams.

While the majority of recreational users are local residents, the Tariffville Gorge attracts kayakers both regionally and nationally. The Gorge is a spectacular rapid that can be run year-round. There are very few rivers in New England and along the east coast where running world-class white water throughout the summer months is possible. It has been the location of National and Olympic Trials, New England Championship competitions, National Canoe Poling competitions and New England Whitewater Triple-Crown Championships.

Though boating, fishing, and hiking/walking are popular activities, the range of recreational pursuits is quite varied. Based on the results of the *Economic and Use Study of the Lower Farmington River and Salmon Brook*, the river, the brook, and their corridors are highly valued by residents and recreational users who strongly support a Wild and Scenic River designation as a way to further river protection. Survey respondents' support is based on the sense of place that the lower Farmington River and Salmon Brook provide, and on the diverse recreational options which the watercourses offer.

Several outstanding trail systems are within the study area including six State of Connecticut officially designated greenways: Farmington River Trail, Farmington Canal Heritage Greenway, Metacomet Ridge System, Blue Blazed Trail system, the Shade Swamp Sanctuary, and the West Mountain Trails in Simsbury. The Salmon Brook system was the most recently designated greenway to be officially included by the State of Connecticut. Not surprisingly, part of what makes each unique is their connection to other Outstanding Resource Values. The Farmington Canal Heritage Trail and the Farmington River Trail are two popular multi-use "Rails-to-Trails" paths that pass through seven of the ten study towns (Burlington, Canton, Farmington, Avon, Simsbury, East Granby, and Granby). The Farmington Canal Heritage Trail has been designated a Community Millennium Trail under the Federal Millennium Trails Initiative based on its special value to the communities it passes through. The Farmington River Trail is an eighteen-mile loop trail that links to the Heritage Trail at points in Farmington and Simsbury. For roughly half its length the trail runs directly alongside the river. Since both trails are built along abandoned rail corridors and canal towpaths, each passes through a rich cultural landscape of historic buildings, canal locks, iron bridges, stone arches, and other landmarks.

With the recent designation of the New England Trail, a National Scenic Trail that follows the traprock ridge through five of the ten study towns, there is the potential for even more regional and national attention on the recreational use of the corridor, and in particular where the trail accesses the Tariffville Gorge. Already successful projects have increased and linked trails, greenways, and the watercourses for increased connectivity of the recreational use network.

3.D. Classification

The river's preliminary classification is based on the river and brook being accessible by road, having some development along their shorelines, and having undergone some impoundment or diversion in the past. The lower Farmington River and Salmon Brook are accessible and visible from roadways and via river crossings. State Route 10 is the predominant north-south artery through the

View of the Tariffville Gorge from the New England National Scenic Trail
Photo: Paula Jones

Study Area that provides access to both the Farmington River and Salmon Brook. Route 10 runs parallel to the Farmington River and some segments of the Salmon Brook in the towns of Avon, Simsbury, and Granby. State Route 44 runs east-west through the Study Towns and crosses the Farmington River in the towns of Canton and Avon. Interstate 91 crosses the river in Windsor.

The broad range of land uses bordering the watercourses is representative of a New England area settled over a period of several hundred years. Remnants of the agrarian past and historic industries that were powered by the Farmington River are evident today. Though the watercourses are visible and accessible by foot and car, approximately 28% of lands bordering the watercourses are preserved in open space. Open space and recreational land comprise the largest percentage of land use along the river, followed by 22% in residential land, 12% mixed use and 9% in agricultural use and 9% currently undeveloped. There are a series of historic dams and one active impoundment on the watercourses.

According to the Wild and Scenic Rivers Act the segments of the Farmington and Salmon Brook that are found eligible for designation best meet the criteria for classification as **'recreational'**.

3.E. Conclusions on Eligibility and Classification

Approximately 63.4 miles of the lower Farmington River and Salmon Brook are eligible for Wild and Scenic River designation based on free-flowing conditions and the presence of Outstandingly Remarkable Values that include **Geology, Water Quality, Biological Diversity, Cultural Landscape,** and **Recreation**. The preliminary classification for all eligible river segments is **"recreational."** The portion of the Lower Farmington River impacted by the Rainbow Dam, reservoir, and tailrace diversion are not found eligible for designation due to the absence of free-flowing character.