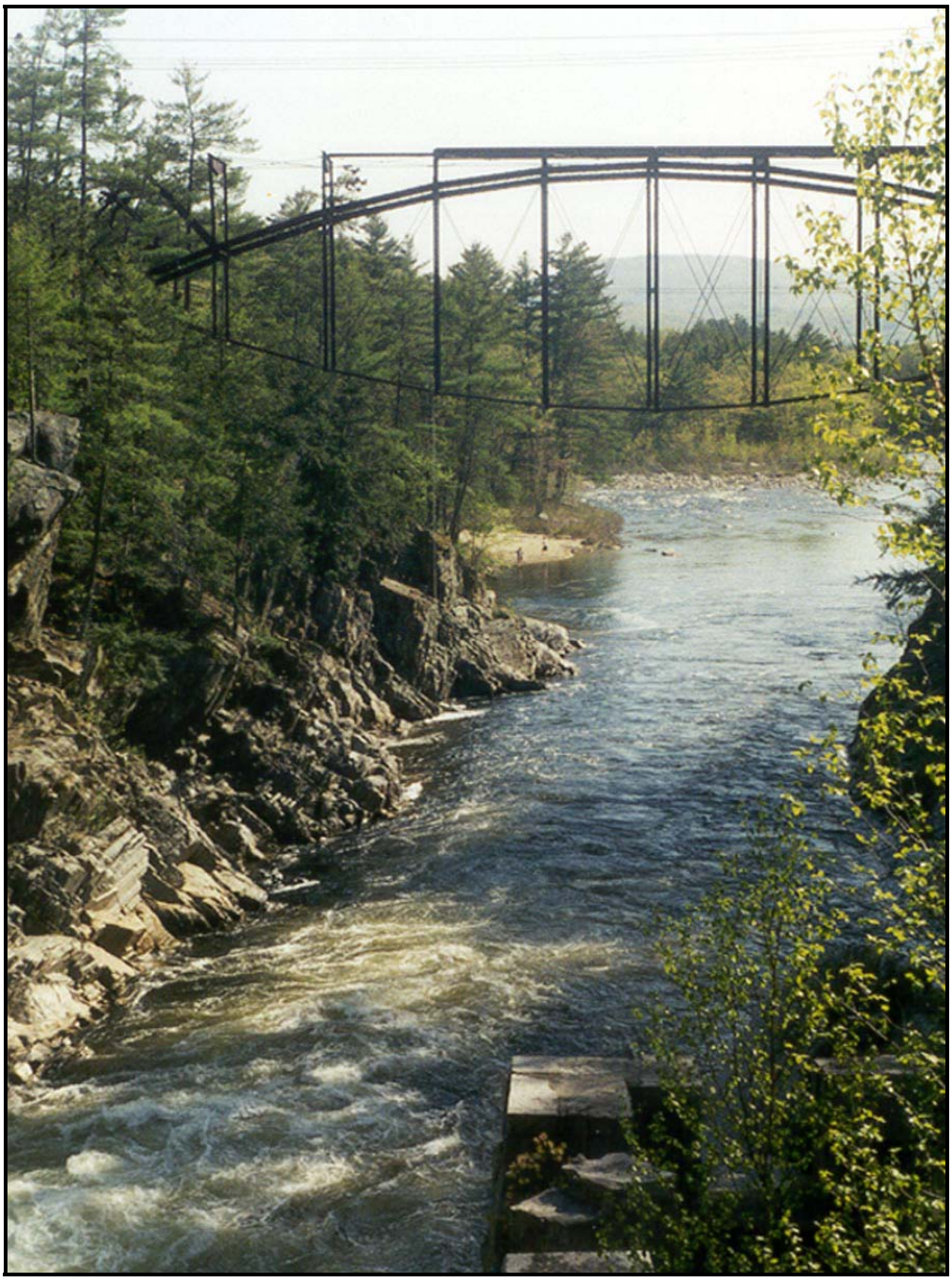
PEMIGEWASSET RIVER CORRIDOR MANAGEMENT PLAN



Pemigewasset River Local Advisory Committee
New Hampshire
2001

Cover Photo by Thomas Smith, LRPC

Remains of the "Pumpkin Seed Bridge" spanning the Livermore Falls Gorge in Campton. A rare double elliptical truss bridge built ca 1885 with steel from the Berlin Iron Works; designer unknown. Financed jointly by the towns of Campton, Holderness, and Plymouth, it served the complex of buildings associated with the Livermore Falls pulp mill on both sides of the Pemigewasset River.

-Data from Lester E. Mitchell, Jr., Campton Historical Society

PEMIGEWASSET RIVER CORRIDOR MANAGEMENT PLAN:

A Resource Guide for Communities

Bring us the purple of mountain sunsets,
Shadows of clouds that rake the hills,
The green repose of thy Plymouth meadows,
The gleam and ripple of Campton rills.

Lead us away in shadow and sunshine,
Slaves of fancy, through all thy miles,
The winding ways of the Pemigewasset,
And Winnipesaukee's hundred isles.

Shatter in sunshine over thy ledges,
Laugh in thy plunges from fall to fall,
Play with thy fringes of elms, and darken
Under the shade of the mountain wall….

John Greenleaf Whittier
"Revisited" 1865

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The Pemigewasset River Local Advisory Committee receives administrative and logistical support, including the production of this report, from the Lakes Region Planning Commission under contract with the New Hampshire Department of Environmental Services. The Lakes Region Planning Commission is a non-profit association serving the people of the Lakes Region. Its mission is to provide a quality environment, to increase economic opportunity and to encourage cultural development by supporting local efforts with education, technical assistance, information, advocacy and responsive representation.

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SECTION I - EXECUTIVE SUMMARY

The New Hampshire Rivers Management and Protection Program was established in 1988 by the New Hampshire Legislature in RSA 483. This program sets up a process by which rivers may be designated for special protection. Designated rivers receive State protection of instream resources while citizen committees are charged with developing management plans for the shorelands making up the river corridor. While most rivers designated for protection under the Rivers Management and Protection Program are now protected by the provisions of the Comprehensive Shoreland Protection Act (RSA 483-B) as well, the Connecticut, Saco and main section of the Pemigewasset Rivers have been excluded by the Legislature. These rivers do receive basic protections based on their classification as "natural", "rural", "rural-community", or "community" rivers. However, their exclusion from the provisions of the Comprehensive Shoreland Protection Act gives added significance to the management plans developed by the citizen committees.

Two sections of the Pemigewasset River were designated for inclusion in the Rivers Management and Protection Program in June, 1991. The Pemigewasset River Local Advisory Committee (PRLAC) was created and charged with developing a management plan for the section of the Pemigewasset River from the northernmost Thornton town line to the confluence with the Winnipesaukee River in Franklin. After a number of years of research and fact-finding, including a comprehensive survey of public opinion, PRLAC has completed a draft management plan for this section of the Pemigewasset.

The goal of the plan is to provide guidelines for the myriad of groups and agencies having some responsibility for activities affecting the river corridor. In the absence of comprehensive State regulations controlling development in the Pemigewasset River corridor (except for septic systems), the towns really must shoulder this responsibility through their zoning and land use ordinances. Therefore, a major goal of PRLAC was to propose guidelines town governments might use in revising their master plans and the regulations based on them. Our objective throughout was to balance sensible environmental and economic goals while respecting the rights and desires of riparian property owners and the population as a whole. Recognizing that the river and its corridor are ever-changing, we sought to make proposals which in a broad sense would remain applicable over the long term, though subject to constant fine-tuning and revision.

The variety and depth of resources on our relatively short stretch of the Pemigewasset is impressive. This is due in part to the three major dams, each of which greatly affects the character of the river behind the dam. The two power dams, Ayers Island and Eastman Falls, create lakes behind them, affecting wildlife habitat and creating opportunities for flatwater boating. In addition, the Ayers Island Dam has the ability to determine the flow in a section of the river which is widely used for whitewater canoeing and kayaking. The flood control Dam at Franklin Falls has profound effects on the upstream section of the river all the way back to Bristol. Since the flood plain in this section

of the river has become a reservoir to prevent flooding downstream, no development can take place here, and in fact an entire village in the town of Hill was relocated when the Franklin Falls Dam was built.

A matrix summarizing the existing laws in the various towns along the river as they apply to water quality, open space, wildlife and scenic beauty was prepared with the help of the Lakes Region Planning Commission (LRPC). Although most of the towns have river corridor zoning or overlay districts, there is little consistency in the existing regulations. None of the towns has enacted protections as comprehensive as those provided for in the Comprehensive Shoreland Protection Act. These voids increase the potential for development-related problems in the corridor.

The community survey elicited no great surprises. There was broad support for the protection of water quality, scenic value, fishing, open space, public access and wetlands. Better flood control management and erosion control also received wide support. Uses which respondents generally would like to see decrease included the use of jet skis, large water craft, and off-road vehicles. Respondents generally had negative reactions to the private withdrawal of water for sale and to public waste disposal in the river corridor. Some of the problems identified by respondents to the survey included flooding/erosion, vandalism/trespassing, trash, and noise/rowdy behavior. Questions regarding the level of government control that would be appropriate gave inconclusive results as they were not answered by a majority of respondents.

Rather than creating a list of objectives for the management plan, our committee chose to identify present and anticipated problems and to try to determine how they might best be addressed. The problems identified fell broadly into six categories: water quality, development & growth, trash disposal, flow-related issues, public use, and recreation. While there was no formal attempt to prioritize the perceived problems, there was a general consensus that water quality and the problems associated with development and growth had the largest long-term effect on the river corridor and therefore deserve particular attention. One of our most significant findings is that water quality testing is insufficient, both in frequency and number of locations, to properly provide for the long-term maintenance of Class B water quality. Inconsistency and inadequacy in the various towns' regulations regarding corridor development is another likely source of future problems.

The committee came up with a wide range of recommendations, many of which would require cooperative action between various state and local agencies, private groups and individual landowners. We attempted to assign a primary responsibility for the implementation of each of our recommendations, but this was not always possible. Of the many recommendations included in the management plan, those having the highest priority would be the ones addressing water quality and growth & development. We feel that water quality is such a basic issue that testing frequency and number of locations tested must be greatly increased. We also feel that town land use regulations need to be revised to provide at least the kind of protections afforded to most public waters by the Shoreland Protection Act, and recommend that towns consider implementation of the Office of State Planning's Model Shoreland Protection Ordinance.

While this plan is the result of many hours of research, study and discussion, we recognize that no plan is perfect or unchanging. The Committee also recognizes the need to make the unique value of this regional resource more apparent to the corridor community. Planning for river protection is a dynamic process, much like the preparation of a town master plan, and we therefore anticipate constant updating to address changes along the river and in public attitudes toward this resource. We therefore welcome comments about this draft plan and invite your participation in the ongoing process which this plan represents.

SECTION II - INTRODUCTION

The Pemigewasset River Local Advisory Committee (PRLAC) was established under the New Hampshire Rivers Management and Protection Program (RSA 483) in 1992. The New Hampshire Rivers Management and Protection Program was enacted in 1988 by the New Hampshire Legislature. The Act is designed to help communities accommodate a wide range of uses for the river without adversely affecting the very qualities that make rivers such rich resources. The Act divides responsibility into two jurisdictions:

- the state protects instream resources; and
- local residents develop and implement river corridor management plans to further protect shorelines and adjacent lands.

The PRLAC committee is made up of volunteers representing diverse interests as well as each of the towns within the designated section of the river. These are the towns of Thornton, Campton, Holderness, Plymouth, Bridgewater, Ashland, New Hampton, Bristol, Hill, Sanbornton and Franklin. Each member of the committee is nominated by his or her town officials and is appointed to a three-year term by the Commissioner of the Department of Environmental Services (DES).

This plan, a principal duty of our committee, is the culmination of many years of fact finding, research, and landowner and non-landowner attitude surveys. Our task in preparing this plan was to propose guidelines that reflect the fact that the river and its corridor are ever-changing. Our objective is to balance sensible environmental and economic goals while respecting the rights and desires of riparian property owners and of the region as a whole. This plan provides to town officials a common thread that they could use in preparing their master plans, or could adopt as an adjunct to their master plan.

The Pemigewasset (Pemi) River and its corridor comprise the river and the land surrounding the river. The width of the corridor is considered to accord with the NH DES standard, 1,320 feet from the normal high water mark of the river, modified where most practicable by roads or geographical features. The Pemi watershed drains approximately 1,000 square miles. The Pemi flows through three counties: Grafton, Belknap, and Merrimack. The Pemi River's headwaters are in Profile Lake in Franconia Notch State Park, and the East Branch starts in the Pemi Wilderness Area. Leaving the Notch, the river eventually widens as it moves southerly along its approximately 70-mile route to its confluence in Franklin with the Winnipesaukee River, thereby forming the Merrimack River. All of the river except a ten-mile segment through Lincoln and Woodstock is protected under the New Hampshire Rivers Management and Protection Program, as of June 1991.

From the northernmost town line of Thornton to the I-93 bridge in Plymouth, the stream is classified by RSA 483:15 as a *rural-community river*; from the I-93 bridge in Plymouth to the Ashland-Holderness town line as a *community river*; from the Ashland-Holderness town line south to the Franklin Falls Dam as a *rural river*; and from the dam to the beginning of the Merrimack River as a *community river*. Please refer to Appendix A for uses and restrictions of these river classifications.

SECTION IV - RESOURCES

Geology

The southern Pemigewasset River Valley was once part of a great glacial Lake Merrimack extending north to Plymouth from Manchester. Much of what remains of that glacial lake can be found today along the Pemigewasset River. Dunes, deltas, and terraces from the glacier have left sand deposits, sometimes 100 feet deep, in the valley. The glacier left large outcroppings, basins, and erratics (glacial boulders), throughout the northern Pemigewasset River Valley. A unique metamorphosed section of rock through Livermore Falls was first discovered in 1879. This rock, Camptonite, named after the town of Campton in which it was found, is of unusual chemical composition. Geologists have discovered this rock type in other regions, and it is known as Camptonite throughout the world.

Sand and gravel deposits form a stratified-drift aquifer adjacent to the river through most of its length. Bedrock typically lies about 100 feet below the surface, although in some areas it may be as much as several hundred feet below. Wells in these aquifers provide municipal water for many communities along the river's length. These and adjoining aquifers also provide domestic water for innumerable household wells. Flow in the aquifers ultimately discharges underground into the river.

Vegetation

Forest cover accounts for much of the vegetation in the Pemigewasset River Corridor. The forest cover is predominantly coniferous, consisting of white and red pine, hemlock and scattered red spruces. Mixed hardwoods consisting of maples, birches and oaks are also scattered throughout the area. Most of the land in the flood zone behind the Franklin Falls Dam is leased by the Department of Resources and Economic Development (DRED) from the federal government for forest and wildlife management. The area licensed by DRED consists of 1,950 acres of forest and 813 acres of old field/early successional cover.

The New Hampshire Natural Heritage Inventory (NHNHI) lists ginseng and millet-grass as endangered plant species found in the Pemigewasset River corridor. The NHNHI also lists several exemplary natural communities in the corridor. A complete list is found in Appendix B.

Open Space

The concept of "open space" in the Pemigewasset River corridor consists of undeveloped areas in this rural environment that supports a variety of activities. Publicly and privately owned parks, athletic fields, wetlands, golf courses, community gardens,

farmland and forestland dominate this greenbelt. These areas afford abundant recreational opportunities, provide wildlife habitat, contribute to local economies, and support the health of the ecosystem.

The maps in Section III show those areas that have been identified as open spaces.

Wildlife

The Pemigewasset River corridor is ideally suited to support numerous wildlife species as it is largely undeveloped. A 1987 U.S. Forest Service report listed 19 amphibian and reptile species, including the red spotted newt, snapping turtle and northern water snake, living in the Pemigewasset corridor. Endangered birds which depend upon the river and its banks for nesting and feeding include the golden eagle, upland sandpiper, peregrine falcon, and the sedge wren. The bald eagle, osprey, northern harrier, common loon, common nighthawk, Cooper's hawk, and purple martin are several of the threatened wildlife species that are also dependent on the river and its resources.

Fish

Of the approximately ten species which the Pemigewasset River supports, bass, trout, and Atlantic salmon are among the most popular species sought by anglers. Southern segments of the river are used by New Hampshire's numerous bass clubs for their annual tournaments. Atlantic salmon are being restored to the Pemigewasset River through a joint project with the U.S. Fish and Wildlife Service and the states of New Hampshire and Massachusetts. Fish passages are complete and used for downstream migration by both Atlantic salmon and trout at the Eastman Falls Dam in Franklin, the Franklin Falls Dam and Ayers Island Dam in Bristol. Atlantic salmon fry are also stocked into the river's mainstream and its tributaries each year as part of the restoration effort.

Water Quality

The entire length of the Pemigewasset River covered in this plan is classified as Class B water quality by the New Hampshire Department of Environmental Services. Class B waters have high aesthetic value and are acceptable for swimming and other recreational activities, fish habitat and for use as a water supply after treatment. Water quality is occasionally adversely affected by a) siltation resulting from flood events, and b) scouring of the banks due to dam-related water level fluctuations resulting in slumping and siltation.

There are seven indicators of overall water quality: water temperature; pH; specific conductance (umhos); turbidity (Nephelometric Turbidity Unit or NTU); total phosphorus (mg/l); bacteria (E. coli count); and dissolved oxygen (% saturation). Overall water quality is primarily influenced by two of these factors: E..coli (the presence of excessive levels suggests that the water is not suitable for fishing, swimming, and other recreational uses) and dissolved oxygen (a key component of the aquatic ecosystem indicating the suitability

of aquatic life habitat). The standard for each of these indicators is more stringent in the headwaters of the river than downstream. Appendix C shows the standards that apply to different sections of the river.

The New Hampshire Department of Environmental Services (NHDES) is charged with developing and enforcing water quality standards and monitoring New Hampshire rivers for compliance. Limited funding results in a somewhat erratic ongoing assessment of water quality statewide (the Pemi was last tested in June, 1997). NHDES now supports the Volunteer River Assessment Program (VRAP), which provides education, equipment loans, and technical assistance for citizens endeavoring to supplement the state ambient sampling program. The only volunteer water monitoring currently taking place appears to be monthly testing for E. coli bacteria during the summer in Franklin by the Upper Merrimack River Local Advisory Committee. Appendix D summarizes the most recent test results available from the NHDES.

Land Use

Although much of the land in the Pemigewasset River corridor remains undeveloped, the developed land supports a variety of uses. In addition to several highways and a railroad line along parts of the river corridor, there are agricultural, residential, recreational and industrial uses, etc. The flood storage area behind the Franklin Falls Dam historically was used for agriculture, even after construction of the dam, but now supports mainly recreational use. The maps in Section III show nine categories of land use in the Pemigewasset River corridor.

Hydroelectric power generation dams owned by Public Service of New Hampshire (PSNH) and licensed by the Federal Energy Regulatory Commission (FERC) are located at Ayers Island between Bristol and New Hampton and at Eastman Falls in Franklin. The FERC license for the Ayers Island Dam was issued in 1996 and expires in 2036; the Eastman Falls Dam license was issued in 1987 and expires in 2017. As part of electric deregulation, PSNH is required to divest itself of these dams, and has discussed their possible sale with neighboring towns.

Impoundments

The Franklin Falls Dam, a flood control dam built and operated by the U.S Army Corps of Engineers, is the only dam not used for hydroelectric production on this section of the river. The Franklin Falls Dam and its 2,800-acre flood storage area extending back to the Ayers Island Dam have largely defined the character of this 12-mile section of the river corridor since the dam's completion in 1943. The dam's significance extends well beyond this section of the river corridor, as it is part of a coordinated system of reservoirs designed to protect communities along the Pemigewasset and Merrimack Rivers as far downstream as Lowell, Lawrence, and Haverhill in Massachusetts.

The 1,740-foot long, 140-foot high dam impounds a permanent pool of 440 acres with a maximum depth of about seven feet. The spillway level, which sets the maximum upstream water level, is 82 feet above the normal pool level. This allows a maximum storage of about 50 billion gallons in the flood storage area behind the dam. Significant storage of water in the reservoir (to typically 14% of capacity) has occurred on the average of once per year. Large storage events exceeding 27% of capacity have occurred on the average of about every three years, and floods in 1953 and 1987 used 76% of the storage capacity.

Although the ultimate responsibility for management of the project's natural resources rests with the Corps of Engineers, the New Hampshire Department of Resources and Economic Development (DRED) is licensed by the Department of the Army to utilize and manage the fish, wildlife, forest and other natural resources in the flood storage area. Their current 25-year license expires in June, 2014.

Flow Characteristics

The section of the Pemigewasset River covered by this plan is free-flowing until it reaches the impound area behind the Ayers Island Dam. It is again free-flowing beyond this dam until it reaches the impound area behind the Franklin Falls Dam. All of the short section between the Franklin Falls Dam and the Eastman Falls Dam is an impound area. The last section of the river, downstream from the Eastman Falls Dam, is free-flowing.

The natural flow of the river from the Ayers Island impound area to its confluence with the Winnipesaukee River is greatly affected by the operation of the dams. The Ayers Island Dam essentially determines the flow in this section of the river, and is required as part of its FERC license agreement to maintain minimum flows at certain times to accommodate the needs of salmon migration and the requirements for whitewater boating.

Flow amount or "discharge" is measured by the U.S Geological Survey (USGS) at Plymouth and by the U.S. Army Corps of Engineers (USACE) at Franklin Falls Dam. Data from Plymouth is particularly useful, as continuous records exist from October, 1903 to the present. Mean daily discharge at Plymouth from 1904 through 1997 is 1,366 cubic feet per second (cfs). Historically, the lowest mean daily discharge occurs in August (512 cfs) and the highest occurs in April (3,944 cfs). The instantaneous values vary much more than the means, ranging from 197 cfs to 24,800 cfs in 1997, for example. The threshold for flood stage at Plymouth corresponds to a mean daily discharge of 20,800 cfs.

Flooding at Plymouth occurs with some regularity. The Federal Emergency Management Agency (FEMA) describes the Pemigewasset River Corridor as "one of the most flood prone areas in the state." In fact, the towns of Plymouth and Holderness have been included in four federal disaster declarations since 1987. Flooding events have been associated not only with spring runoff and ice jams, but have also occurred at other times. Flooding is a serious problem, causing erosion and damage to bridges, culvert dikes and railroad beds, as well as to structures located in the flood plain.

Withdrawals and Discharges

Withdrawals - The water user registration and reporting program authorized by RSA 482:3 went into effect in 1987. All facilities which use more than 20,000 gallons per day (GPD), averaged over a 7 day period, or 600,000 gallons in any 30-day period, must register with NHDES. Once registered, the user must measure the amount of water used monthly and report these figures to the Water Division quarterly. The information collected under this program is a fundamental element in the overall assessment of water availability. Potential future problems relating to well interference, declining water tables, and/or diminished stream flows can be identified at an early stage and corrective action taken. Registered users along our section of the Pemi are: Jack O'Lantern Resort; Campton Sand & Gravel; Persons Concrete; Owl's Nest Golf Club; Plymouth State College; Bridgewater Power Company; and Franklin Water.

Discharges - The National Pollutant Discharge Elimination System (NPDES) requires that all dischargers have an NPDES permit. Permitted dischargers on our section of the Pemi (and its tributaries) include four waste water treatment plants: Waterville Valley, Plymouth, Ashland, and Bristol.

Community

Historically, the Pemigewasset River and its corridor had great importance to the towns through which it passes. Before roads were built, the river served as a primary means of transportation, so that town centers naturally evolved along its banks, particularly at the confluence with other rivers. In addition to providing transportation, the river was used for fishing and provided water power for mills along its banks. When roads (and later railroads) were extended to this part of New Hampshire, the rugged terrain made the river valley their logical route, further supporting the development of towns located along the river.

In the first half of the 20th century, the historical uses of the river became less important to the communities in the river corridor. As the towns grew and became more industrialized, there was a need to dispose of municipal sewage and industrial waste, and the communities looked to the river to fulfill that need. Because of inadequate treatment technology and increased use, pollution levels in the Pemi eventually rose to the point that it could be fairly described as an "open sewer," particularly in times of low flow. Legislation passed in the 1960's set strict standards on discharges into the river and resulted in the restoration of the river to its current class B status. A history of the restoration effort and its effects was compiled by Malcolm "Tink" Taylor in 1979 for the EPA and is included as Appendix F.

Today, the river is seen as a community resource mainly for its aesthetic and recreational values, which in turn make it a magnet for tourism. For many of the towns along the river corridor, the Pemigewasset is one of their most important natural resources.

Boating

There is extensive boating activity along the entire section of the Pemigewasset River covered in this report. Virtually this entire segment of the river is suitable for canoeing and kayaking, although some sections are useable only at times of high flow. The section from the Thornton-Woodstock town line to Plymouth consists of rapids interspersed with quickwater, and requires a portage around Livermore Falls. From Plymouth to the confluence with the Squam River there is quickwater, but the current weakens over the next three miles. The Ayers Island Dam creates a flatwater section for several miles upstream allowing for use by motorboats, which are restricted to 10 mph maximum speed. The eight-mile section of rapids below the Ayers Island Dam attracts numerous whitewater enthusiasts during spring, summer and fall. Adequate instream flows for whitewater boating are maintained on this section at peak hours on weekends and holidays between May 1st and August 1st by the Ayers Island Dam, in compliance with PSNH's FERC license. The river becomes flatwater again behind the Franklin Falls Dam and the Eastman Falls Dam, and continues as a mile-long rapids to its confluence with the Winnipesaukee River.

Recreation

The Pemigewasset River corridor supports a number of recreational uses, including hunting and fishing, snowmobiling, cross-country skiing, swimming, hiking, and camping. A section of the NH Heritage Trail, a program of the NH Division of Parks and Recreation to create a trail connecting communities from Massachusetts to Canada, is complete in Franklin and Hill. Much of the trail follows an abandoned highway and railroad bed along the west bank of the river, and is used for mountain biking and snowmobiling as well as for hiking. Another hiking trail extends 3.8 miles north from the Franklin Falls Dam to Sanbornton on the east side of the river. Picnic areas are found at the Ayers Island and Eastman Falls Dams, at the confluence of the Smith River in Bristol/Hill, and at the Sawhegenet Falls Recreation Area in Bridgewater. The Sawhegenet Falls area and several others are used for swimming . Privately owned campgrounds are located in Bristol, New Hampton, Campton and Thornton. Three golf courses are located in this section of the river corridor: the Jack O'Lantern Resort in Thornton, the Owl's Nest Golf Club in Campton and Thornton., and the White Mountain Country Club in Ashland.

Scenic

Scenic vistas abound along the Pemigewasset River corridor, both from the river itself and from the roads and trails along the river valley. US Route 3 in Campton and Thornton has been designated as a Scenic and Cultural Byway and affords excellent views of the Franconia Ridge and Mt. Lafayette. Livermore Falls Gorge in Campton offers one of the most outstanding scenic values on the river. This gorge boasts the river's largest falls, having a drop of 50 feet. Four miles north of Plymouth, the Blair Bridge, a 283-foot covered bridge built in 1869, provides another focal point of scenic interest. These regional highlights attract visitors from across the country.

Public Access

Public access to the Pemigewasset River is found in several locations. Public boat-launch facilities are found on the west bank in Thornton at the Cross Road bridge, in Plymouth off Green Street, in Bristol at the Route 104 bridge (Mooney Clark Landing), and off Route 3A just above the Eastman Falls Dam in Franklin. North of Plymouth, several bridge crossings serve as informal access points to the river. PSNH maintains a location just below the Ayers Island Dam for launching canoes and kayaks, as well as a portage path around the dam. Several points along the Coolidge Woods Road in New Hampton (shown on some maps as Flood Plain Road), on the east side of the river south of the Old Bristol Road, are used as take-out points by whitewater enthusiasts. In Bridgewater, canoe access is found at the Sawhegenet Falls. As mentioned earlier, access for swimming is found at the Sawhegenet Falls Recreation Area in Bridgewater, just off the River Road.

Historical and Archeological

Numerous Native American tribes traditionally passed along the Pemigewasset River, most of them from the Algonquin group. Trails, campsites and tools of these indigenous people have been discovered along the river, presenting artifacts illustrating historical uses of the river. As settlers moved north into the valley during colonial times, logging and paper mills flourished. The Pemigewasset River was a highly valued resource to settlers, who used it to transport logs to various mills downstream.

Construction of the three dams on this section of the river in the first half of the 20th century brought a great deal of change to the southern part of the river corridor. Construction of the Franklin Falls Dam necessitated moving the entire village district of Hill in 1941, leaving behind the old cellar holes, sidewalks, and trees. A popular account of the move entitled "The Story of Hill, New Hampshire" by Dan Stiles was published in 1942. A more comprehensive account entitled "Hill Reestablishment: Retrospective Community Study of a Relocated New England Town" was prepared for the U.S. Army Corps of Engineers in 1978. The most recent publication describing the Hill relocation is a 1989 report prepared by the Lakes Region Planning Commission called "A Report on Hill Village - The Historical Significance of this New England Village"

About twenty sites within the Pemigewasset River Corridor are listed in the National Register of Historic Places, including the Plymouth Historic District and the Central Square Historic District in Bristol. A town-by-town description of historical, archeological and cultural resources is included as Appendix G.

SECTION V - EXISTING LAWS AND REGULATIONS

A matrix summarizing federal and state laws and regulations affecting our section of the Pemigewasset River begins on the following page. Because of the diversity and complexity of the regulations, we have not attempted to make any generalizations about them. At this time, new draft regulations regarding instream flow are being considered by the NHDES. Since these regulations could have a major impact on the river, we have summarized the major elements of the draft plan as Appendix H.

A matrix summarizing pertinent local zoning ordinances in the towns along the Pemi corridor follows the federal and state regulations matrix. All of the zoning ordinances are consistent with a desire for good water quality and the protection of open spaces. Some of the major issues addressed by the zoning laws are as follows:

- Minimum lot sizes are two acres with the exception of Sanbornton (1.5 acres in General Residential and six acres in the Forest Conservation District), and Thornton (1 acre).
- Building setbacks along the river are 200' with the exception of Bridgewater and Holderness (150'), Plymouth (75'), and Campton (50'). No building setbacks from the river are specified in the zoning ordinances of Sanbornton and Thornton.
- Seven towns (Holderness, Ashland, Bristol, New Hampton, Sanbornton, Plymouth, and Campton) have a River Corridor Zone or Environmentally Sensitive Zone. The intent of this zone is to protect the environmentally sensitive corridor along the river.

A more comprehensive town-by-town summary of zoning ordinances and other local regulations affecting the river corridor is included as Appendix I.

The towns' master plans also address issues relevant to the river corridor. However, most master plan references represent general policy statements rather than specific regulations. As significant as these may be, they are not in fact laws or regulations affecting the river corridor, so we have included a matrix of master plan references only in the appendices, as Appendix J.

SECTION VI - COMMUNITY SURVEY RESULTS

In the summer of 1998, the Pemigewasset River Local Advisory Committee conducted a community survey with assistance from the Lakes Region Planning Commission. This section summarizes the results of that survey.

Purpose

The purpose of the survey was to collect information from citizens who own property on the Pemigewasset River, and from other citizens in towns on the river and the general public. The survey focused on what the important issues are to the respondents, and what kinds of activities should be encouraged and discouraged.

Methodology

To collect public input on river uses and issues, two surveys were developed (See Appendix K). The first survey was sent to citizens who own land on the river in nine towns. The source of the mailing list was the tax maps in each of the towns. The towns surveyed were: Thornton, Campton, Holderness, Plymouth, Ashland, Bridgewater, New Hampton, Bristol, and Franklin. (No surveys were mailed out to Hill and Sanbornton landowners since none of the river frontage in those towns is privately owned.) The respondents were given a stamped envelope addressed to the Lakes Region Planning Commission. The respondents were anonymous; however some did sign their names. Approximately 250 surveys were sent.

A second shorter survey was developed to collect information from citizens in the eleven towns comprising this section of the river corridor who do not necessarily own property on the river. These surveys were distributed to each town office and in some cases other important town buildings (e.g., general store, library)

Both surveys were distributed the week of July 15, 1998

Returns

Sixty-six (66) completed mailed surveys were returned within the time specified, representing a twenty-six (26%) per cent response rate. Forty-eight (48) of the shorter surveys were returned.

Data Tabulation and Analysis

The Advisory Committee met on August 25, 1998 in Holderness and passed a motion to have Nancy K. Johnson, Regional Planner from Lakes Region Planning Commission, process the surveys and prepare a report. Subsequently, Judy Faran, a member of the PRLAC, prepared an independent report based on the data compiled by Nancy Johnson. Her executive summary, as approved by the Committee, follows. A more detailed summary of the survey results is included as Appendix L.

Community Survey Results
Executive Summary

Analysis prepared by Judy Faran - Member/Secretary PRLAC 4/2000, based on data compiled by Nancy Johnson - LRPC.

Demographic Summary:

Most responses to the landowner surveys (the long form) came from the towns of Bridgewater, Franklin, and Thornton. Most of the citizen response forms (short forms) came from Hill, Bridgewater and Sanbornton. Please note that the towns of Hill and Sanbornton did not receive the landowner surveys, as all land along the river in those towns is owned by public entities, not by private individuals. Most respondents reside either out-of-state or in Bridgewater or Franklin. The average acreage owned is 24. The average number of feet of frontage owned is 831. The average length of ownership time is 30 years. The river played only a secondary role in the decision to purchase the property. The current use of the homes are: primarily full-time residence, recreation, wildlife habitat, and second/vacation home. The owners continue to own their property because: "it's home," "it has value," and "it's near water."

River Concerns & Benefits:

Items expressed are not listed in any ranked order.

The primary problems with the river and its corridor identified by the respondents are: flooding/erosion, vandalism/trespassing, trash, current government regulations, noise/rowdy behavior, and off-road vehicles.

The primary uses and benefits of the river and its corridor include: scenic value, nature/wildlife watching & habitat, fishing, boating (non-motor craft and small motor boats only), swimming, open space, walking, photography, and public access.

Most respondents would like to see a decrease in the following uses of the river and its corridor: motor boating (large motor craft, personal watercraft, and reckless operators); off-road vehicles; private water withdrawal for sale (bottled); and public waste disposal (sewage).

Most respondents would like to see the following items protected: water quality, better flood control/management, better erosion control, scenic value, nature/wildlife watching & habitat, fishing/fisheries habitat, open space, public access/recreational use, and wetlands.

Regulations:

There were specific questions on the questionnaires that addressed government control. On Question 11, regarding conservation easements or restrictions, development restrictions, scenic easements, and land donation, most respondents had not considered these options or did not answer the question . Most respondents to Question 12 (What level of government control of the river do you consider appropriate?) had not considered the issue or did not answer the controls questions. On Question 16 (Do you feel that any of the measures listed below would be appropriate for the protection of the Pemigewasset River and its corridor?), 40% or more failed to express an opinion on each of the listed measures. In the essay responses to Question 17, the percentage that responded with opinions about regulation was extremely small.

Based on the weak response or the lack of response to the questions on the regulation issue, the Committee was unable to establish any distinct conclusions. The only pattern evident in the responses was some correlation between acreage/river frontage owned and opinions on control. Those respondents with more than fifty (50) acres and extensive river frontage tended to favor either less local, state, and federal control, or wanted control to stay the same. The river front property owners with fewer acres and less river frontage tended to agree more often with increased state, local, and federal control.

SECTION VII - PRESENT & ANTICIPATED PROBLEMS

Below is a listing and brief descriptions of what the PRLAC Committee has determined to be the most critical ***Present and Anticipated Problems*** facing the Pemigewasset River and its corridor. This list is based on Committee members' input and the community survey results.

A. Water Quality.

1. Maintaining standards - The Pemi is listed as Class B water quality. Maintenance of Class B water quality cannot be taken for granted on this section of the river.

2. Inadequate monitoring - NHDES records show that in the past ten years monitoring of the Pemi has been sparse. Problems with water quality could go undetected for a significant period of time.

3. Monitoring the watershed as a whole - Water quality of the Pemi is dependent on making sure the tributaries in the entire watershed have water quality equal to or better than that of the river. Current monitoring practices do not appear to address this.

4. Septic disposal - Many private septic systems undoubtedly do not conform to current codes. This may contribute to pollution of the river now or in the future.

5. Leaking of underground storage tanks - Some underground storage tanks may be leaking or at risk for leaking. This could cause some pollution of the river and its associated aquifers. A listing of reported contamination sites in the corridor appears in Appendix E.

6. Given how close highways come to the river in places, accidents and hazardous spills threaten water quality.

B. Development & Growth

1. Over-development of river shoreline areas – Over-development leads to possible erosion of the river banks and destruction of habitats. In addition it can spoil the river users' appreciation of the natural scenic beauty.

2. Loss of open space - Open space is one of the prime factors in the scenic beauty of the river corridor and one of the main reasons we value the river. Once lost, it is virtually impossible to restore.

3. Destruction of wildlife habitat - Man's use of the corridor often leads to destruction of wildlife habitat. Wildlife provide us with recreational and scenic uses, as well as some helpful symbiotic relationships. Loss of habitat will lead to loss of wildlife,

diminishing the aesthetic and recreational value of the river corridor.

4. Economic development - The river corridor includes a good deal of valuable land. A delicate balance exists between the preservation and protection of those things we value along the river corridor and the rights of property owners to use their land for economic development. That balance is constantly threatened by extreme views on both sides.

C. Trash Disposal

1. Litter - Trash and illegal dumping is a persistent problem.

2. Landfills and transfer stations / restrictive rules - Litter is increased when restrictive rules imposed by local landfills and transfer stations make the legal disposal of certain items difficult or expensive. This situation seems to be getting worse as disposal facilities become more and more particular about what they will accept, and in what form they will take it.

D. Flow-related Issues

1. Water withdrawals - Significant withdrawals (relative to flow) from the Pemi or its watershed could have serious effects on the river.

2. Flooding - As detailed in Section IV, flooding can be a serious problem, particularly in Holderness, Plymouth, and Ashland where development has occurred on the flood plain.

3. Bank erosion - Although erosion is a natural process, it can produce siltation and have other undesirable effects. River uses that cause variations in water levels or create waves tend to exacerbate the problem.

E. Public Use.

1. Water craft - Dangerous operation of motorized watercraft is a problem. Sea- plane operation is also a concern because of noise and safety issues.

2. Vandalism/rowdy behavior/noise - Vandalism of private and public property on land along the river is always a concern. In addition, either rowdy behavior or noise from watercraft, radios, etc., disturbs riparian land owners and other recreational users.

3. Trespassing - Trespassing onto private lands along the river is a recurring problem for landowners.

4. Lack of enforcement of regulations - Many existing laws deal with the concerns expressed here. However, enforcement appears to range from minimal to non-existent much of the time.

F. Recreation

1. Fishing - Although restoration efforts have met with some success, these measures are incomplete. The dams still prohibit upstream migration, and fishing is a far cry from what it would be if the river were completely in its natural state.

2. Public access - Some of the trespassing, as well as other issues, is due to poor public access. In addition, poor facilities, maintenance, and inadequate parking at some existing public access areas make them less likely to be used.

3. Off-road vehicles - Irresponsible use of off-road vehicles by some operators has caused destruction of habitat, erosion, and trespassing and littering on private and public lands.

4. Access to private land - Traditionally, New Hampshire landowners have allowed their lands to be used, with permission, for recreational purposes such as hiking, hunting, or cross-country skiing, greatly supplementing the limited availability of public recreation areas. This tradition is threatened by occasional misuse and by the attitude of landowners who may not be familiar with this pattern of use.

SECTION VIII - RECOMMENDATIONS

The overall goal of this Committee, and these recommendations, is to identify and establish good management practices that can be utilized to protect and enhance the resources of the river corridor. Generally speaking, while many rules, regulations, and practices in place today have the ability to protect the river corridor, some rules are not effective, either through lack of public awareness or lack of enforcement, and in some cases the law may do more harm than good.

The recommendations below specifically focus on those issues that were identified by the Committee as being either current or anticipated problems affecting the river and its corridor. While we have attempted to identify who would be primarily responsible for implementing each recommendation, in many cases complete implementation would require cooperative action between various state and local agencies, private groups, and individual landowners. We would hope that those who would logically have a role in carrying out the recommendations would recognize their responsibilities and act accordingly.

A. Water Quality

1. Using resources at NHDES and other agencies, the frequency of monitoring water quality of the river should be increased, and monitoring of the major tributaries should be established. Monitoring results should be made public and readily available.

2. PRLAC, in conjunction with NHDES, should establish a minimum of two VRAP (Volunteer River Assessment Program) teams to assist in the water quality monitoring programs. The same groups should devise procedures that would ensure that appropriate remedial actions are taken if water quality drops below Class B standards. Local schools, civic groups and individuals are encouraged to participate in water monitoring.

3. PRLAC, in conjunction with local Conservation Commissions, should develop programs to educate landowners along the Pemi and its tributaries as to Best Management Practices.

4. The potential problems posed by defective or improperly maintained septic systems would be best addressed through efforts to educate homeowners on the proper use and maintenance of septic systems. In addition, inspection of septic systems should be a part of the home inspection process when properties are sold. Homeowners should also be made better aware of funds available to assist in the replacement of old fuel tanks and in cleaning up damage caused by leaking tanks.

5. Closer coordination should be sought between agencies responsible for emergency management plans dealing with accidents and hazardous material spills. The goal should be to develop up-to-date and effective emergency management plans.

B. Development and Growth

1. Towns that have not yet done so should adopt river corridor overlay zoning plans incorporating shoreland protection measures similar to those included in the Model Shoreland Protection Ordinance prepared by the New Hampshire Office of State Planning. While we generally support the protection measures in this model ordinance, we are concerned that the purported exemption for agricultural activities (Section 17) may in practice not be obtainable because the exemption hinges on an arbitrary and tedious procedure to assure conformance with best management practices.

2. Town master plans should address the issue of appropriate growth in the river corridor.

3. Towns should adopt "farm-friendly" zoning regulations, since farming preserves open space while providing productive use of the land.

4. Town officials need to monitor their respective town and to be diligent in enforcing the zoning and other regulations that regulate development, protect open space, and protect wildlife habitat.

5. Planning/zoning boards should take into consideration scenic values, habitat protection, and open space needs when developing plans or before giving approval to projects. For example, by encouraging cluster development, it may be possible to preserve open space which would otherwise be lost.

6. PRLAC encourages efforts to educate the public about the pros and cons of conservation easements, land trusts, and other land protection measures.

7. Open space is often lost when landowners are forced to sell their land because they can no longer afford to pay the real estate and/or other taxes. Tax relief going beyond the existing current use statutes should be enacted, making it easier for landowners and their heirs to hang on to their land and not to be forced to sub-divide if they don't wish to.

C. Trash Disposal

1. Reducing litter:

   a. PRLAC, in conjunction with the towns, should help organize and promote clean-up programs involving schools, civic groups, and individuals. For example, a river clean-up initiative might be modeled after the highly successful Adopt-a-Highway program.

   b. Agencies responsible for public lands should increase "Carry In - Carry Out" signage where applicable.

c. Funding for state and town clean-up crews should be increased and more emphasis placed on this aspect of maintaining highways and other public property.

2. Reducing illegal dumping:

a. The NHDES should undertake a complete review of current disposal regulations with the following objectives:

- To make regulations and fees more consistent among the towns in the river corridor, so that no town becomes unfairly burdened with items from outside its boundaries.
- To make it easier and cheaper to dispose legally of problem items such as tires and propane tanks.
- To provide for hazardous waste collection more than once a year.
- To develop funding sources to accomplish the objectives above.

b. State and federal laws should provide manufacturers with incentives to develop and promote programs that will allow the owner to return the products to them for proper disposal at the end of the products' useful life.

D. Flow-related Issues

1. PRLAC supports NHDES efforts to establish comprehensive Instream Flow Regulations.

2. PRLAC encourages towns which have not yet joined with FEMA and Project Impact to develop flood management programs to do so. Holderness is currently working on a Flood Mitigation Plan, and Plymouth is currently working on an All Hazard Mitigation Plan.

3. Planning and zoning boards should restrict development in areas which they determine to be subject to flooding or erosion.

E. Public Use

1. Regulations already exist that deal with most of the public use problems. The appropriate authorities should increase the enforcement of those current regulations.

F. Recreation

1. The New Hampshire Fish & Game Department and U.S. Fish & Wildlife Service should continue fish stocking programs, and expand restoration programs to

maintain or increase fishing opportunities. Development of two-way fish ladders would help bring back natural migrations.

2. Current boating access maps distributed by the New Hampshire Fish and Game Department do not show the public access points on our section of the Pemi. These maps should be updated to include comprehensive information on public river access and resources. It would also be helpful if these maps provided some information about regulations which affect users of the river and its associated recreational facilities.

3. Efforts to educate the public about the need to get permission from landowners before going on private lands should be intensified. For example, brochures provided to hunters by the New Hampshire Fish & Game Department should strongly emphasize this point.

4. Towns and the State should be more diligent about keeping public areas clean and safe. Towns should be encouraged to provide adequate public access, including parking. This would make using those areas more appealing and keep people from seeking alternative areas.

5. As a part of trail maintenance, those groups which maintain public trails should make a periodic impact assessment to determine what if any damage is being done by use of the trails. Particular attention needs to be paid to the problem of erosion, and steps taken immediately to correct any adverse effects to the river caused by erosion or other use problems.