

## **CHAPTER 15**

### **NATURAL FEATURES**

#### **INTRODUCTION**

Two maps showing natural resources have been prepared for this Plan. The first is a composite map showing natural resources including streams, wetlands, hydric soils (which are potential wetlands), 100-year floodplains; wooded areas; and areas of steep slope, including slopes of 15% - 25% and slopes greater than 25%. The second map shows water related features, including: streams, floodplains, wetlands, hydric soils, and watersheds, which are listed by watershed name.

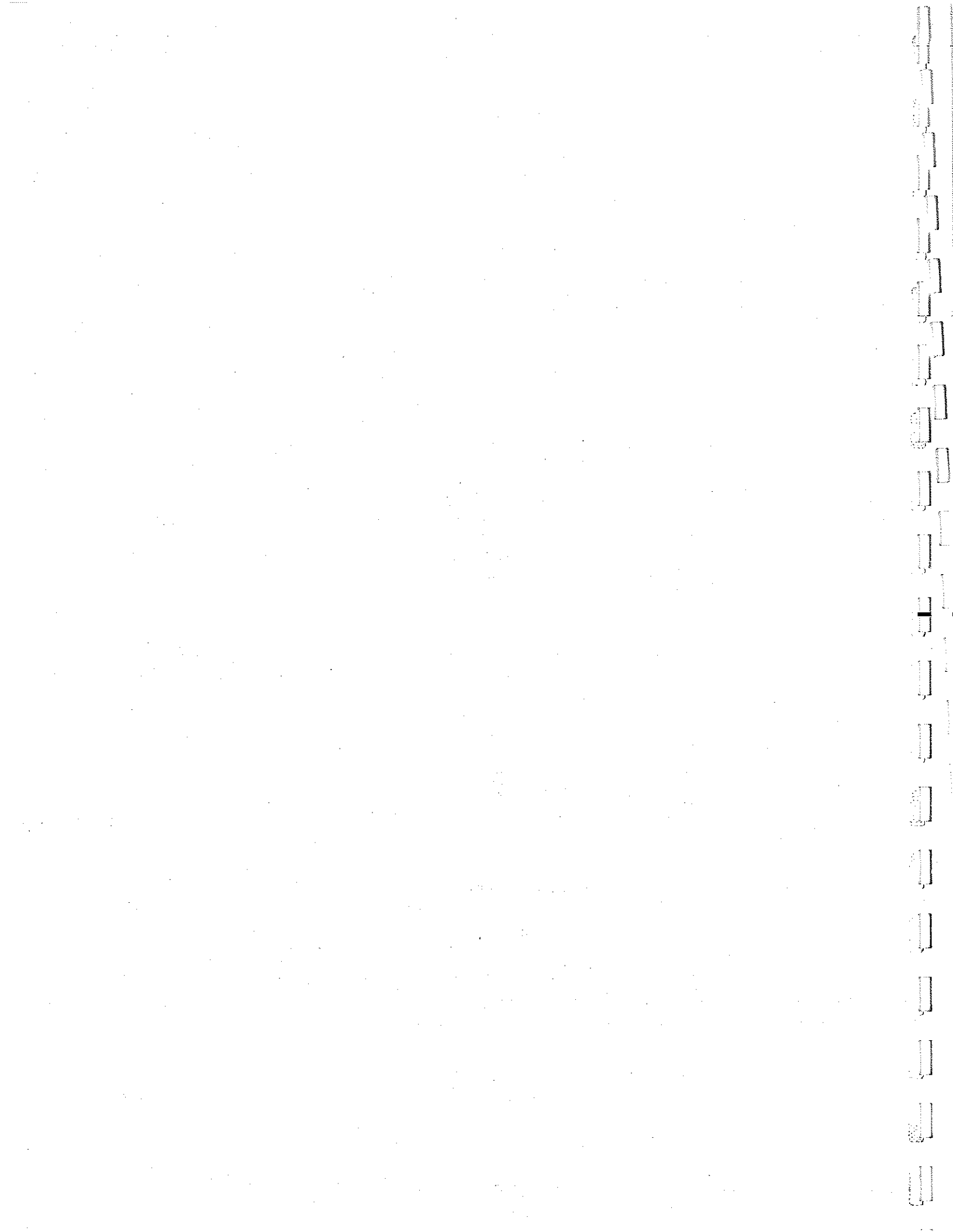
#### **FLOODPLAINS**

One hundred-year floodplains are shown from Federal Emergency Management Agency (FEMA) Maps. Detailed studies have not been performed to establish, through calculation, the extent of the 100-year floodplains for all watercourses. Any development proposed in the vicinity of watercourses by developers would require a calculated study of the 100-year floodplain by the developer if such detailed studies have not been performed by FEMA.

Floodplains are areas adjacent to watercourses which are covered by floodwater during times of flooding. A 100-year floodplain is the area which has a 1% chance of being flooded during any one year, and which is typically used for regulatory purposes. It is best if the floodplains are not developed, because development within the floodplains results in danger to persons and property. If development occurs within the floodplain, this may constrict the area over which floodwaters may flow, resulting in increased flood damage downstream because of resultant increased flood velocities downstream. Outdoor storage of materials within floodplains is not desirable because of the possibility of the materials entering the stream when flooding of the banks occurs.

Care must be taken in disturbing areas along watercourses because increased sedimentation within the stream (increased depositing of soil within the stream) can occur. Increased impervious cover along watercourses typically increases the storm water runoff in the streams. The runoff can erode stream banks and channels. If sedimentation is increased, filling of streambeds can occur, which could cause floodwaters to cover a larger area, meandering of streams, and choking of life within the stream, detracting from the aesthetic value of the stream.

It is desirable to keep pervious surfaces on stream banks, as opposed to impervious surfaces such as paved areas. As surface runoff moves toward streams, water can be



absorbed into the ground if the surface is pervious. Increased absorption can result in replenishment of groundwater and also in decreased flood peaks because less water reaches the stream from the surface of the land. Inadequate supply of groundwater can result in an inadequate flow of water to the stream during dry months. The inability to sustain stream flow can mean a greater concentration of pollutants at periods of low flow.

Agriculture practiced along streams should be practiced with care. Increased tillage and use of the soil can increase the sediment concentration and runoff reaching streams. Animal excretions can result in increased bacteriological concentration in runoff, pesticides can result in increased undesirable chemicals in runoff, and fertilizer and manure can increase nitrate concentrations in runoff.

On-site sewage disposal systems should not be located within areas subject to flooding because of the danger of contamination of the stream and the groundwater because of the proximity of the stream and the presence of the high water table. There may not be an adequate distance between the on-site facility and surface water to permit renovation of sewage effluent prior to its reaching the stream. In some instances, soils found in the floodplains are very porous and the movement of sewage effluent is too rapid to allow for the renovation of the effluent prior to reaching the groundwater table or the stream. In other situations, the soil near the surface may be saturated with water or become readily saturated with sewage effluent, resulting in effluent remaining near or rising to the surface of the land. When flooding occurs, sewage effluent could then contaminate the surface water. The efficiency of filter fields of septic tanks can be impaired or destroyed as a result of flooding.

## **WETLANDS**

The wetlands shown are from the National Wetlands Inventory, prepared by the Office of Biological Services, U.S. Department of the Interior, Fish and Wildlife Service. The wetlands inventory was prepared by stereoscopic analysis of high altitude aerial photographs, with the wetlands identified on the photographs based on vegetation, visible hydrology, and geography. A detailed on the ground and historical analysis of any site may result in a revision of the wetland boundaries, and it is possible that small wetlands and those obscured by dense forest cover may not be identified.

Wetlands within the area are generally found along the watercourses such as the Schuylkill River, streams and in areas identified as hydric soils. Wetlands are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, prevalence of vegetation typically adapted for life in saturated soil conditions. During on-site investigation, wetlands can sometimes be identified when they are saturated with permanent or semi-permanent standing water and contain common wetlands plants such as cattails and willows. If wetlands cannot be identified by hydrophytes (plants adapted to life in saturated soil conditions), soils may be

investigated to determine whether wetlands are present. Hydric soils mapping can be used to identify potential wetlands sites. Hydric soils are discussed below.

In order to put wetlands into less technical terms, often low lying land that remains wet for considerable periods of the growing season, land that can not be farmed because it is too wet or can only be farmed every few years, or low-lying land that can only be developed by filling are likely to be wetlands. These areas store water which can replenish groundwater and surface water supplies.

Wetlands can be areas rich in plant growth and animal habitat. They often serve as breeding places for many organisms. In addition to providing a home and a source of food for organisms, wetlands can protect water sources and can help keep water sources clean by acting as natural filters and removing pollutants such as bacteria and sediment from water. This occurs as plants growing in and around wetlands trap pollutants.

In general, no developmental activity or placement of fill material may occur within wetlands without obtaining a DEP permit.

## **HYDRIC SOILS**

The hydric soils have been mapped from soils information provided by United States Department of Agriculture Natural Resources Conservation Service and indicate areas of potential wetlands. Hydric soils developed under conditions sufficiently wet to support the growth and regeneration of hydrophytic vegetation and are soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions (an anaerobic situation is one in which molecular oxygen is absent) in the upper part.

Criteria for identifying hydric soils include somewhat poorly drained soils that have water table less than 0.5 ft. from the surface for a significant period (usually a week or more) during the growing season; are poorly drained or very poorly drained and have either water table at less than 1.0 ft. from surface for a significant period during the growing season if permeability is equal to or greater than 6.0"/hr. in all areas within 20", or have water table at least 1.5 ft. from the surface for a significant period during the growing season if permeability is less than 6.0"/hr. in any layer within 20"; soils that are ponded for long duration (from 7 days to 1 month) or very long duration (greater than 1 month) during the growing season; or soils that are frequently flooded for long duration or very long duration during the growing season.

The areas of hydric soil are generally found in the vicinity of the watercourses within the Region. There also are several isolated areas of hydric soil displayed on the Water Related Features Map.

The hydric soils should be preserved and serious consideration should be taken to limit development on hydric soils. Hydric soils can act like a sponge when floodwaters rise, and when coupled with established wetlands, can filter nutrients and pollutants to protect the surface and ground water.

### **STEEP SLOPES**

Areas that have slopes greater than 15% have severe limitations to development. In general, this land is too steep for residential subdivisions and cultivation. Development of steep slopes can result in hazardous road conditions, costly excavation, erosion and sedimentation and storm water runoff problems. These slopes are quite prone to erosion, and protection of them is particularly important for water resource protection due to watercourses that are generally nearby. Development should be limited, vegetative cover maintained to the greatest extent possible, and erosion controls instituted. Without absorptive vegetation, runoff can rapidly erode the slopes. The primary areas of steep slope are Monocacy Hill, Neversink Mountain, northern Exeter Township, and the portion of Exeter Township near Fabers and Schoffers Roads.

### **WOODED AREAS**

Wooded areas are concentrated in the northern portion of Exeter Township, Monocacy Hill, and Neversink Mountain. They are also scattered throughout the region and along the stream corridors within the region. The wooded areas should be protected as a valuable resource for the protection of steep slopes and to minimize the erosion that may occur if disturbed by clear cutting or extensive development.

Wooded areas are scenic amenities and habitats for wildlife and home to most of the native species in the County. They provide visual relief from developed land areas. In addition, they increase capacities for absorption of storm water runoff, diminishing flood potentials and decreasing erosion. Wooded areas are especially valuable when on steep slopes, playing the important role of reducing runoff and erosion and sedimentation by binding the soil.

Maintenance of wooded areas on steep slopes is of even greater importance when the steep slopes are near streams, which could be disturbed through sedimentation, and experience greater flood peaks if they are swelled by increased surface runoff. Wooded areas are in some cases in close proximity to the watercourses within the Region, sometimes on steep slopes.

When wooded areas are retained, the quantity and quality of groundwater can be better maintained than if woods are removed, because the natural cover allows for infiltration of rainfall into the groundwater system. Retention of wooded areas will also preserve the home of most of the native species in the County.

Wooded areas also have recreational potential, recognized when Amity established Monocacy Hill as a community resource in the Township.

### **ROLE IN OPEN SPACE SYSTEM**

Stream valleys, farmland, and woodlands in the Region constitute background open space, which is seen and perceived by residents of the entire area. As development continues to occur in the Region in the future, if this background open space is not preserved, the remaining rural character of the Region will be lost.

### **STREAMS AND WATERSHEDS**

The watersheds and streams in the region are shown on the Water Related Features map. Some of the natural functions of watercourses and the area surrounding the watercourses have been discussed above. It is also important to note that streams provide a recreational resource.

The streams shown on the Water Related Features Map drain into the Schuylkill River, which drains into the Delaware River.

PA DEP has established designated water uses for waterways within the Commonwealth. Designated classifications for watersheds found in St. Lawrence, Exeter and Amity are as follows:

<u>Stream</u>	<u>Zone</u>	<u>Water Uses Protected</u>
Monocacy Creek	Basin	WWF
Manatawny Creek	Main Stem	CWF
Unnamed Tributaries Manatawny Creek	Basins	CWF
Ironstone Creek	Basin	TSF

The Water Use Protected symbols mean the following:

### ***Special Protection***

<u>Symbol</u>	<u>Protected Use</u>
HQ	<i>High Quality Waters</i> – A stream or watershed which has excellent quality waters and environmental or other features that require special water quality protection.
EV	<i>Exceptional Value Waters</i> – A stream or watershed which constitutes an outstanding national, State, regional or local resource, such as waters of national, State or county parks or forests, or waters which are used as a source of unfiltered potable water supply, or waters of wildlife refuges or State game lands, or waters which have been characterized by the Fish Commission as “Wilderness Trout Streams”, and other waters of substantial recreational or ecological significance.

### ***Aquatic Life***

<u>Symbol</u>	<u>Protected Use</u>
CWF	<i>Cold Water Fishes</i> – Maintenance and/or propagation of fish species including the family Salmonidae and additional flora and fauna which are indigenous to a cold water habitat.
WWF	<i>Warm Water Fishes</i> – Maintenance and propagation of fish species and additional flora and fauna which are indigenous to a warm water habitat.
MF	<i>Migratory Fishes</i> – Passage, maintenance and propagation of anadromous and catadromous fishes and other fishes which ascent to flowing waters to complete their life cycle.
TSF	<i>Trout Stocking</i> – Maintenance of stocked trout from February 15 to July 31 and maintenance and propagation of fish species and additional flora and fauna which are indigenous to a warm water habitat.

Special Protection Waters, High Quality and Exceptional Value, are required to be maintained at their existing quality; however, High Quality water can be degraded if certain social and economic justifications are met. Streams that are classified as High Quality have additional requirements for potential discharges listed in the Rules and Regulations of the Pennsylvania Department of Environmental Protection. PA DEP requires that a proposed point source discharge to High Quality Waters must show that

the discharge is justified for necessary economic or social development which is of significant public value and that the proposed discharge alone or in combination with other discharges will not affect the protected use criteria. A proposed discharger must prove that the best available land disposal and reuse technologies are not feasible for economic environmental reasons.

A Stream Corridor Preservation Plan has been established to highlight the need to protect the watercourses within the Region.

### **Natural Areas of Special Interest**

The following Natural Areas Inventory sites are found in the St. Lawrence Exeter and Amity Region, and shown on the Historic Resources Map in Chapter 22.

**Neversink Mountain** – This mountain provides open space in an urban setting and provides habitat for four rare species. Although there is a small residential development on the mountain, it does not appear to be influencing the species of special concern there. What is of concern is the use of herbicides and pesticides to control plants on the powerline right-of-way and for gypsy moth control in the surrounding woods. Herbicide use should be limited to control of tree saplings to ensure survival of the food plants used by two rare butterflies. The electric utility company and Berks County Conservancy have made progress toward this end. Aerial spray for gypsy moths should be avoided because the two butterflies are susceptible to the same chemicals.

It will be important to manage habitat on the mountain to limit the further spread of exotic plant species and maintain the small dry, rocky openings on the south slope that are important for the rare plant limited to this habitat. No logging has occurred recently but it should be completely discouraged in the future.

There is potential for Neversink to be a low-impact recreational asset to Reading and surrounding towns. The former trolley line offers opportunities for environmental education and nature observation, and walking and horseback riding.

The mountain is one of the four most important sites identified in Berks County.

**Schuylkill River** – Preserve as much open space as possible along river and all islands; excellent recreational resource. High County rank.

**Amityville Floodplain Forest** – Floodplain islands and north-facing slope; diverse flora and wildlife habitat; water quality protection; maintain in present condition. Low County rank.



**SP528** – A species currently under review to determine its status in Pennsylvania, grows in Forest Hills Cemetery in Exeter Township. The very small C-ranked population occurs in a small limestone woodland on the cemetery property. The woodland harbors small patches of native vegetation despite rampant exotic species invasion. Careful control and removal of exotic species may ensure the continued existence of SP528 at the site.

**SP557** – Marks a small population of a PA-Rare sedge growing on the dry gravel slope of an old coal siltation basin in Exeter Township with slender cottonweed (*Froelichia gracillis*), buttonweed (*Diodia teres*), large crabgrass (*Digitaria sanguinalis*), few-flowered burgrass (*Cenchrus pauciflorus*), and yellowish wild bean (*Strophostyles helvola*). Protecting a species in such a highly disturbed setting is problematic. At this time, it is recommended that a local botanist monitor the population.

**SP514** – The Monocacy Creek site, currently being used as a cattle pasture, is a wet meadow located along Monocacy Creek, Exeter Township, Black willow, reed-canary grass, goldenrod, asters, jewelweed, boneset, monkey flower, and sedges and rushes are common species. A fair population of a plant species of concern was found here in 1992. This species requires open habitat and likely benefits from light grazing under its current land use. The owner is aware of the plant, and intends to keep the site as it is. Heavy grazing and succession are potential threats. No special management is recommended.

