QUABBIN LANDSCAPE AND DCR/OWM NATURAL RESOURCES MANAGEMENT

RESOURCE DESCRIPTION

Total Quabbin Reservoir Watershed Area - 119,940 acres

The Office of Watershed Management has care and control of the 24,529 acre Quabbin Reservoir, plus 54,686 acres of land within the watershed, plus 4,400 acres off the watershed, for a total OWM ownership of 79,215 acres on the watershed (66%), and an overall total, including off-watershed lands of 83,615 acres.

Non-OWM ownership includes 28,846 acres of privately owned forestland, plus 8,207 acres of other publicly owned forestland. Agriculture encompasses just 1,283 acres (~1%). Currently developed land includes residential, commercial, industrial, recreational, waste disposal, administrative, roadway, and utility rights of way, and totals less than 5% of the watershed area.

Within OWM lands there are 3,716 acres of islands and 2,272 acres of wetlands. In addition to these two areas, there are special management restrictions placed on 1,712 acres of steep slopes, 1,058 acres of Quabbin Park, and the 1,183-acre Pottapaug Natural Area.

Quabbin Reservoir is fed by nearly 150 miles of tributary, which drain 96,000 acres of watershed land. Annual precipitation has averaged 45 inches since 1955, with a range from 29.7 inches (1965) to 64.9 inches (1955). September is the wettest month, averaging 4.11 inches, while February is the driest, averaging 2.97 inches. The average precipitation *yield* to the reservoir from the entire watershed is 50%. At full elevation (530' above mean sea level), the Reservoir contains 412 billion gallons within a shoreline of 118 miles, and can safely yield 158 million gallons per day (whole system safe yield is 300 mg/d) to supply Boston's water demands.

Elevation on the watershed ranges from 530' at the full Reservoir's surface, to 1,383' on Prospect Hill in Phillipston. Topography is characterized by north and northeast trending hills and narrow valley bottoms. Surficial deposits of ablation till and basal till blanket these upland slopes with a thin veneer ranging from 5 to 20 feet or more in thickness. Valley bottoms and lowlands are generally filled with stratified glacial outwash deposits consisting of varying amounts of silt, sand, and gravel. Glacial till is the most extensive deposit in the watershed, and is overlain by a thin mantle of eolian silt and very fine sand.

Quabbin soils have been categorized into five basic types. These include the excessively drained soils (10.3% of the watershed), well-drained thick soils (34.3%), well-drained thin soils (27.4%), moderately well-drained soils (19.8 %), and poorly to very poorly-drained soils (8.1%).

The Quabbin forest is approximately 66% hardwood, deciduous types, primarily red and white oaks (48%). The other 34% is in conifer types, primarily white pine (21%). Birch and red maple types make up 11% of the forest, red pine plantations 7%, northern hardwoods 7%, hemlock types 5%, and spruce plantations 1%. Recent silvicultural efforts have begun to diversify the age structure of this forest, which is still dominated by two ages; stands originating with farm abandonment at the turn of the century, and those initiated by the hurricane of 1938 and planting that occurred at about the same time.

White pine and black birch dominate understory tree species, in part due to protracted deer browsing, but all of the oaks, maples, and birches are represented, as well as hemlock, red pine, hickory, white ash, black cherry, and poplar. OWM has accumulated detailed information on understory vegetation, including the occurrence and abundance of both common and rare plants.

In addition to varied forest structure, the watershed provides a wide range of habitats that support both common and uncommon species and communities. There are approximately 2,272 acres of wetlands, and aerial photo interpretation has identified 367 potential vernal pools. Other rare, unique, or exemplary communities include hemlock dominated stream valleys (currently threatened by the hemlock woolly adelgid), *Nyssa sylvatica* swamps (which include some of Quabbin's oldest trees), bog and fen peatlands, talus slopes, and bedrock outcrops along ridge tops.

Wildlife on Quabbin is varied and abundant. Most common species are those that are adapted to mature forest conditions, as well as water-based species. Species adapted to early successional habitats are relatively uncommon. Monitoring efforts track the status of deer, beaver, breeding birds, Canada geese, common loons, coyotes, eagles, and a variety of amphibians. At least 27 species listed as "special concern" in Massachusetts occur on Quabbin, including mammals (s. bog lemming, n. water shrew), reptiles and amphibians (such as spotted and wood turtles, Jefferson salamander), and many birds (such as American bittern and bald eagle). Unusual occurrences include the first nestings of Cerulean warblers in Massachusetts, a black racer hibernaculum, and breeding locations of Acadian flycatchers.

RESOURCE MANAGEMENT

OWM has determined that deliberate management of the forest cover to carefully distribute diverse ages/sizes and site-suited species of trees represents the most conservative approach to water supply protection. The 2007-2017 Quabbin Land Management Plan details this water resource protection-zoned approach. OWM utilizes commercial timber harvesters to maintain the desired forest structure. These timber harvesters are permitted to cut designated trees following a competitive bidding process, and are supervised by professional OWM foresters during the harvesting process, to secure compliance with regulations that protect natural as well as cultural resources. In July of 1997, OWM became the first "Green Certified" public land in North America, a third-party assessment of the long-term environmental and socio-economic sustainability of management practices, under conditions established by the international Forest Stewardship Council.

On the portions of the OWM properties that are actively managed in order to maintain age and species diversity, timber volumes are estimated to be growing at the rate of approximately 15-20 million board feet per year. OWM management practices harvest approximately 8-10 million board feet annually, in the range of 40-67% of the annual volume growth. Commercial harvesting takes place with a goal of regenerating approximately 400 acres per year to diversify the age structure and species composition of the forest, while cutting less than 25% of any given subwatershed in any given 10-year period.

Wildlife management on Quabbin is focused first on tracking and mitigating the effects of other OWM management activities on wildlife habitats and populations. Active management programs are also underway or being developed to limit the negative impacts on water quality by such populations as geese and gulls, white-tailed deer, burrowing animals, and beaver. Active wildlife habitat management for selected species considered to be in need of focused attention in the state is a component of Quabbin management and includes such assistance as artificial rafts for nesting loons and close monitoring of bald eagles.