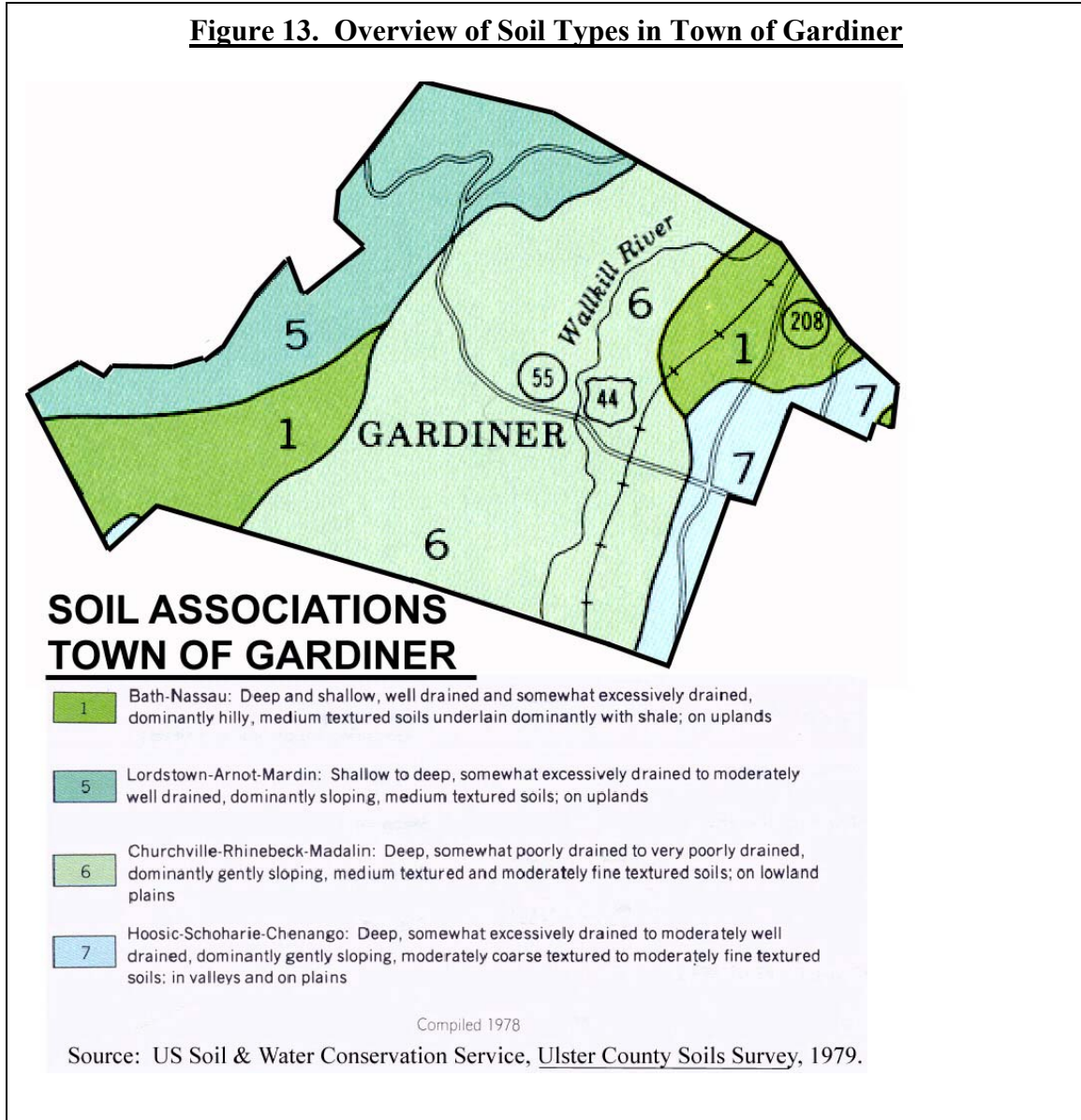


Inventory of Natural Resources

Soils: According to the most recent Soils Survey for Ulster County, the Town of Gardiner has four major categories of soils, as indicated below in Figure 13. The Northeastern and



Southwestern edges of the Town have soils from the Bath-Nassau complex, which tend to be hilly and well-drained upland soils with shale bedrock. Along Gardiner's Eastern edge, the soil complex shifts to Hoosic-Schoharie-Chenango, which features moderately to excessively drained soils in valleys and plains. Approaching the flood plains for the Walkkill River and Shawangunk Kill, the soil complex becomes Churchville-Rhinebeck-Madalin, poorly drained soils associated with lowlands. Along the Town's portion of the Shawangunk Ridge, the Lordstown-Arnot-Mardin soils complex dominates, featuring upland, sloping soils.

Slope: As suggested by the Town's soils composition, the vast majority of Gardiner consists of relatively flat or gently sloping lands, with slopes of 10 percent or less. The western edge of the Town features the steep slopes associated with the Shawangunk Ridge, with the northwestern corner of the Town having slopes in excess of 15 percent. (See Figure 14.)

Hydrology: The Shawangunk Kill and the Wallkill River are the two largest watercourses in the Town of Gardiner. Their flood plains occupy much of the south/central portions of the Town. (See Figure 15.) Minor waterways and NYS DEC wetlands are found scattered throughout all portions of the Town.

Significant Areas: The Town has five significant natural and/or scenic areas that have been recognized by local, state or federal action. They are described below.

The Shawangunk Ridge: In addition to serving as an important element of the area's water supply, the Shawangunk Ridge is an important repository of significant plant and animal habitats. The biodiversity of the Ridge is one of the reasons it was named one of the last great places on Earth by the Nature Conservancy. The Shawangunks' five lakes, six waterfalls, and over 100 miles of roads and trails also provide the Town and the surrounding area with recreational opportunities and scenic views are an essential ingredient to the quality of life enjoyed by residents.

The Shawangunk Kill: The Shawangunk Kill from the border of Ulster and Orange counties to its confluence with the Wallkill River has been designated by New York State as a Recreational River under the State Wild, Scenic and Recreational Rivers Act of 1982. Under that designation, "no dam or other structure or improvement impeding the natural flow thereof shall be constructed on such river . . . Notwithstanding anything herein contained to the contrary, existing land uses within the respective classified river areas may continue, but may not be altered or expanded except at permitted by the respective classifications, unless the commissioner or agency orders the discontinuance of such existing land use. In the event any land use is so directed to be discontinued, adequate compensation therefore shall be paid by the state of New York either by agreement with the real property owner, or in accordance with condemnation proceedings thereon."

In its assessment of Significant Habitats and Habitat Complexes of the New York Bight Watershed, the US Fish and Wildlife Service designated the Shawangunk Kill as a significant habitat complex. (See Figure 16.) According to the study:

The Shawangunk Kill is a relatively undisturbed Hudson River tributary. Its low nutrient levels, cool water, and lack of a major water control structure allow the lower Shawangunk Kill to support a regionally rare biological community. This stretch of stream supports high diversities of fish and mussels, unusual for the Hudson Valley. Six species of freshwater mussels have been identified in this stretch of the river, including the globally rare swollen wedge mussel and other unionid mussels including eastern elliptio (*Elliptio complanata*), eastern floater (*Anodonta cataracta*), triangle floater

(*Alasmidonta undulata*), squawfoot (*Strophitus undulatus*), and eastern lampmussel (*Lampsilis radiata*). River fingernail clam (*Spaerium fabale*) has also been found in this stretch. Thirty-one species of fish have been reported from this segment of the river, including the following rare species: comely shiner (*Notropis amoenus*), sand shiner (*Notropis stramineus*), logperch (*Percina caprodes*), redbreasted sunfish (*Lepomis auritus*), and margined madtom (*Noterus insignis*). Wood turtle occurs in riparian habitat of the Shawangunk Kill and its tributaries. The federal candidate bog turtle (*Clemmys muhlenbergii*) has been found in several wetlands and tributaries of the Shawangunk Kill, but none of these populations has been located in recent years. The Shawangunk Kill supports the only known occurrence of beakgrass (*Diarrhena obovata*) in the state and in the study area. Rare plants of the Shawangunk Kill corridor include threadfoot found on submerged bedrock ledges in the river; sharp-winged monkeyflower, wingstem, and red-rooted flatsedge along the silty banks of the river; and beakgrass, Davis' sedge, swamp agrimony, small white aster (*Aster vimineus*), and violet bush-clover in old fields and open woods in the floodplain. . . .

Excessive groundwater withdrawals could have significant impacts on flow and water quality. Water withdrawals from the Shawangunk Kill would be detrimental to the rare species found there. Longer low flow periods would result in increased warming of the water, reduced dissolved oxygen, increased concentration of nutrients and silt, and changes in the patterns of sediment deposition. Other threats include pollution by landfill leachate, withdrawal of water for irrigation, and siltation from logging, construction, and agriculture. Development in the watershed will likely have negative impacts on both the rare biological communities and downstream water quality. Clearing of vegetation adjacent to the river for agriculture, development, or forestry would threaten riparian communities and water quality. (US Fish & Wildlife Service, Significant *Habitats and Habitat Complexes of the New York Bight Watershed*, November, 1997.)

The Wallkill River: From its source in New Jersey to just past the New York State line, the Wallkill River has been designated a National Wildlife Refuge. According to that program:

As a major watershed, wedged between the Appalachian Valley and Ridge to the west and the Highland Ridge System to the east, the Wallkill River provides migratory and nesting habitat for waterfowl, which use the valley as a conduit between eastern Canada and the Atlantic coast and between the Delaware and Hudson rivers. More than 225 species of birds, including 21 species of waterfowl, occur on the refuge.

While Gardiner's portion of the Wallkill does not have the National Wildlife Refuge designation, it is clearly an important link between those wildlife resources and the Wallkill's role in the Hudson River estuary system. Together with the Rondout Creek, the Wallkill is part of one of the largest tributary complexes to the Hudson River. Besides its significant natural resource values, the Wallkill River has long been a source of active and passive outdoor recreation for Gardiner residents.

Figure 14.
Town of Gardiner Topography

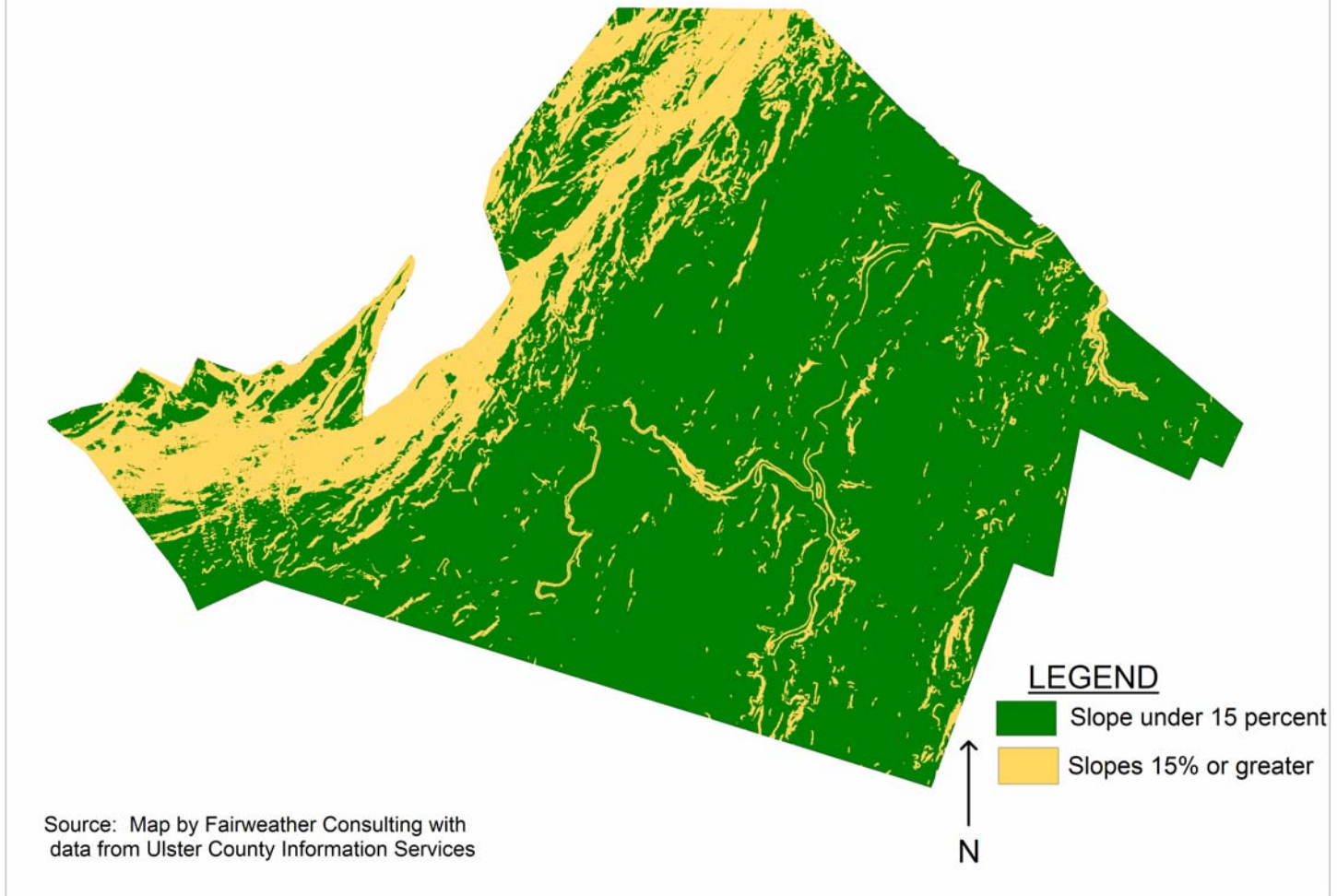
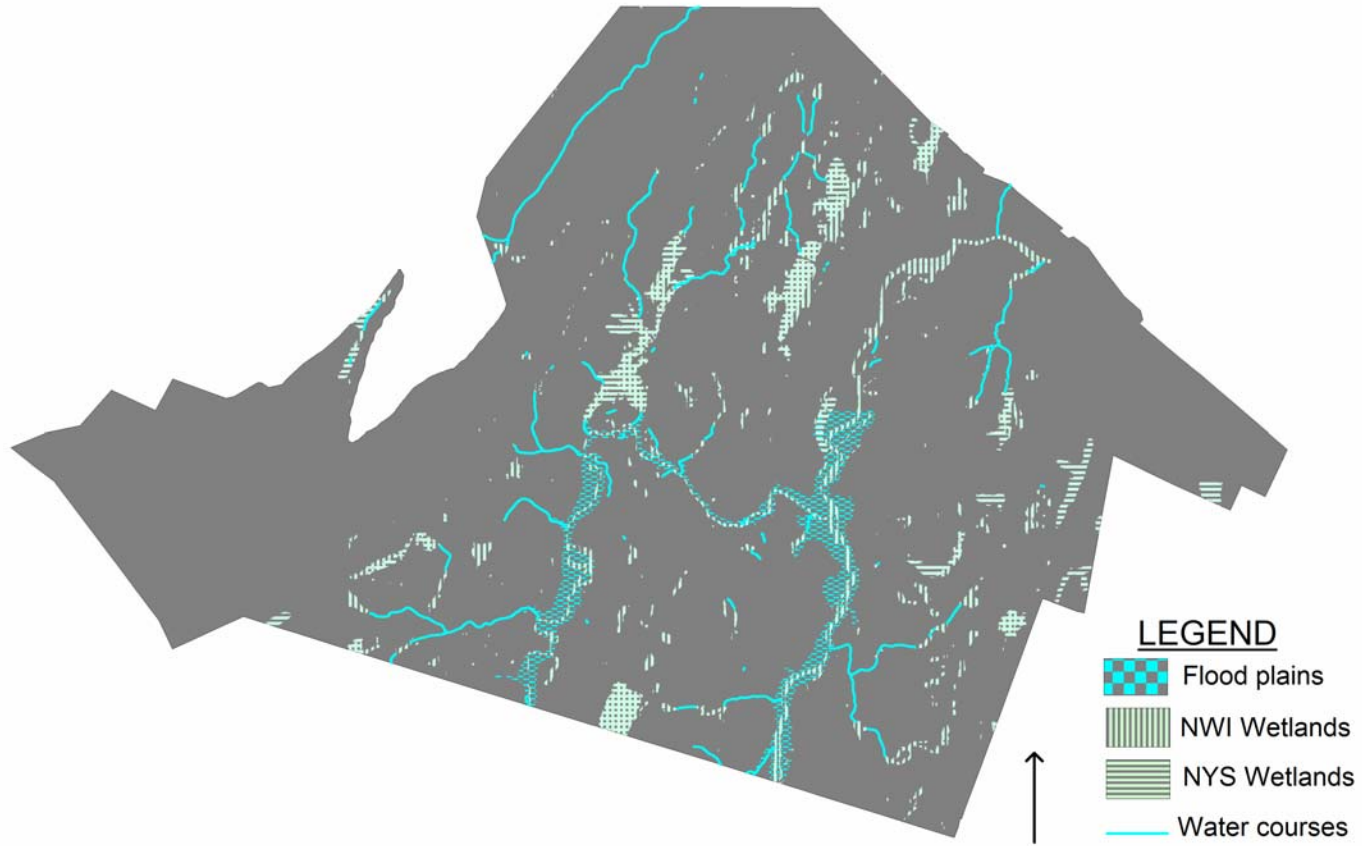


Figure 15.

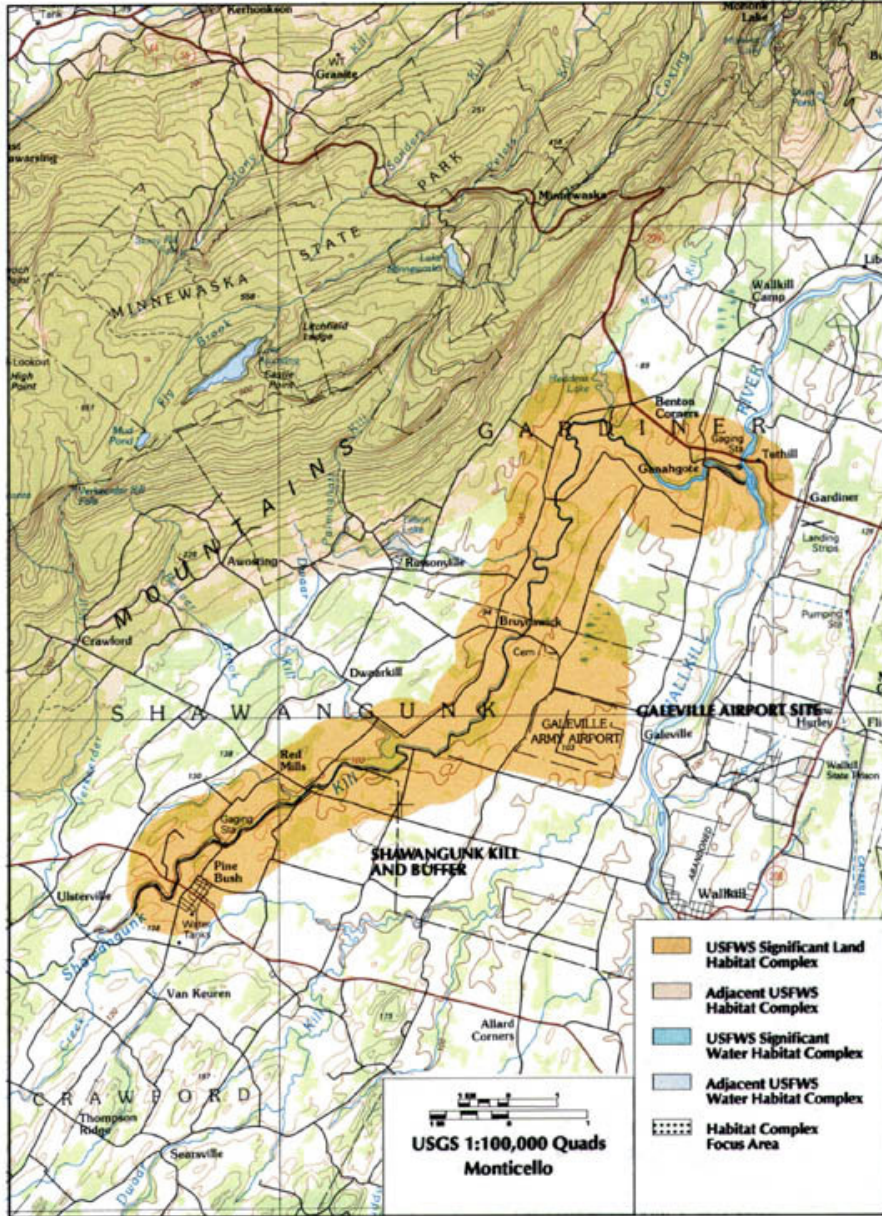
Town of Gardiner Hydrography



Source: Map by Fairweather Consulting with data from Ulster County Information Services

Figure 16.

**Shawangunk Kill USFWS Significant Land
Habitat Complex**



Source: US Fish & Wildlife Service, *Significant Habitats and Habitat Complexes of the New York Bight Watershed*, November, 1997.