

Protecting Resource Values On Non-Federal Lands

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FOREWORD

This paper is intended to help federal agency staff, wild and scenic river (WSR) study team members, local residents, and community leaders to understand and apply the Wild and Scenic River Act's (Act) protection criteria for river-related resources located outside federal lands. In the second section, this paper provides an outline of the Act's statutory resource protection requirements and the interpretation of this mandate found in the *Department of Interior and Agriculture Interagency Guidelines for Eligibility, Classification and Management of River Areas* (Interagency Guidelines) published in the *Federal Register* (Vol. 47, No. 173; September 7, 1982, pp. 39454-39461). The third section provides a summary of concerns that have been voiced by agency staff and the public over the meaning of these requirements, while the fourth section presents a framework that has been developed by agency staff to resolve resource protection issues. Case study summaries from WSRs across the country are also presented in this section. Finally, the fifth section contains additional technical information about assessing a river's resource-protection needs and applying appropriate resource protection tools.¹

INTRODUCTION

Standards and procedures for the protection of river-related resources on non-federal lands within WSR corridors² are not well defined in the Act. As a consequence, this issue is widely interpreted by agency staff and the public, and the resulting uncertainty creates controversy in WSR planning and administration. Much of this controversy is associated with apprehension

¹ **Author's Note:** This paper evolved through peer review of earlier drafts at working meetings of the Interagency Wild and Scenic Rivers Coordinating Council; Council-sponsored public information workshops; and the 1996 American River Management Society Symposium. Its content includes extensive sections contributed by agency staff responsible for WSR river planning and management throughout the country. Additional contributions to the case study and toolbox sections are welcome and will be used when the paper is periodically updated.

² For the purposes of this paper, the term "river corridor" is defined as either the 1/2-mile wide study corridor or the area within a designated river's boundaries.

about the use of federal land acquisition as the primary protection tool for river-related resources. However, federal land acquisition is not always an appropriate tool for conserving resources located beyond existing federal lands. Thus consistent, practical approaches towards the development of cooperative resource protection strategies are needed if the Act's resource-protection mandate is to be fulfilled.

For study rivers, criteria are needed to measure the adequacy of existing controls in protecting the outstanding resource values identified during the study. The decisions whether to recommend WSR designation, and whether federal land acquisition should be used to help conserve the river's resources, are based in part on this determination. On designated rivers, there is a need for improved guidance to enable federal river managers, state and local governments, and private landowners to work cooperatively towards resource protection goals. Since non-acquisition approaches rely on the voluntary cooperation of local and private interests in order to succeed, it is essential that these groups share in the process of setting resource protection standards and selecting appropriate protection strategies.

STATUTORY BACKGROUND

The mandate to protect a WSR's outstandingly remarkable values (including *land-based* resources such as recreational access, scenery, wildlife habitat, and historic sites) is found in several sections of the Act.

Section 1(b): *It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable . . . values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations.*

Section 3(d)(1): *. . . the Federal Agency charged with the administration of each component on the National Wild and Scenic Rivers System shall prepare a comprehensive management plan for such river segment to provide for the protection of the river values. The plan shall address resource protection . . . and other management practices necessary or desirable to achieve the purposes of this Act.*

Section 6(c): *Neither the Secretary of the Interior nor the Secretary of Agriculture may acquire lands by condemnation . . . if such lands are located within any incorporated city, village, or borough which has in force . . . a duly adopted, valid zoning ordinance that conforms with the purposes of this Act. . . [T]he appropriate Secretary shall issue guidelines, specifying standards for local zoning ordinances, which are consistent with the purposes of this Act. The*

standards specified in such guidelines shall have the object of (A) prohibiting new commercial or industrial uses other than commercial or industrial uses which are consistent with the purposes of this Act, and (B) the protection of the bank lands by means of acreage, frontage, and setback requirements on development.

Section 10(a): *Each component . . . shall be administered in such a manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with the public use and enjoyment of these values. In such administration, primary emphasis shall be given to protecting its esthetic, scenic, historic, archaeological, and scientific features.*

Section 10(e): *The States and their political subdivisions shall be encouraged to cooperate in the planning and administration of components of the system which adjoin State- or County-owned lands.*

Section 11(b)(1): *The Secretary of the Interior, the Secretary of Agriculture, or the head of any Federal agency, shall assist, advise, and cooperate with States or their political subdivisions, landowners, private organizations, or individuals to plan, protect, and manage river resources. . . . This authority applies within or outside a federally administered area and applies to rivers which are components of the Wild and Scenic Rivers System . . .*

Section 12(a): *The Secretary of the Interior, the Secretary of Agriculture, and the head of any other Federal . . . agency having jurisdiction over any lands which include, border upon, or are adjacent to, any river included within the . . . System or under consideration for such inclusion . . . shall take such action respecting management policies, regulations, contract, plans, affecting such lands . . . as may be necessary to protect such rivers in accordance with the purposes of this Act . . .*

Section 12(c): *The head of any agency administering a component of the national wild and scenic rivers system shall cooperate with the Administrator, Environmental Protection Agency, and the appropriate State water pollution control agencies for the purpose of eliminating or diminishing the pollution of waters of the river.*

The Interagency Guidelines interpret this mandate as follows:

Land uses and developments on private lands within the river area which were in existence when the river was designated may be permitted to continue. New land uses must be evaluated for their compatibility with the purposes of the Act.

Managing agencies will implement these [management] principles to the fullest extent possible under their general statutory authorities and existing Federal, State and local laws. Because of these limitations, however, implementation of the principles may differ among and within components of the system depending on whether the land areas involved are federally, State, locally, or privately owned.

River managers will work with local authorities to abate activities within the river area which are degrading or would degrade existing water quality.

Existing patterns of land use and ownership should be maintained, provided they remain consistent with the purposes of the Act. Where land use controls are necessary to protect river values, the managing agency will utilize a full range of land-use control measures including zoning, easements and fee acquisition.

In summary, there are no explicit standards for resource protection on non-federal lands in the Act or Interagency Guidelines. Neither provides much guidance, apart from the reference in Section 6(c) to zoning guidelines, on the subject of non-acquisition approaches to resource protection. As a result, federal agency staff have had to rely heavily on professional judgement in interpreting and applying the Act and guidelines on WSRs that flow through lands held by state and local governments or private landowners. Several case studies of resource protection approaches that have been used on actual rivers are described later in this paper.

ISSUE-RELATED CONCERNS

In order to resolve the issue of resource protection on non-federal lands, it is important to understand the questions and concerns it raises within riverfront communities. Given that the Act grants authority (albeit limited) to federal river managing agencies for the acquisition of land along designated rivers, it is easy to see why corridor residents become concerned about the methods that will be used to protect river-related resources. To the casual reader of the Act and Interagency Guidelines, their lack of specific information on non-acquisition approaches can lead to the conclusion that there are no alternatives to federal land acquisition. Typical questions raised during river studies and the development of comprehensive management plans include:

- Can the federal government regulate, through zoning or otherwise, the use of non-federal lands in order to protect a river's outstanding resources?
- If the federal government doesn't have zoning power, why do the Interagency Guidelines say, "Where land use controls are necessary to protect river area values, the managing agency will utilize a full range of land-use control measures, including zoning?" That is, *how* will the managing agency go about implementing the land-use control measures?

- Since the formal zoning standards described in Section 6(c) of the Act have never been promulgated, is the use of federal land acquisition to protect resources along the river a certainty if the river is designated?
- My community doesn't have any zoning. Does this mean my land will have to be acquired by the federal government if the river is designated?
- What if my community has great zoning on paper, but poor enforcement?
- Even though formal Section 6(c) zoning standards have never been established, aren't federal agencies using some sort of informal standards to evaluate local zoning? Why can't I find out what those standards are so I can see if I agree with the agency's conclusions?
- Shouldn't the study or plan development team be looking at more than just zoning when it assesses how well resources located on non-federal lands are protected?
- Is it reasonable to think that a single set of zoning guidelines could be developed to protect many different types of river resources throughout the country?
- How can federal agencies recommend designation of rivers flowing through non-federal lands if they have no way of assuring the permanent protection of the resources that make the rivers eligible for this distinction, apart from acquiring a certain number of acres per river mile?
- Lands owned by state and local governments are exempt from zoning laws. Should a river be recommended for designation if these lands could be developed for inappropriate purposes, harming the river's resource values?
- If the federal government already owns an average of 100 acres per river mile along the designated segment, how can the protection of resources located on other lands be assured?
- What's the point of designating a river to protect it from dams and diversions if land use practices on non-federal lands within the entire watershed threaten water quality and other values?
- Why spend millions of dollars to acquire lands within the river corridor, and why spend time and energy developing partnerships with communities to protect areas within a river's boundaries, if the owners of adjacent land can do anything they want, even if it degrades the river's character or resources?

- How can the federal government ensure adequate recreational access to the river if it doesn't own the land?
- Even if the federal government doesn't own my riverfront land, doesn't it have some responsibility to protect me from trespassers?

Few of these questions have easy answers. The fourth section presents summaries of some of the solutions to the resource protection issues that have been developed by agency staff and community partners. For additional explanations, please see the comprehensive Wild and Scenic Rivers Act "*Questions and Answers*" compendium (a separate paper in this publication) prepared by Gary Marsh, the Bureau of Land Management's Washington representative to the Interagency Wild and Scenic Rivers Coordinating Council (Council).

RESOURCE PROTECTION STANDARDS AND APPROACHES

The overall purpose of WSR designation is to protect the nation's outstanding free-flowing rivers and associated resources "for the benefit and enjoyment of existing and future generations." Because designation ensures that a river will not be subject to major new federal water resources projects, including new dams and hydroelectric developments, it can be a strong river protection tool. However, river systems are also affected by a variety of land use decisions and water-related policies over which the federal government has little or no control.

On most rivers, particularly those that have extensive areas of non-federal lands within their watersheds, or where water rights and water quality are major issues, the protection from damage associated with federally authorized projects that is automatically afforded by WSR designation falls short of ensuring the health of the river system as a whole. As outlined earlier in this paper, the Act seeks to compensate for this "protection gap" in part by authorizing the federal acquisition of land or easements within a congressionally designated river's boundaries.³ However, it is clear from the constraints placed on land acquisition that Congress never intended it to be the only tool available for the protection of land-based resources. For instance, fee acquisition is limited to an average of 100 acres per river mile, and condemnation cannot be used if 50 percent or more of the land within the boundaries is already in public (including state and local) ownership. State-owned lands can be acquired only through donation or exchange. Additional limitations on the use of acquisition and/or condemnation have also been set legislatively for individual rivers when they were added to the National Wild and Scenic Rivers System (National System).

³ Unless otherwise provided in law, boundaries can average no more than 320 acres per river mile (640 acres per mile in Alaska).

In addition to these statutory limitations, political and institutional realities also discourage the use of federal land acquisition. The purchase process is frequently slow, expensive and controversial. Funds available to agencies for land acquisition are extremely limited and are subject to annual fluctuations, making it difficult to implement long-term acquisition programs. In many parts of the country, the possibility of federal acquisition -- even through willing-seller, willing-buyer transactions -- can result in a decision not to designate an eligible river, resulting in the potential loss of its free-flowing character to federally authorized dams, hydropower projects, etc. Furthermore, land acquisition is of limited utility in assuring the protection of many important river-related values, including resources influenced by land use outside the river's boundaries (such as wildlife habitat, water quality, and even scenery), and adequate flows, which are dependent on both land use and non-federal allocation decisions. Thus, as a resource protection tool, the federal land acquisition authority provided in the Act is inadequate to fulfill the Act's resource-protection mandate on most, if not all rivers. The additional protection needed to protect such rivers for the benefit and enjoyment of future generations can only be provided through the cooperation of state and local governments, landowners, and other river-related organizations.

Given the flexibility the Act provides, and the need to downplay the role of federal land acquisition along so-called "private lands" rivers, agency planners and river managers have developed various solutions to the resource protection issue. However, these approaches vary regionally and from agency to agency, creating the potential for inconsistency. New study and resource management planning teams may be starting from scratch when workable solutions already exist. In addition, since these approaches have never been formally adopted, they are unknown to potential supporters of additional river designations. As a result, the agencies implementing them can appear to be setting arbitrary river protection goals and using top-down management strategies, undermining the mutual trust needed for river conservation efforts to succeed. The Council can play a strong role in promoting the awareness of workable protection approaches among agency staff, with the goal of promoting consistency while maintaining sufficient flexibility to meet the individual needs of WSRs in a variety of settings.

Below is an outline of the principles used by agency staff to: 1) set resource protection standards, and 2) implement resource protection approaches, on both study and designated WSRs. A summary of working examples of resource protection is included as well.

Resource Protection Standards

Relying on the Act and common sense for guidance, agency staff have developed the following basic principles for use in setting resource protection standards. All four WSR managing agencies accept the following as principles for resource protection.

- The amount of protection needed to protect and enhance a river’s “outstandingly remarkable values” (ORVs) varies depending on the resource involved and the topography of the river corridor. More stringent controls might be needed to protect critical habitat, less to protect an isolated historic feature.
- The protection approach should be performance-based, focusing on desired long-term outcomes (or desired future conditions) rather than on simple regulatory formulas. A single setback requirement will not be effective for all resources on all rivers.
- There should be a distinction between protection standards for the immediate riparian zone and the rest of the river corridor. The former should be more stringent to protect riparian structure and function. The latter should address the need to protect and enhance identified resource values, and to prevent undesirable large-scale land use changes.
- The patterns of ownership and land use that exist when a river is designated (e.g., mixed farming and low-density residential uses; rangeland in large holdings; or even urban settlements beyond a forested floodplain), which in turn determine the river’s character, should be used to help establish limits for acceptable land use changes. In other words, new buildings along a segment that already has some development are not necessarily unacceptable, provided they are similar in scale and location to pre-existing structures. A build-out analysis may be useful in helping to predict land use changes that will occur based on existing zoning and ownership without additional resource protection measures.
- The river’s classification(s) may help provide benchmarks against which potential changes can be measured. In general, protection standards should ensure that a segment’s appropriate classification would not change from wild to scenic, or from scenic to recreational, if a new assessment were to be performed.
- The suitability for designation of so-called “private lands” study rivers should be based in part on the adequacy of resource protection that is either already in place or reasonably expected to be provided through means other than federal land acquisition. To help set standards for any additional resource protection measures that may be needed, a “vulnerability analysis” of a river’s ORVs, water quality, and free-flowing character can be performed during the study, comparing existing levels of protection to desired future conditions for these resources.
- In setting protection standards for flow- or water quality-dependent ORVs (e.g., recreation, fisheries, and scenery), an instream flow study may be needed to help identify the limits of acceptable flow and water quality changes. Such a study may also help identify management strategies that would enhance water quality and other resource values.

Resource Protection Approaches

To reiterate: The resource protection approaches discussed in this section exclude federal land acquisition. All require the participation of the landowner and/or land use regulating authority (e.g., county or local government) for implementation. Agency staff use the following basic principles to develop and implement resource protection approaches.

- Since states differ in the authorities they delegate to county and local governments, there are regional differences in the kinds of land protection tools available. Resource protection strategies will also vary.
- Resource protection efforts should rely on cooperative approaches, focussing on incentive carrots rather than regulatory sticks (e.g., conserving riverfront land through voluntary conservation easements resulting in property tax reductions, rather than through restrictive regulations).
- WSR suitability requirements can provide an important incentive for local voluntary resource protection efforts. If the federal agency responsible for the river study determines that additional resource protection measures are necessary to ensure that the river's ORVs, water quality, and free-flowing character will be permanently protected and enhanced, communities desiring WSR designation have a strong incentive to implement such measures.
- Specific protection measures can be identified by using a conceptual framework⁴ that displays relevant forms of protection for lands within the river corridor. Such forms of protection include land use regulations (e.g., floodplain zoning), critical areas protection laws (e.g., wetlands protection laws), physical barriers to development, and conservation ownership.⁵

⁴ Such as the matrix on the next page, which was developed by a regional planning commission and National Park Service staff to evaluate a 2(a)(ii) designation request for the Westfield River in Massachusetts.

⁵ Including land and interests in land owned by state, local or private entities where the clear purpose of such land is conservation.

Town-By-Town Comparison of Existing Protection for the Westfield River, Massachusetts

	Zoning Regulations						Limits to Development		Conservation Lands***						
	River Protect. Overlay	Flood-plain Overlay	Shore Buffer Area	Septic Setback	Special Permit for Structure	Min. Lot Size	Lack of Existing Road Access to River	Physical Constraints to Dev' ment	(in acres)			(in miles)			
									State Ownership	Federal Ownership	Town and Non-profit Lands	Total River Frontage Protected	Public River Frontage Protected	Private River Frontage Protected	
Becket	No	Yes	None	N/A	**	2 acres	Yes (WB)	Yes (steep slopes, WB)	88			5.2 WB	.6	4.6	
Chester	Yes	Yes*	100'+ flood-plain	150'	Yes	2 acres, 1/4 acre in town center	Yes (parts of WB, MB)	Yes (steep slopes, WB)	6720	1567	151	8.2 MB 16.8 WB	0.0 MB 2.5 WB	8.2 MB 14.3 WB	
Chesterfield	Yes	Yes*	100'+ flood-plain	Far as feasible	Yes	2 acres	Yes (EB)	Yes (steep slopes, EB)	2438	2589	205	14.2 EB	7.5 EB	6.7 EB	
Cummington	Yes	Yes*	100'+ flood-plain	150'	Yes	2 acres, 1/2 acre in town	Yes (parts of EB)		608		76	18.2 EB	3.8 EB	14.4 EB	
Middlefield	Yes	Yes*	100'+ flood-plain	150'	Yes	2 acres, 1 acre in Bancroft	Yes (WB)	Yes (steep slopes, WB)			559	5.6 WB 4.6 MB	1.3 WB 0.7 MB	4.3 WB 3.9 MB	
Worthington	Yes	Yes*	100'+ flood-plain	Far as feasible	Yes	2 acres	Yes (MB)	Yes (steep slopes, MB)	5428			12.4 MB	2.9 MB	9.5 MB	
EB = East Branch MB = Middle Branch WB = West Branch * Included in River Protection Zoning Overlay. ** New construction or substantial improvements must not increase flood levels. *** Acreage breakdown per community are estimates as some conservation land parcels cross municipal boundaries.												Totals	27.6 WB 25.2 MB 32.4 EB	4.4 WB 3.6 MB 11.3 EB	23.2 WB 21.6 MB 21.1 EB

Resource Protection Examples⁶

The following examples describe the approaches used by federal agency staff in applying the Act's resource protection requirements on WSRs, or portions of rivers, flowing through non-federal lands. These approaches may vary, depending on: 1) a river's status as a congressionally authorized study river or a so-called "instant" WSR (a river designated without the benefit of a Section 5(a) or (d) study); 2) the extent of institutional support for cooperative river-protection efforts that already existed when the river was designated or the study was authorized; and 3) local and regional experience with, and attitudes toward, land use controls. Such factors can affect the priority agency staff place on building partnerships with landowners and state and local governments, versus working to implement actual resource protection improvements. WSR resource protection is an ongoing process; sometimes it is imperative to build a foundation for cooperative river protection before results can be realized.

Big and Little Darby Creeks, Ohio

Background: The Big and Little Darby Creeks were designated as components of the National System in 1994. These segments had already been designated as Ohio Scenic Rivers when the Governor of Ohio requested national designation under section 2(a)(ii) of the Act, which allows for state and local administration at no expense to the federal government. Apart from the requirements that the river be designated as a wild, scenic, or recreational river by or pursuant to an act of the state legislature, and that it be administered by an agency or political subdivision of the state, the same requirements for designation apply to rivers designated under section 2(a)(ii) as apply to those designated by Congress under section 3(a).

The 556-square mile watershed of the Darby Creeks is located within 25 miles of downtown Columbus, which, with its 1.5 million people, is the largest metropolitan area in Ohio. Approximately 90 percent of riverfront property is privately owned; the Franklin County Metropolitan Park District owns most of the publicly owned lands. Outstanding resources include an exceptionally diverse fish and mollusc community with endangered species in each class; scenic, cultural, and historical values are also considered important resources. The watershed, primarily agricultural in nature, is experiencing encroaching residential development from Columbus.

Based on an evaluation of the eligibility and suitability of the proposed segments, totaling 86 miles, the National Park Service (NPS) recommended that the Secretary of the Interior designate

⁶ Resource protection examples were provided by Council members and the following individuals: U.S. Forest Service -- Steve Mellor, Mollie Chaudet, and Jim Chu; National Park Service -- Jamie Fosburgh, Malcolm Ross, Bill Sharp, and Angie Tornes.

the Big and Little Darby Creeks. During the evaluation process, NPS also formulated some suggestions for enhancing management.

Standards: Since protection of the aquatic resource was the primary goal of those seeking protection of the Darby Creeks, and because riparian corridors are essential to maintaining healthy aquatic habitat, the vulnerability of lands within the riparian zone was evaluated. In addition, the NPS evaluation recommended assessing the aesthetic, cultural and historic values and taking steps to protect those resources.

Approach: The evaluation of resource protection consisted of applying more rigorous criteria in areas of greatest development pressure and less rigorous criteria in more remote locations. Therefore, zoning which protects a minimum 120 feet of naturally vegetated riparian corridor, limits development within the 100-year flood plain, incorporates building setbacks, and restricts septic system placement was evaluated more critically in Franklin and Madison Counties (closest to Columbus). Also taken into consideration were subdivision regulations which protect the river; construction site erosion and storm water control regulations; and lands protected through public ownership, conservation easements, and land trusts.

The protection measures mentioned above were eventually successfully applied to those areas receiving greatest development pressures. The same measures were minimally applied, if at all, in the more remote areas of Union and Pickaway Counties. However, the evaluation also included man-made limitations to development such as roads or railroads paralleling the creeks, and natural limitations to development such as soils unacceptable for septic systems. Due to some building restrictions in one county, and both man-made and natural limitations to development, protection in the more remote areas was found adequate.

In addition to these more direct protection measures, a partnership of local, state and federal agencies and non-governmental entities meet quarterly to present status reports of actions taken under their various programs. Several large grants from federal agencies and private foundations have been awarded to conduct biological, water quality, and soil erosion research, and to develop technical assistance and educational programs relating to sustainable agriculture, erosion control, and stream quality monitoring in the watershed.

Evaluation: Overall awareness of the Darby Creek's ecological importance has increased, as has riparian public land ownership. Research, educational efforts, and monitoring continue. However, no new specific land use protection measures have been adopted in the remaining two counties, one in which residential development pressure from Columbus is being felt. In addition, an increasing concern pertaining to the entire creek area relates to the continued degradation of the cultural landscape, aesthetics, and historical resources.

Upper Delaware River, New York and Pennsylvania

Background: The Upper Delaware River was one of the original rivers identified for study in the Act. One of the few remaining large undammed rivers in the northeast, the Delaware is within a two-hour drive of major population centers in New York, New Jersey, and Pennsylvania. Conflicts over the management of recreation on this river (e.g., access, boater safety, overcrowding, and trash removal) provided the major incentive for designation within riverfront communities. However, because the Upper Delaware was designated before the federal government and local communities had agreed on a management approach, including the delineation of boundaries, it has taken years to develop the sense of trust and cooperation that now exists along this river.

Standards: An early conceptual management plan developed by the Bureau of Outdoor Recreation (whose WSR study functions were later transferred to the NPS) proposed boundaries encompassing a liberal ridge-to-ridge area, including many existing riverfront communities. After the river was designated in 1978, the NPS and the Conference of Upper Delaware Townships (COUP) eventually revised the river's boundaries from 86,000 to under 56,000 acres, excluding some buildable uplands near existing developments. The new boundary includes lands that drain directly to the river or tributaries, from the river landward to the first major topographical feature. Within this area, the river management plan generally uses performance-based standards to guide resource protection decisions. However, the plan also specifies certain land uses that are considered to be inherently incompatible with the protection and enhancement of the river's values.

Approach: There were several attempts, first by the Bureau of Outdoor Recreation and then the NPS, to develop a river management plan before the current plan was produced and accepted in 1986. Early efforts were conducted by agency staff working at a distance from the project area, with little input from local residents and governments. Within the NPS, the planning effort was further complicated by the involvement of staff from both the regional office and the agency's national planning service center. The unfortunate consequence of the project's history was that major opposition to federal involvement in the Upper Delaware Valley solidified around the issue of the river management plan.

The successful 1986 plan was produced by the local advisory group, COUP, working in cooperation with NPS staff. Among other things, it established the Upper Delaware Council, rather than the NPS, as the entity responsible for implementing the management plan. The plan creates a contract between member communities and the NPS, affording such communities local input into resource protection decisions, including federal land acquisition proposals. Acquisition is considered a last resort. Member towns are thus empowered to continue to protect river-related resources their own way, while benefitting from the regional coordination provided by the Upper Delaware Council. Municipalities that have not endorsed the management plan are not members

of the Upper Delaware Council, and have no say in NPS management decisions that may affect them.

The lessons learned on the Upper Delaware (the need to collaborate closely with local residents, and to focus on use of protection tools other than federal land acquisition) have since been applied by agency staff working on other “private lands” WSR studies nationwide.

Evaluation: While some towns continue to oppose the management plan, the majority of the communities (11 out of 15 towns and townships in the two states) along the 73-mile designated segment are members of the Upper Delaware Council. The NPS has acquired only the minimum amount of land that it needs for facilities and river access (under 24 acres as of September 1996). Resource protection efforts have included the monitoring of runoff coming from landfills outside the river’s boundaries and coordination with state agencies to improve regulatory oversight.

Upper Deschutes River, Oregon

Background: The Upper Deschutes River was designated under the Omnibus Oregon Wild and Scenic Rivers Act of 1988, without the benefit of a suitability study. Most of the 54-mile designated reach is also protected under the Oregon State Scenic Waterways System. This program, similar to national WSR designation, is designed to protect and enhance scenic, natural, aesthetic, recreation, scientific, and fish and wildlife qualities. It requires preconstruction review of proposed new development or changes in existing land uses.

Approximately 23 percent of land along the Upper Deschutes is in private ownership. Nearly 3,000 private parcels existed within 1/4-mile of the river at the time of its designation. Having been platted prior to the river’s designation, many of these parcels have since been developed into year-round and vacation residences.

In addition to land use issues, resource protection standards were needed to address the challenge of protecting flow-dependent resources on the Deschutes, where all of the river’s natural and stored flows had already been allocated to out-of-stream uses.

Standards and Approach: A joint river management plan was developed by 18 different governmental or quasi-governmental authorities. This comprehensive river management plan serves all of the cooperators. Important elements include:

- An interagency “stewardship team” to provide assistance to private landowners in appropriate development practices to protect and enhance river values and to seek methods to streamline the permitting process.

- An adaptive management strategy for increasing winter instream flows and reducing flow fluctuation over the long term.

The cooperative approach to river administration recognized that key issues which affect river values, such as management of flows and private land development, could only be addressed with the willing participation of all appropriate authorities. These authorities include other federal agencies (e.g., Army Corps of Engineers), tribal governments, various state agencies (e.g., the Oregon Parks and Recreation Department, Oregon Department of Fish and Wildlife), Deschutes County, and the irrigation districts. The following premises describe the approaches to dealing with water quantity and quality and private lands:

- 1) Water quantity and quality issues are addressed through a voluntary adaptive management approach. Studies conducted by the Bureau of Reclamation (BOR) have shown that conservation measures, although expensive, could result in sufficient water savings from which to significantly improve winter instream flows and the reliability of water to irrigation users. Other methods of improving instream flow, such as water leasing and purchase from willing sellers, have been demonstrated in other portions of the Deschutes Basin and were also explored. The river management plan identifies a set of strategies which include experimentation with release rates and the identification of long-term targets for instream flow. As water is made available through conservation, lease or purchase of water will be used to provide incremental increases in winter flows. These strategies will be evaluated periodically to determine their effectiveness in reaching the resource condition goals identified in the plan.
- 2) Private lands are addressed by focusing on future potential for development and working cooperatively with private landowners to identify and implement development compatible with protecting and enhancing river values. The State Scenic Waterway Program and Deschutes County provide most of the regulation for private land uses within the river corridor. During the planning process, an interagency team reviewed the standards for future development and found that existing setbacks, zoning ordinances, and design reviews were sufficient to protect river values. Existing setbacks are 100 feet, commercial development is prohibited, height limitations are consistent with State Scenic Waterway administrative rules, and new residential development must be 10 acres or greater.

The interagency team recommended that county ordinances be modified to reflect the use of “bioengineering” techniques for streambank stability and erosion control. Because the Deschutes’ flow regime is significantly modified by upstream dam operation, winter flows are unnaturally low due to storage and the summer irrigation season produces high flows equivalent to a 25-year flood event. More specifically, a number of agencies cooperated to prepare a brochure which explains to landowners the importance of

riparian zones and the improved long-term effectiveness of bioengineering techniques to protect their property. This program also includes technical assistance and financial support of demonstration projects.

Evaluation: Implementation of key aspects of this plan is already underway, though it is not yet final (the target date was July 1996). The entities involved in developing the plan (many state, local and federal agencies, along with members of the public) have demonstrated an extraordinary willingness to cooperate and to ensure consistent river management during the planning period. Some activities that are currently under way include: experimentation with release rates and related monitoring; a joint conservation effort by the BOR and one irrigation district to conserve water and turn the savings into instream flows; completion of a successful pilot streambank stabilization project; and a more efficient building permit process that recognizes the shared river management goals.

While the plan sets ambitious goals, the partnerships forged during the planning process will provide the framework for successful implementation of the plan. Its success also depends on the partners and the community keeping river stewardship a high priority and working to achieve commensurate funding.

Farmington River, Connecticut

Background: Designated in 1994, the Farmington River flows through a hilly, densely forested region of northwestern Connecticut. Adjacent lands are principally in private ownership, although substantial acreages are held by Hartford's regional water supply utility. Two state forests are also located along the segment, a recreational asset prized by fly fishermen, canoeists, kayakers, etc.

The Farmington WSR study was initiated by valley residents who were concerned by proposals to expand Hartford's regional water supply to include existing, inactive reservoirs on the river's West Branch. They feared that water withdrawals would harm the river's pristine water quality, destroy its value as a cold-water fishery, impede Atlantic salmon restoration efforts, and reduce the quality of recreation. However, they were also concerned about the Act's land acquisition authority, and were leery of the "traditional" designation approach which could result in the creation of a new park unit. Direction provided in the legislative history of the study authorization, along with the control over the study provided by a federal advisory committee (FAC) appointed to work with the NPS on the study, served to defuse some of these concerns.

Standards: As part of the study, information about existing forms of resource protection within the river corridor was analyzed to determine whether the Farmington's outstanding values were adequately protected. Through this vulnerability analysis, the study team identified the need for

additional shoreland protection on private lands along the river since few existing measures protected resources such as riparian habitat, water quality, and scenery. To protect the segment's ORVs and water quality, control over the placement of new structures and septic systems within a 100-foot wide buffer zone was needed, along with strict limitations on vegetative cutting and sand and gravel removal.

The team also developed a standard for instream flows to protect and enhance the segment's outstanding fishery and recreational opportunities. To do this, existing recreational use was quantified (by calculating the number of days of optimum and minimum conditions during appropriate seasons for four different forms of recreation that occurred during representative years). The flows needed to sustain this use, along with flows needed to protect fisheries (using instream flow incremental methodology) were also identified. State water allocation authorities and a major water utility committed themselves to the protection of these flows.

Approach: Riverfront overlay zoning districts were drafted by the NPS at the request of local governments and in cooperation with the FAC. All of the riverfront towns along the segment adopted these districts prior to designation. This action “earned” the towns a favorable suitability finding and established their commitment to protecting the river without the need for federal land acquisition. Accordingly, the river designation act preempted the national Act's federal land acquisition authority. This was based both on a Section 6(c) finding, and, more important, a finding that all ORVs were sufficiently protected through new and existing actions by the state and local governments.⁷

A voluntary private land protection program was also initiated during the study through a cooperative agreement between the NPS and the Trust for Public Lands (TPL). Working with local land trusts and the Farmington River Watershed Association, the TPL conducted landowner workshops on the benefits and financial consequences of conservation easement donation.

The NPS/FAC study team conducted an instream flow study in cooperation with the state and the water utility most likely to need additional supplies from the river. Both state regulators and the utility voluntarily agreed to maintain the flows needed to protect and enhance flow-dependent ORVs. State water quality authorities also committed themselves to a non-degradation policy for new point source discharges along the segment.

⁷ Section 6(c) focusses on the adequacy of a single resource protection mechanism, zoning, and further limits the analysis to an examination of whether new commercial and industrial uses are restricted and whether the “bank lands” are protected through setback, frontage and acreage requirements. The agency staff and the FAC who worked on this study believed that a favorable suitability finding should be based on the protection afforded to all ORVs, plus the river's water quality and free-flowing character. While development density and dimensional requirements, and the prohibition of commercial and industrial uses, may help to protect many ORVs, a suitability finding should be based on a comprehensive examination of the river's resource protection needs.

Evaluation: All of the above resource protection measures, plus many others, were identified during preparation of the river management plan, which was completed and endorsed by the NPS, the FAC, study area towns, and the state *before* the river was designated. This ensured that all river protection partners had a strong, voluntary commitment to resource protection, relieving the NPS of the role as enforcer of state and local protection programs not directly within its control. By requiring landowners and state and local governments to “ante into the river protection pot” before granting them the protection from direct and adverse federal projects that they desired, this strategy also ensured that designation without federal land acquisition would not be a meaningless endeavor.

The coordinating committee identified as co-administrator of the river in the designation legislation began meeting in September 1995. The management plan it will implement represents a contract by and between all of the entities whose actions and policies can affect the river and its resources.

Lamprey River, New Hampshire⁸

Background: A Section 5(a) study was initiated on this “private lands” river in southeastern New Hampshire in 1992. The Lamprey flows through areas dependent on forestry, farming, and small-scale mill operations since early Colonial times. Despite this long-term pattern of settlement, the river corridor shows little evidence of human alteration apart from scattered houses, occasional road crossings, and two National Register-listed historic mill dams. A proposal to construct a hydroelectric facility at one of these sites was the spark which galvanized local pursuit of the study.

Standards: All riverfront towns were found to have existing 100- to 125-foot setbacks for new, non-water-related structures. Most towns also regulate vegetative cutting along the river, and the one which does not is covered by the state vegetative cutting law, which requires that any timber harvesting within a 150-foot wide riparian buffer zone be done so as to retain a “well distributed” stand of trees. Based on this, recommended actions for resource protection include maintaining riparian integrity; emphasizing education and improved enforcement of existing laws; standardizing 125-foot septic system setbacks in all communities; and creating a local, voluntary program to protect riverfront lands with the highest wildlife and natural values using conservation easements, etc.

⁸ The Lamprey River is one of the newest additions to the National System. An 11.5-mile segment was designated by Congress in October 1996.

Approach: The NPS conducted the study in close cooperation with a local advisory committee, town governments, and state and regional planning agencies. All were involved in the analysis of existing resource protection and formulation of recommendations. A plan developed during the study and based on these findings will serve as the comprehensive management plan when the river is designated. Separate votes approving the management plan were secured in each of the communities along the segment. The Lamprey designation legislation retains the Act's willing seller and donor land acquisition authority but excludes the use of eminent domain.

Evaluation: Although the river has just received Congressional designation, local efforts to pursue resource conservation goals have already resulted in the acquisition of two key river-front parcels by town governments, along with the donation of a conservation easement on a third, private parcel. Research on local turtle and mussel populations initiated during the study has also continued, as have voluntary efforts to monitor riverfront development proposals. Implementation of the river management plan will only enhance the positive momentum generated during the study period.

Maurice River, New Jersey

Background: The Maurice River and several tributaries were the subject of a 5(a) study conducted by the NPS which culminated in designation of the river(s) in 1993. Originating in the New Jersey Pine Barrens, the Maurice flows through forest and marshes before reaching Delaware Bay. Its estuary provides significant wildlife habitat and is partially protected as a national wildlife refuge. The remainder of the river corridor is in non-federal ownership.

Standards: The focus of protection in the local management plan prepared during the study was on the creation of a river conservation zone that established consistent land use policies among the riverfront municipalities. This zone is composed of two subareas: a resource protection district and a development district. It is based upon seven areas of environmental and economic importance identified as relevant to municipal land use regulation and river management, including septic system pollution, wetland protection, control of erosion and sedimentation, control of "other" water pollutants, protection of upland habitat, protection of visual buffers, and promotion of economic vitality.

Approach: A draft of the River Conservation Overlay Zone (which establishes substantive and procedural requirements for permitted uses, including dimensional requirements such as setbacks and densities, and procedural requirements for site plan review, special permits, etc.) was developed in collaboration with local communities during the study. Each municipality has adopted a version of the draft zone, with riverfront setbacks ranging from 300 to 500 feet. The river's suitability for designation was based on each municipality's commitment to adopt these land use controls, as expressed through passage of municipal resolutions. The designation act

documented the finding that the proposed zoning would comply with 6(c) standards, preempting federal acquisition on this river.

In addition, the local management plan and the final study report identify six critical natural resource areas requiring protection beyond that provided through local land use regulation. Implementation of protection in these areas will be facilitated, at the communities' request, by the NPS. The agency will serve as an advocate in regional efforts to create a conservation program, establish visitor welcome and interpretive facilities, and streamline the land use permitting process.

Evaluation: The adoption of the local management plan has resulted in the enhanced protection of two critical areas through strengthened municipal land use regulation; initiation of negotiations for the protection of two other critical areas, one through state acquisition and the other through land trust protection; initiation of a landowner conservation program through education and easements (under development); increased coordination between state and federal regulators; and the placement of stream crossing signs. New Jersey's conservation program, Green Acres, has targeted the Maurice River as a priority area for land acquisition as a result of designation. Unresolved issues include the potential for zoning variances to degrade the river's resources, the uncertainty of ongoing financial and administrative support from the NPS, and the qualified support of local officials.

Skagit River, Washington

Background: Portions of the river and its tributaries were identified for study in the original Act and were designated in 1978. The designated reach includes portions of the Suiattle, Sauk, Cascade and Skagit Rivers, is approximately 158.5 miles long, and has about 39,000 acres within the river corridor. About one-half of the designated area is in private ownership, including portions of the lower Sauk, Suiattle, and Cascade, and the Skagit mainstem.

Standard: The objective of the river management plan is to protect and enhance the ORVs: wildlife (the third largest wintering bald eagle population in the continental United States), fisheries (five species of salmon and three species of sea-going trout), and scenic quality. The 1977 *Skagit Final Environmental Impact Statement* (associated with the congressionally authorized study) recommended that the state of Washington administer the mainstem Skagit segment, with the U.S. Forest Service (USFS) administering the other three rivers. State administration was to be implemented through action of its legislature and cooperative agreements between the state and federal governments. Due to administrative and priority changes within the state, such legislation did not occur. However, the state/federal partnership approach and the use of cooperative agreements remain important aspects of present river administration.

Approach: The river management plan has been implemented through a partnership between the USFS and appropriate county, state, and federal agencies, along with tribal governments. This approach relies on working cooperatively with these other agencies and landowners to develop necessary river protection strategies. For instance, USFS staff are working under the umbrella of the Washington Growth Management Act, which requires that the largest and fastest growing counties in the state do extensive planning related to statewide goals. USFS staff serve on a Technical Advisory Board, formed pursuant to the Washington Growth Management Act, which is responsible for development of criteria for Forest Zoning and the identification of critical areas (wetlands, aquifer recharge areas, geologically hazardous areas, frequently flooded areas, and fish and wildlife conservation areas). This board also includes other government agencies, tribes, landowners, environmental organizations, and development interests.

Similarly, USFS staff are participating with private landowners, other agencies, industry, and tribes, in the on-the-ground review of timber harvest activities both inside and outside the river corridor, helping to identify mitigation measures to protect river values. This review process, mandated by state legislation, allows state and federal agencies and the public to review forest practice applications and to provide comments and suggested mitigation related to their concerns.

Many activities that occur within and outside the river corridor can affect river values. To address this, the USFS has cooperated with the Environmental Protection Agency (EPA) and the Skagit Systems Cooperative (biologists representing the Upper Skagit, Sauk-Suiattle, and Swinomish tribes) in developing a Skagit River Basin water quality monitoring plan. Currently, efforts are underway to implement this plan by expanding the Skagit Watershed Education Program, which seeks to educate fourth and fifth graders about their watershed. The program will be expanded to include a water quality monitoring component, utilizing volunteers from the local community and schools. Volunteers will be responsible for conducting a variety of surveys to determine watershed health.

USFS staff also initiated a watershed working group with Skagit Systems Cooperative; Skagit County; Skagit Conservation District; EPA; NPS; U.S. Fish and Wildlife Service; Army Corps of Engineers; the Washington State Departments of Natural Resources, Ecology, and Fish and Wildlife; and Seattle City Light (the utility that manages three dams on the upstream Skagit River). This group has worked to set priorities for watershed restoration. During the past two years, over \$1.75 million of state and federal funds have been spent in the basin for watershed restoration and fisheries enhancement. Projects to date have included fish passage and habitat improvements, road abandonment, and road reconstruction.

To protect and enhance the wildlife resource, the USFS and North Cascades Institute have developed the “Eagle Watcher” program, an environmental education program to train volunteers to provide eagle information to river users. During the three years of this program, over 150 volunteers have been trained, and have provided information to over 20,000 visitors to the Skagit

River. The volunteers provide information about bald eagle biology as well as appropriate viewing techniques to minimize impacts on eagle feeding. USFS staff have also helped organize an annual Bald Eagle Festival, increasing tourism and revenue to the upper Skagit River area during an otherwise less popular time of year.

Land acquisition from willing sellers has also been effective in protecting the river's values. USFS staff have worked with non-profit groups, including The Nature Conservancy and River Network, to purchase key parcels that might have faced unacceptable development. To date, over 3,100 acres have been acquired.

Evaluation: The USFS has helped increase understanding of the WSRs program and its intent as applied to the Skagit River system. Importantly, the USFS has become the coordinator/facilitator for many issues and programs in the Skagit basin. The complex land ownership pattern in the basin presents an inherent limitation to WSR administration. Other agencies, upon whom the USFS relies for the regulation of non-federal land use, are not always able to provide adequate review and enforcement. This has increased the need of USFS staff to effect formal and informal partnerships within the community. These partnerships will be of even greater importance as funding and staffing of all agencies becomes more limited.

Sudbury, Assabet, and Concord Rivers, Massachusetts⁹

Background: A Section 5(a) study of these rivers, located only 25 miles west of downtown Boston and within an hour's drive of 2-3 million people, was initiated by residents concerned about the impacts of a possible re-activation of dormant upstream reservoirs to supply the metropolitan area with water. Growth pressures within the eight communities that lie along the 29-mile study area were also perceived to be a problem. Possessing good schools, small town lifestyles, and located within an easy commute of regional high-tech centers, these towns were in danger of losing their sense of place, which is based in part on the health of the rivers flowing through them. A WSR study was seen as an opportunity to strengthen local control over state and federal land and water use policies, and to increase inter-town communication and cooperation.

Standards: During the WSR study, protection standards for the outstanding resources that make these rivers eligible for designation were developed and included in a river conservation plan. These standards were based on the goal of protecting and enhancing each resource value over the long term. The rivers' outstanding resources include: scenery considered noteworthy by the state; easily accessible, portage-free recreation; nationally significant aquatic and riparian

⁹ Legislation for designation was filed in 1996.

wildlife habitat; historical and archaeological sites associated with early colonization, Native American cultures, and the revolutionary “shot heard ‘round the world;” and literary values associated with the nineteenth century transcendentalist movement.

For scenic values, the goal was to prevent major alterations in the river corridor landscape, such as the loss of forested hillsides or the construction of conspicuous houses in upland meadows. Other forms of development incompatible with existing land use patterns (e.g., shopping malls, factories, or other intensive land uses at the rivers’ edge) were also considered incompatible with designation. The standard of protection for recreation included the need to protect existing access points on non-federal lands. For ecological resources, the goal was to prevent reasonably foreseeable and preventable losses in the diversity, distribution, or populations of native species.

Historical and archaeological sites, along with literary values, were considered to be adequately protected if the patterns of land ownership and regulatory status (e.g., National Register listing) associated with these sites would prevent their loss through inappropriate development.

The river conservation plan also recommends several activities that will enhance the rivers’ resources. These include: 1) development of a recreation management plan by the state and river towns, with the assistance of the River Stewardship Council that will be created when the river is designated, to reduce recreational use conflicts; 2) landowner education programs to improve riparian land stewardship; and 3) the development of educational and interpretive materials associated with the rivers’ history, literary heritage, and ecological values.

Approach: Because the river study team (NPS and a FAC) was explicitly discouraged by Congress from considering federal land acquisition as a potential resource protection tool for these rivers, the team knew from the outset that the rivers could only be found suitable for designation if other alternatives were used to protect their resources. The team decided to survey the entire 58 miles of shoreline within the study area to determine where ORVs were located and whether associated lands were protected from inappropriate development. A subcommittee, including the NPS, town staff, and other local experts, was formed to work within each of the eight municipalities to pinpoint vulnerable parcels.

These standards outlined above were applied in the parcel-by-parcel vulnerability analysis. Each parcel’s ownership, topography, and regulatory setting was evaluated to determine if any potential increases in land use intensity or inappropriate changes in land use type were possible. Most parcels extend more than 100 feet from the river, and significant acreages (over 56 percent of the total frontage) were found to be protected through existing ownership by the U.S. Fish and Wildlife Service, the state, towns, and local land trusts. The analysis did not include “ridge-to-ridge” survey except where distinctive landscapes were present.

For private, non-conservation land, the team came to the following conclusions: 1) In general, a dense hardwood/softwood forest canopy greatly exceeds the 30-35 foot maximum residential building height along rivers (most land is zoned residential), screening both existing buildings and potential new construction; 2) that, due to the flat terrain along the study segments (the floodplain is over 1.5 miles wide in some areas), strong state regulatory protection for bordering wetlands, and local floodplain zoning that exceeds Federal Emergency Management Agency (FEMA) minimums in most towns, major new development or even substantial alteration of existing buildings along the rivers is unlikely; and 3) there are no large subdividable parcels along the river segments. Thus the team found that no additional resource protection measures were required for the rivers to be found suitable for designation.

The FAC as a whole reviewed and endorsed these findings. Concurrently, a management plan was prepared that included recommendations (rather than requirements) for additional resource protection by local, state and federal governments, and riverfront landowners. This plan, which will serve as the comprehensive management plan when the rivers are designated, was endorsed by study area residents through town meeting votes requesting congressional designation.

Evaluation: While river designation legislation has not yet been passed by Congress (as of October 1996), local efforts to implement the river management plan have already begun. Pursuant to suggestions made by WSR study participants during the local permitting process, a residential subdivision on one of the few undeveloped parcels along the rivers has been redesigned. A naturally vegetated riparian buffer will be retained, and car top boating access to the river will be provided at the site. Planning assistance is also being provided by the state and federal governments to the eight riverfront towns, helping them to focus on the protection of river values in updates of their local open space plans. These plans will make them eligible for state funding for open space acquisition. After the rivers are designated, the effectiveness of these and other resource protection efforts is expected to be enhanced once the River Stewardship Council convenes.

White Salmon River, Washington

Background: The Lower White Salmon is an “instantly designated” WSR that was entirely in private ownership at the time of its designation. The designated portion of the river is only 7.7 miles long, out of a total of around 45 mainstem miles, within a 400-square-mile watershed.

Standard: The management plan for this river was developed by a broad-based task force that sought to achieve consensus on river management issues, focusing on the management of private lands as well as instream and river recreation issues. The resulting river management plan seeks to balance two broad goals: 1) to maintain and enhance the economic viability of existing natural resource uses and respect private property and tribal rights; while 2) conserving and enhancing

land-based biological and physical resources such as canyon ecology, species diversity, historical and archaeological resources, and scenic quality.

As a result of the river management planning process, the county agreed to adopt new zoning and shoreline requirements, including: 1) a 100-foot riparian setback for any development; 2) a minimum 1320-foot frontage requirement for residential development along the shorelines; and 3) average lot sizes of 20 acres. The 100-foot setback pertains to timber harvesting and other vegetative manipulation, intensive grazing, construction, road building, and septic system placement. The frontage requirement was established to help achieve minimum lot size and to reduce visual impacts on river users, based on the user perception that over four houses per river mile along one side of the river would degrade river used experience and the existing natural setting. The 20-acre minimum lot size was based on the goal of maintaining workable acreage for the natural resource-based economy and lifestyle within the watershed.

While the 100-foot setback helps to maintain river values, the river management plan had identified the need for a 200-foot riparian setback. This setback was based on the need to protect water quality along the segment. Extensive water pollution studies in the Lacamas Lake Basin (a rapidly-developed rural area in an adjacent county) indicated that a minimum 200-foot buffer was needed to prevent water pollution where housing densities approached one unit per five acres. In addition, the 200-foot setback included at least 90 percent of all the stream-adjacent slopes that had the potential for direct surface runoff into the mainstem of the White Salmon. The USFS and the county are currently working on methods to achieve a setback consistent with the intent of the river management plan.

Approach: The river management plan is being implemented in cooperation with the state, county, private groups, Yakima Indian Nation, river users, and landowners, and includes a significant USFS land acquisition program through exchange and purchase from willing sellers. In addition to the changes in zoning within the river corridor, county and state agencies have also developed and implemented more restrictive upland requirements. This effort was initiated and supported by the USFS through cooperative agreements and technical assistance.

One result of the management planning process was the creation of a watershed-wide management committee, formed under the auspices of the local Conservation District and the Natural Resources Conservation Service. The watershed management committee in turn developed a water quality and improvement plan, implemented by the state and local governments, landowners, user groups, and conservation organizations. Support for this effort in excess of half a million dollars has been obtained by the watershed management committee in just over three years.

Examples of specific projects include: major annual river cleanups; an environmental education program for local school districts focusing on water quality in the watershed; the establishment

of a county adopt-a-stream program; a water quality monitoring study and riparian inventory within the entire watershed; a groundwater and septic system study; riparian fencing; bank stabilization; the development of dairy waste control systems; the assessment of a major tributary watershed by Champion International and Washington State Department of Natural Resources to address timber harvesting concerns in this critical sub-basin; the placement of bird and bat boxes to help reduce use of pesticides within the watershed; upland tree planting; and the establishment of a Washington State Conservation Corps for work within the watershed. The group continues to apply for additional grants.

Evaluation: The USFS's ability to protect and enhance the river's values has been limited by inadequate funding for river administration and an inability to effect the planned land acquisition program. Conservation groups are very concerned and vocal about the agency's perceived lack of river advocacy. Similarly, due to the delay in implementing the federal components of the river management plan, the county has not implemented some of the restrictions agreed upon during the river planning process. Enforcement of existing regulations is inconsistent. Importantly, however, through the cooperation of landowners, the watershed management committee, and the Conservation District, a number of significant and far-reaching improvements have been developed and implemented. Thus an effective partnership has been established for future projects.

Wildcat Brook, New Hampshire

Background: The Wildcat drains a designated wilderness within White Mountain National Forest before flowing through the resort community of Jackson, New Hampshire. Jackson was developed as a resort in the 1800s and has retained many historic hotels and inns along the Wildcat, particularly in the vicinity of a series of cascades and waterfalls just above the village proper. In the early 1980s, proposals to construct hydropower facilities at the falls, which would have destroyed their scenic value and dewatered portions of the river, spurred local interest in a WSR study.

Standards: The vulnerability of lands within the riparian zone was evaluated. Since the Wildcat runs through a cultural landscape which has changed little in the past century, the focus was on privately owned riparian parcels with a high potential for new development that would be incompatible with existing historic buildings or that would impair riparian integrity, water quality, etc. Another goal was to maintain appropriate public access to local parkland at the waterfall and a riverfront meadow in the town center.

Approach: Several resource protection approaches were used. Conservation easements were obtained for many otherwise developable parcels. New zoning ordinances were also adopted: floodplain zoning, which includes a 75-foot building setback from the river even when this area

is not in the FEMA-mapped 100-year floodplain; and soils-based density zones, which serve to reduce the likelihood of water quality degradation.

Evaluation: Because its members serve fixed terms, the Wildcat Brook Advisory Commission has seen a 100 percent turnover in membership since the river was designated. While this has created the need for continuous re-education of the Wildcat Brook Advisory Commission about the Act's requirements and limitations concerning the use of private lands along the river, designation has succeeded in helping Jackson conserve one of the town's principal natural features. This effort has been enhanced by the continued involvement of key members of the study team as unofficial watchdogs, and by the participation of USFS representatives on the Wildcat Brook Advisory Commission.

RESOURCE PROTECTION TOOLBOX

There are a variety of mechanisms that can provide protection for land-based, river-related resources. These range from proscriptive laws and regulations (e.g., floodplain zoning and river protection overlay districts), through incentive programs, to purely voluntary measures (e.g., maintaining natural buffers between the river and lawns or cultivated fields).

In general, regulatory approaches work best in areas that already have relatively complex land use laws. Such approaches require adequate enforcement in order to be effective, and are more likely to be accepted and implemented in semi-rural or suburban communities than in more sparsely developed areas.

Incentive programs can be effective in areas where the local, state, or federal government has something of value to offer to the landowner in exchange for the surrender of certain property rights. For example, local property tax reductions provide the incentive to keep agricultural or forest lands from being subdivided, while federal income tax deductions encourage land-owners to donate conservation easements. There are many other federal incentive programs -- e.g., the "Sodbuster," "Swampbuster," and livestock waste management requirements that are tied to agricultural loan programs, and the "Safe Harbors" program under the Endangered Species Act -- that can also help protect river-related values.

Purely voluntary measures are most likely to be implemented in areas where landowners value their ability to serve as resource stewards more than they value their freedom to do whatever they want with their land. Such attitudes usually require a good understanding about the effects of land use practices on natural resources. Environmental education programs can therefore help to encourage the use of voluntary conservation measures. In areas where the stewardship ethic

is strong, a social atmosphere is created that supports and rewards this kind of behavior, censuring those who do not conform to the stewardship ideal. These social pressures are more likely to encourage sound stewardship in close-knit communities, where land changes hands infrequently and there are few absentee owners, than in rapidly developing or resort areas.

In choosing appropriate resource protection strategies, river conservation professionals thus need to understand three major factors: 1) the nature of the resource to be protected; 2) the nature of the threat to the resource; and 3) the social context within which to apply the protection strategy.

The sections below outline many of the regulatory, incentive and voluntary programs that can be used to protect river-related values. Major resource categories that benefit from each measure are listed in italics. This section cannot and does not include every potential means of protecting land-based resources, however, and the benefitting resources listings are intentionally broad. More information about assessing the adequacy of existing river resource protection follows.

Regulatory Measures

Local Laws and Regulations

River corridor protection zone	<i>riparian function, water quality, scenery</i>
Building setback requirements	<i>water quality, scenery</i>
Minimum river frontage requirements	<i>water quality, scenery</i>
Minimum lot size requirements (including requirements that a minimum percentage of each lot be contiguous, buildable upland rather than wetlands or floodplain)	<i>riparian function, scenery, water quality</i>
Natural vegetation retention requirements	<i>riparian function, scenery, water quality</i>
Septic system setback and percolation rate standards	<i>water quality, undeveloped character</i>
Earth excavation restrictions	<i>water quality, scenery</i>
Subdivision provisions	<i>riparian function, scenery, water quality</i>
Site plan review requirements	<i>water quality, scenery</i>

Use zoning (e.g. allowing agricultural and residential use, prohibiting commercial or industrial uses)	<i>water quality, scenery, undeveloped character</i>
Maximum building height requirements -- measured from grade at river frontage rather than street frontage	<i>scenery</i>
Floodplain zoning	<i>riparian function, scenery, water quality, free-flow</i>
Stormwater, sedimentation, and erosion control regulations	<i>water quality</i>
Public open space subdivision requirements	<i>scenery, riparian function</i>
Maximum slope requirements	<i>water quality, undeveloped character</i>
Cluster zoning	<i>riparian function, scenery, water quality</i>
Local wetlands protection laws	<i>water quality, riparian function, undeveloped character</i>
 <i>State Laws and Regulations</i>	
Wetlands protection	<i>water quality, riparian function, undeveloped character</i>
Uniform shorelands zoning	<i>riparian function, scenery, undeveloped character</i>
State scenic river designation	<i>riparian function, scenery, undeveloped character</i>
Water quality classification and discharge standards (e.g., Class A, non-degradation and/or ORW designation)	<i>water quality</i>
Septic system setback and percolation rate standards	<i>water quality, undeveloped character</i>

Timber harvest restrictions	<i>water quality, riparian function, scenery</i>
Current use assessments	<i>undeveloped character</i>
State environmental impact analysis laws	<i>water quality, riparian function</i>
Terrain alteration permits (size threshold)	<i>water quality, riparian function</i>

Federal Laws and Regulations

National Environmental Policy Act	<i>water quality</i>
National Flood Insurance Program (applies indirectly to communities and banks rather than the landowner)	<i>water quality, riparian function, undeveloped character</i>
Clean Water Act	<i>water quality, navigability</i>
Rivers and Harbors Act	<i>recreational access/navigability</i>
Endangered Species Act	<i>riparian function, wildlife habitat, scenery</i>
Wild and Scenic Rivers Act	<i>free-flow, water quality, ORVs</i>

Incentive Programs

Local Incentives

Property taxes based on current use (e.g., agricultural, forestry, or recreational lands) rather than “highest and best use” value	<i>undeveloped character</i>
As-of-right cluster zoning	<i>undeveloped character</i>
Transfer of development rights	<i>undeveloped character</i>
Assessments that reduce taxable value for land that is unbuildable due to topography or conservation easements	<i>undeveloped character</i>

State Incentives

State-funded agricultural preservation restriction programs

undeveloped character, scenery, riparian function

Federal Incentives

Income tax deduction for charitable contributions, including donated value of conservation easements

undeveloped character, riparian function, scenery, water quality

“Safe Harbors” program under Endangered Species Act

wildlife habitat, riparian function

Sodbuster and Swampbuster programs

water quality, wildlife habitat

Voluntary Programs

Purchase of development rights or fee interest by municipality or organization

undeveloped character, riparian function

Voluntary best management practices:

- maintenance of riparian buffer between lawns or cultivated fields and river
- fencing livestock out of river
- low till or no-till cultivation
- reduction in the use of fertilizers, pesticides, and herbicides
- vegetation management that promotes native species, eradicates nuisance species

riparian function, water quality, scenery

water quality

water quality

water quality

wildlife habitat, scenery

Analysis of Existing Resource Protection

The following factors should be considered in assessing how well existing controls protect river-related resources:

The extent of existing public conservation land ownership (local, state, federal)	<i>riparian function, undeveloped character, water quality</i>
The extent of existing private conservation land ownership (non-profits, institutions)	<i>riparian function, undeveloped character, water quality</i>
Existing conservation easements	<i>riparian function, undeveloped character, water quality</i>
Utility ownership	<i>riparian function, undeveloped character, water quality (depends on management)</i>
Flowage rights	<i>undeveloped character, riparian function, scenery</i>
Access limitations:	
• Areas that are “landlocked” due to natural features (gorges, canyons, wetlands, etc.)	<i>riparian function, undeveloped character, water quality, scenery</i>
• Areas that are landlocked due to human activities (railroads, highways, etc.)	<i>riparian function, undeveloped character (depends on what roads etc. look like)</i>
Slopes too steep for development	<i>riparian function, water quality, scenery</i>
Soils that are unsuitable for development	<i>water quality, riparian function</i>
Floodways/floodplains (where regulated)	<i>riparian function, scenery, water quality, undeveloped character</i>
Extent of existing development (“build-out” status)	<i>(depends on how existing development is affecting river)</i>