

7

Programs and Permitting



Neira A. Murdock

Mountain sweet pitcher plant (*Sarracenia rubra* ssp. *jonesii*).

Programs and Permitting

Federal and State Programs for Conservation of Wetlands

The US Department of Agriculture and state government agencies sponsor a host of conservation programs that provide reimbursement to landowners who undertake natural resource conservation work such as wetland restoration. It is not necessary to seek only one conservation program that can fund an entire project. Multiple sponsors can support a project, and they often prefer to work in partnership with landowners, conservation organizations, and other government agencies. Also, it may be possible for landowners to obtain the greatest financial advantage by using several programs to underwrite the cost of separate elements of their wetland conservation plan.

The programs offered are too numerous and varied to describe here, but some, with the greatest significance to wetland restoration in the Mountains and Piedmont, are described below:

1. Wetlands Reserve Program

The Wetlands Reserve Program (WRP) provides an opportunity for landowners to receive compensation for voluntarily restoring wetlands. Participation in WRP is not limited to farmers. WRP authorizes the US Department of Agriculture's Natural Resources Conservation Service (NRCS) to pay for wetland restoration projects. Landowners may also choose to receive substantial land payments by selling a site's development rights to NRCS through a 30-year or permanent conservation easement. NRCS thus works with landowners and partner

agencies to develop a wetland restoration plan and to guide its implementation. Virtually all the methods described in this manual may be incorporated into a WRP wetland conservation plan. At the time of this writing, North Carolina has four mountain wetland sites enrolled in WRP. Each site involves only a few acres of former pastureland and riparian forest. Although small, these areas provide important habitat for wetland dependent wildlife and plants. One project has a perpetual conservation easement, two have 30-year easements, and one is simply a 10-year contract for restoration with no easement at all. Examples of restoration measures include: plugging drainage tiles, fencing, restoring stream channel morphology to raise the water table, creating shallow pools using excess cut and fill material, controlling woody vegetation, and re-establishment of sphagnum moss beds.

2. Wildlife Habitat Incentives Program

The Wildlife Habitat Incentives Program (WHIP), an NRCS program, that reimburses for development of wildlife habitat on private and local government lands. Not just limited to farmers, WHIP emphasizes restoration and management of rare and declining wildlife habitats through 5 to 10-year agreements. It may be used for restoration and management of native early successional vegetation on and around small wetlands.

3. Environmental Quality Incentives Program

The Environmental Quality Incentives Program (EQIP) of the NRCS provides

Programs and Permitting

reimbursement and special incentive payment to farmers who voluntarily adopt systems that protect natural resources. EQIP can address a wide array of farming related conservation concerns such as fencing for grazing management, stream bank stabilization, vegetative filter strips, riparian buffers, and livestock watering systems. The list does not end with these examples. The largest federally sponsored agricultural conservation program, EQIP awards hundreds of new contracts each year. The program reimburses up to 75% of the cost of installing Best Management Practices (BMPs) covered under a 10-year agreement.

4. State Agricultural Cost Share Programs

State Agricultural Cost Share Programs may provide another source of reimbursement for installation of agricultural BMPs (Best Management Practices) that reduce soil erosion and nutrient loss from agricultural land. Included in these programs may be fencing for livestock exclusion and grazing management, managing livestock watering facilities, and providing vegetative filter strips.

5. Partners for Fish and Wildlife: Habitat Restoration Program for Private Landowners (FWS).

The Partners for Fish and Wildlife Program provides technical and financial assistance to private landowners who restore and enhance fish and wildlife habitat on their property while leaving the land in private ownership. Anyone interested in the conservation of wildlife habitat on private lands can qualify as a partner, including ranchers, farmers, local agencies, private organizations, corporations, urban residents, government agencies, and educational institutions.

Totally voluntary, the program concentrates on funding such practices as restoring the following: cleared, drained, or otherwise degraded wetlands and

riparian habitats; breeding and roosting habitat for neotropical migratory birds; fish habitat; and the habitats of endangered and threatened species. Currently most restoration being completed is that of wetland restoration.

Ditched and drained farm fields are the most common types of freshwater wetlands being restored. These areas can be completely drained or may remain wet only during certain parts of the year. Riparian restoration is usually undertaken when stream and river banks have little or no vegetation left and in places where soil erosion from nearby areas is degrading adjacent watercourses. Habitat restoration for specific fish and wildlife species, such as endangered species, can take many forms, depending on the habitat needs of the individual species.

As partners in the project, the US Fish and Wildlife Service and any combination of other governmental agencies and public or private organizations will share the cost of restoration. The landowner may participate as a partner and may contribute use of equipment such as tractors, or funds to assist with the restoration.

The maximum amount of Service funds that may be expended on a person's property during any single fiscal year is \$10,000. Although some exceptions are possible, funding of project components or phases in sequential years is not generally allowed.

Private landowners must sign a minimum 10-year habitat development agreement. This pact specifies what each party will provide and commits the signers to maintain the restored habitat over the term of the agreement. Under specified conditions, habitat development agreements may be modified or terminated by either party.

Priority emphasis for projects is on Federal trust resources: e.g., migratory birds, endangered and threatened species, wetlands, floodplains, and riparian areas. The program emphasizes habitat restoration (i.e., hydrology and vegetation), and to a lesser extent habitat improvement and creation (see attached definitions). Other factors being equal, projects with in-kind services provided by the

Programs and Permitting

landowner (e.g., the landowner agrees to install structures for water control, etc., and maintain them over the period of agreement) receive a higher priority.

For habitat restoration, the total project cost is eligible for funding. For habitat improvement projects (e.g., fall/winter flooding of crop fields), at least 50 percent of the total project cost must be covered with in-kind services and/or non-service funds.

Service funding through the Partners for Fish and Wildlife Program cannot be used to purchase land-use rights to secure landowner participation (e.g., cannot purchase easements, pay rent). Landowners may be reimbursed for certain expenses such as water pumping costs.

Examples of projects funded by the service:

- Restoring hydrology on a previously altered site, including plugging drainage ditches, constructing levees, reestablishing historical topography and associated periodic flooding, installation of water-control structures, and related work.
- Restoring natural vegetation types on altered sites.
- Restoring and protecting riparian and floodplain areas: e.g., the Service will pay for fencing and any revegetation efforts along a stream or floodplain.
- Restoring, improving, and protecting habitat for threatened, endangered, or rare species: e.g., bog turtles, or Gray's lilies.
- Removal of exotic plants and animals which, competing with native fish and wildlife, alter their natural habitats.
- Installing fencing and off-stream livestock watering facilities to allow for restoration of stream and riparian areas.
- Planting native grasslands.
- Prescribed burning as a method of removing encroaching species and restoring natural disturbance regimes necessary for some species' survival.
- Reconstruction of in-stream aquatic habitat through bioengineering techniques.

Local Soil & Water Conservation District personnel are one of the best resources for providing wetland conservation expertise. These professional conservationists can explain

financial assistance programs available to landowners, and can also provide important design and planning assistance. A Soil & Water Conservation District office is usually located near a county's center of government and in an agricultural service center. To contact the local Soil & Water Conservation District office, look in the telephone book under "Local Government, Soil & Water Conservation".

Non-governmental Organizations

Conservancies and Land Trusts

Conservancies and land trusts are non-profit organizations created to preserve and restore natural resources. The scope of each organization varies. Regional land trusts focus on a local area or a specific resource, such as a river or lake. Some larger organizations, such as The Nature Conservancy, are interested in exceptional resources around the world. There are many different preservation methods that involve conservancies and land trusts. In addition to protecting a natural resource, some of these options offer financial benefits. Following are brief descriptions of a few options:

• *Management Agreements*

Management agreements are made between the landowner and a conservation organization. The agreements are temporary and each is designed to fit the particular desires of the landowner. Management agreements involve the development of a conservation plan, to be implemented by the conservation organization or the landowner.

• *Conservation Easements (no transfer of land ownership)*

Conservation easements are voluntary legal arrangements specifying that the property in question can only be used in ways that preserve its natural assets. Usually managed by a conservation organization, the easement is tailored to the desires of each landowner, and conservation trust. Conservation easements can reduce federal and state

Programs and Permitting

income tax, estate tax, gift tax, state inheritance tax, and sometimes state and local property taxes. Conservation easements are usually perpetual. Temporary easements are possible, but in most cases tax benefits only apply to perpetual easements.

- **Leases**

Leases of property to a conservation organization are no different from any other property lease. They are temporary and provide income to the landowner without change in ownership. The use of the property by the conservation organization is specified within the lease.

- **Sales**

Conservation organizations generally have a limited amount of funds for land acquisition. Because of these financial constraints, they usually purchase property at a reduced or “bargain sale” price. The landowner may receive an income tax reduction by claiming the difference between the selling price and the fair market value as a charitable donation. Selling at a reduced or “bargain sale” price also reduces capital gains taxes by decreasing the amount taxed.

- **Donations**

Donating property to a conservation organization is the most effective method of reducing taxes. Benefits include federal income tax deductions equal to the fair market value of the land, estate tax benefits, and avoidance of capital gains tax. The North Carolina Conservation Tax Credit Program also permits a dollar for dollar state income tax credit and an income tax reduction for larger gifts. For full details contact a local land trust or conservancy. Also see Appendix D for a list of organizations that can provide more information about wetland protection methods and assist with protection decisions.

Wetland Partnerships

Forming partnerships is a good way to bring a variety of technical and financial resources to bear on a project. Restoring and managing wetlands is a complex process requiring knowledge of a wide array of technical topics. Financial needs are a major concern in carrying a project to completion. In many cases, one agency or organization will not have all the resources necessary to address all of a project’s needs. Meeting each partner’s needs and expectations and insuring good communication is important in maintaining unity of purpose and insuring the success of the project.

Developing and implementing a wetland restoration or management plan requires input from a number of diverse technical disciplines. These can include, but are not limited to, hydrologists, engineers, ecologists, wetland scientists, geomorphologists, botanists, agricultural specialists, and foresters. Sources of expertise in these disciplines can include local, state, and federal agencies, non-governmental organizations, private consulting firms, and universities. In addition to bringing knowledge of their discipline, technical partners will often bring specialized equipment, such as data logging piezometers, to the project.

Financial assistance programs often have a narrow focus for their funding. Many states have cost share programs that assist agricultural land users to install Best Management Practices (see Glossary). These programs may focus on water quality, soil quality, or nutrient management concerns. State and federal agencies fund wetland restoration for mitigation purposes or to benefit specific game and nongame wildlife species. Universities may have financial resources that are dedicated to research relating to wetland functions or specific plant or animal species. Often a project will involve a number of these issues including: restoring wetlands, water quality concerning livestock, and research into restoration or wetland management techniques. Carrying out a project of this scope requires tapping into

Programs and Permitting

a number of funding sources. The best way to accomplish this is to include partners who have access to or expertise in acquiring the type of funding needed to carry out the project.

To secure participation and insure long-term commitment, it is important to involve partners from the beginning of the planning process. They must have a stake in the success of the project, each partner with specific goals they hope to accomplish as a participant in the project. These goals may be as varied as developing habitat for an endangered species, improving water quality as part of a river basin plan, or documenting the economics of livestock management practices. If the partner's participation is important to the success of the project, their goals must be incorporated in the project plan. It is important to understand that, while their goals may be different, partners can work together to expand the scope and improve the quality of the overall project.

In a partnership, particularly one with widely varied goals, it is necessary to establish a well-defined plan and decision making process. The project plan and goals must be well spelled out. A process must be in place to adapt the plan as the project proceeds. Depending on the scope of the project, a formal steering committee and chairperson may be necessary.

The project leader must facilitate involvement and information sharing among the partners. All the partners must be notified of scheduled activities that are important to the project. While the hydrologist's responsibility is monitoring groundwater levels, they may be interested in seeing how a vegetation inventory is conducted. Teamwork and opportunities for involvement in all aspects of the project help maintain long-term commitment. Communication can best be served through regularly scheduled meetings or communications such as letters and email. This helps to insure that each partner's needs and concerns are being addressed. Restoration and management activities will require scheduling and coordination, another good reason to insure that good lines of communication are established at the beginning of a project.

Permits Required Under the Clean Water Act

Restoration activities in wetlands often require prior permit approval from the US Army Corps of Engineers (Corps) under Section 404 of the Clean Water Act. The construction of berms or weirs for water management, the restoration of a channelized stream to reinitiate overbank flooding, the filling of drainage ditches, or the mechanical removal of nuisance vegetation are but a few examples of activities that may require a Department of the Army (DA) permit. The key to the Corps permit determination is whether or not the proposed activity results in a discharge of dredged or fill material into jurisdictional wetlands or surface waters. If so, then a DA permit is required.

There are basically two types of permits in the Corps Regulatory Program: general permits and individual permits. General permits are issued regionally or nationwide for categories of activities that have minimal impact on the aquatic environment both individually and cumulatively. Regional general permits are commonly referred to simply as general permits and nationwide general permits as nationwide permits. These permits are available to the landowner or project proponent, usually with a minimum of processing, provided that certain impact thresholds are not exceeded and certain conditions are met. Some general and nationwide permits require notification to the Corps before beginning work (pre-discharge notification or PDN) while others do not. There may also be exceptions to the PDN requirement on a regional level. For example, in the 25 counties of western North Carolina containing trout waters, a PDN to the Corps and the North Carolina Wildlife Resources Commission is required for nationwide or general permits. Proposed activities in any "Mountain or Piedmont Bog" of North Carolina would also require notification. Individual permits are processed on a case-by-case basis for projects that have more than minimal impact. These permits involve a public notice review process, coordination with

Box 7.1 Agency Assisted Restoration and Research**By Dick Everhart**

This project, in western Piedmont North Carolina, began as an effort to restore habitat for the federally listed bog turtle (*Clemmys muhlenbergii*). The US Fish and Wildlife Service, through their Partners for Fish and Wildlife Program, provided initial funding for the project. A local non-governmental organization with an environmental education focus, the Foothills Nature Science Society, agreed to receive and manage the funds for the project. As the project developed, it quickly became apparent that there was very little information available on the restoration or management of habitat for the bog turtle. As a result, the scope of the project was expanded and new partnerships developed. The local Soil and Water Conservation District approached Pilot View Resource Conservation and Development, Inc. for assistance in identifying funding sources and securing additional funding. The Natural Resources Conservation Service's Wetland Science Institute provided the funding required to carry out the necessary research.

Areas identified as needing additional research were: hydrology, vegetation control, habitat preferences, determining the presence of bog turtles and the impact of livestock on Meadow Bogs and bog turtle populations. A local consulting firm interested in contributing to the science of ecological restoration was hired to carry out a study of the site hydrology. A consulting botanist worked with the regional office of The Nature Conservancy to look at options for controlling woody succession in Meadow

Bogs. A faculty member and students from the University of North Carolina at Greensboro looked at habitat preference and methods for determining the presence of bog turtles. The NC Chapter of the Sierra Club provided a summer intern to assist with the UNCG effort. The coordinator of living collections for the North Carolina State Museum of Natural Sciences drew on a number of years of field data and experience to address the issue of livestock and Meadow Bogs. The local NRCS and staff assisted with data collection. Pilot View Resource Conservation and Development, Inc. helped to manage both the project schedule and finances, and insure that the goals of the funding agencies were met.

Most of the partners participated in a majority of the field activities that took place at the study site. Communication was insured through regular meetings and use of email. Points of contact were established for both technical and financial decision making. The results are that the information needed to develop and implement a restoration and management plan is now in hand. The original restoration will be carried out as planned and the information gathered can be used to benefit bog turtle populations throughout their range.

The study site has become important because of the long-term monitoring of hydrology and turtle populations. Since the erection of a fence in 1994 to seasonally exclude livestock, the dangerously small bog turtle population has nearly doubled!

Federal and State regulatory and resource agencies, and a public interest determination.

For the type of work advocated by this manual, that is the restoration and management of small wetlands, it is anticipated that nationwide permits could be used to authorize most work in waters or wetlands. This approach is to the advantage of both the landowner/proponent and the Corps because it minimizes impacts, processing time, and paperwork. Nationwide permits do not require any fees. A summary description of the nationwide permits (NWP) most applicable to

wetland restoration work follows. A complete listing of nationwide permits and conditions is found in the Federal Register (61 FR 65874), December 13, 1996. The Federal Register can also be accessed on the Internet through the US Government Printing Office at www.access.gpo.gov. On March 9, 2000 the Corps published a notice in Part III of the Federal Register (65 FR 12818 - 12899) announcing the issuance of five new NWPs, the modification of six existing NWPs, the modification of nine NWP general conditions, and the adoption of two new NWP general conditions.

Programs and Permitting

The new NWP's are designed to replace NWP 26. These changes took effect on June 7, 2000. The March 9, 2000 Federal Register notice is available for viewing on the Internet at www.saw.usace.army.mil/wetlands/regtour.

- a. NWP 18, Minor Discharges: authorizes the discharge of up to 25 cubic yards of fill material into surface waters or the loss of up to 0.1 acre of wetlands. If the discharge is in wetlands or exceeds 10 cubic yards in surface waters, then notification to the Corps is required. The discharge must be part of a single and complete project and cannot be used in conjunction with NWP 26.
- b. NWP 26, Headwaters and Isolated Waters Discharges (note: these permits, though no longer issued, are included because the information below is still applicable to those issued in the past): authorizes discharges of dredged or fill material into headwater streams, their adjacent wetlands and isolated waters provided that the discharge does not cause the loss of more than 3 acres of wetlands or more than 500 linear feet of stream bed. Discharges causing the loss of greater than 0.33 acres of waters and/or wetlands require notification to the Corps. Regional conditions in North Carolina also require notification for over 150 linear feet of stream bed impacts. The discharge must be part of a single and complete project. This NWP expired on June 7, 2000 and will not be renewed. Activities verified by the Corps under NWP 26 will remain authorized until February 11, 2002. Under the grandfather provision of the nationwide permit regulations, any permittee has 12 months, after the expiration of the NWP, to complete construction of the Corps' authorized activity. To qualify for the grandfather provision, the permittee must have begun construction or had a

contract to begin construction prior to the expiration date.

- c. NWP 27, Stream and Wetland Restoration Activities: This modified NWP authorizes activities in waters or wetlands associated with the restoration of former waters, the enhancement of degraded tidal and non-tidal wetlands and riparian areas, the creation of tidal and non-tidal wetlands and riparian areas, and the restoration and enhancement of non-tidal streams and non-tidal open water areas. Projects accomplished through agreements with the US Fish and Wildlife Service or the Natural Resources Conservation Service are authorized as well as work undertaken by other public agencies or private individuals. Notification to the Corps is generally required. This NWP is intended for projects that serve to restore natural wetland hydrology, vegetation, and function to altered and degraded tidal and non-tidal wetlands and the natural functions of riparian areas. In its current modified form, this NWP is also intended for projects that create, enhance or restore natural stream structure and stream habitat. It does not authorize the conversion of streams or natural wetlands to another aquatic use such as a waterfowl impoundment. Stream channelization is not authorized and only native plant species should be used if the permittee is vegetating the project site.

As previously mentioned, there are a number of conditions that must be met to work under the NWP's. With this manual's emphasis on restoring endangered and threatened species habitat, it is important to note that one of these conditions restricts the use of any NWP if the activity would jeopardize the continued existence of a threatened or endangered species or its critical habitat. If

Box 7.2 Alternative Livestock Watering Systems and Program Support**By Matt Flint**

Wetland restoration projects in the Mountains and Piedmont often occur in working pastureland, so it is important to consider how livestock watering needs can be met without causing harm to wetland resources.

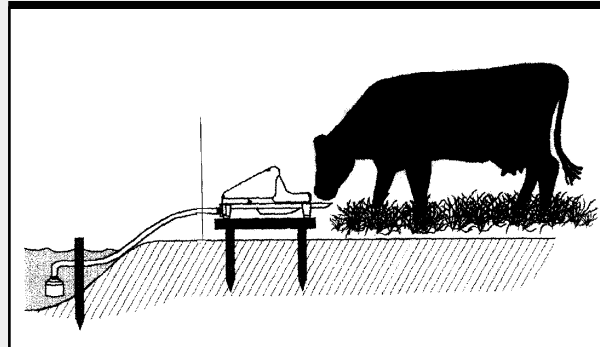
Livestock require dependable sources of clean drinking water. A lactating cow can drink up to 35 gallons of water per day. One beef animal or horse can drink up to 20 gallons of water per day. A fully effective livestock watering system will meet the animal operation's needs while protecting water quality and the integrity of important wildlife habitats, such as wetlands. EQIP and state agricultural cost share programs can help landowners with expenses incurred when installing environmentally friendly watering devices.

Streams, ponds, wells, and springs have all been traditionally used as sources of livestock water. Heavy animal foot traffic and accumulation of feces around watering areas call for treatments that minimize soil erosion and protect water quality. For the purpose of this manual, livestock watering systems that have the least impact on wetland habitats will be discussed.

Generally, uncontrolled livestock access to ponds and streams are discouraged due to water quality concerns and a need to prevent transmission of livestock disease. Development of springs can divert water out of the wetland system, thereby preventing full hydrologic functioning and degrading wetland habitat. Excavation of ponds in wetlands eliminates natural wetland plant communities and destroys wet meadow habitat.

Alternatively stream, pond, and well water can be delivered to tanks or troughs by means of gravity flow or pump. Gravity feed pipelines or siphons can provide water from streams and ponds if proper elevations can be achieved in a reasonable distance within the pasture. These pipelines extend to a trough or a series of troughs equipped with a shutoff float or overflow standpipe. A filter on the inlet end of the pipeline prevents debris from clogging the system.

Electrically powered pumps provide dependable powerful movement of water, but their installation and



Pressure from a drinking cow's nose causes a simple pump to lift freshwater from the fenced-out stream. This energy-efficient system can provide an alternative to pond construction and stream development for livestock water.

operating costs may be high. Solar powered electric pumps and hydraulic-ram pumps are lower cost options capable of moving water without connection to outside electric power sources. A solar powered electric pump uses a panel of solar cells to run a pump motor and charge an automobile type battery for back-up power. A hydraulic-ram pump uses water's natural head pressure to lift water into a distribution pipeline. It is a good option for Mountain wetland conservation, but requires careful design and installation to ensure proper operation. A natural pool in a stream is selected as the location for the inlet pipe. The inlet is typically a 4-inch plastic well screen that prevents entry of debris. The elevation of the inlet pipe is especially critical for correct operation. The ram must be located in an accessible area that is protected from dislocation or damage by floodwaters.

A nose pump or pasture pump is another device used to pump water for livestock. The force of drinking animals pumps the water. When a nose plate, positioned above a drinking bowl, is depressed the pressure on the nose plate compresses a piston that draws water out of a stream or pond.

No one livestock watering system will fit all situations. The landscape topography, the number of animals served, the yield of the water supply, and the costs are all factors for determining the most appropriate system or combination of systems.

Programs and Permitting

restoration work is being proposed in a wetland such as a Mountain Bog or Swamp Forest/Bog Complex that is likely to harbor such species, it would be essential to coordinate the proposal with the US Fish and Wildlife Service. Projects that do not meet the terms and conditions of the NWP's must be processed as individual permits in a public review process.

This is not meant to be a definitive description of the Corps' Regulatory Program but rather to provide the reader with a starting point at which an informed dialogue regarding a restoration project can begin. Given the seeming complexity of this program, particularly to those who do not work with it on a daily basis, it is best to contact the Regulatory Branch/Division of the Corps of Engineers District in your state or your local Regulatory Field Office. It is recommended that contact be made at the concept phase of a project prior to detailed design. A complete description of the Regulatory Programs of the Corps of Engineers can be found in the Federal Register (51 FR 41206), November 13, 1986 or through the US Government Printing Office Internet address above. Information on the Regulatory Program in North Carolina can be accessed through the Wilmington District's Internet Home Page at www.saw.usace.army.mil.

Reporting Wetlands Violations

Most citizens are not adequately trained to determine whether or not ditching is illegal, so any suspicious ditching or draining should be reported to the Corps of Engineers. Federal and state regulations are often not adequate to protect important wetland ecosystems, especially small ones. Although citizens and biologists experience disappointment that some ditching and draining of wetlands are not illegal, perseverance in the reporting process is important if illegal activities are to be discovered! The following telephone numbers are for the Corps of Engineers Districts in the Southern Appalachian region.

Wilmington District (NC)(910) 251-4511
 Norfolk District (VA)(804) 441-7068
 Charleston District (SC)(803) 727-4330
 Savannah District (GA)(912) 652-5768
 Nashville District (East TN)(615) 736-5181
 Huntington District (WV)(304) 529-5487

Some states have wetland protection regulations that are more effective or stringent than the federal ones. If the reported activity is not a violation of federal law, it may be illegal in your state. Consultants at the Corps of Engineers can help you get in touch with the appropriate state agencies. The more phone calls you make, the better.

Bibliography

Clean Water Act, P.L. 92-500, 86 Stat. 816, as amended; 33 U.S.C.A. 1251-1376. Sections applicable to bog protection restrict the placement of fill in wetlands without a permit from the US Army Corps of Engineers.

Endangered Species Act of 1973, as amended. P.L. 93-205, 87 Stat. 884, as amended; 16 U.S.C.A. 1531-1540. Prohibits taking of Endangered and Threatened species from the wild without a permit; prohibits Federal agencies from funding, authorizing, or otherwise carrying out activities that would jeopardize the continued existence of federally listed endangered or threatened species.

Natural Resources Conservation Service. 1997. National Range and Pasture Handbook. NRCS Grazing Lands Technology Institute, NRHP 190-vi. Sept. 1997. A government document describing the ecology and management of native rangeland and domestic pastureland used for grazing and haying.

Programs and Permitting

Natural Resources Conservation Service. 2000. Field Office Technical Guide, Volume IV. Raleigh, NC. A government document describing standards and specifications for agriculture-related natural resource conservation practices in North Carolina.

Natural Resources Conservation Service. 1997. National Range and Pasture Handbook. NRCS Grazing Lands Technology Institute, NRHP 190-vi. Sept. 1997. A government document describing the ecology and management of native rangeland and domestic pastureland used for grazing and haying.

North Carolina Department of Environment and Natural Resources, Division of Water Quality. 1999. A Guide for North Carolina Landowners: Financial Incentives and Technical Assistance Programs Which Apply to Wetlands, Streams and Streamside (Riparian) Areas. North Carolina Department of Environment and Natural Resources, Division of Water Quality, North Carolina Wetlands Restoration Program. September 1999. This booklet provides landowners, land-use planners, and natural resource managers with the most current information about federal, state, and other assistance related to conservation of wetlands, streams, and streamside areas in North Carolina. Contains reference material about program requirements, land protection options, eligible land types, and other information sources. It is available on-line from: <http://h2o.enr.state.nc.us/wrp/files/landown.htm>

Many additional sources are available on the web.