DESIGNATION

of the

CANOE RIVER AQUIFER, SNAKE RIVER, WATSON POND and LAKE SABBATIA

AREA OF CRITICAL ENVIRONMENTAL CONCERN

located in portions of the
TOWNS OF EASTON, FOXBOROUGH, MANSFIELD, NORTON, SHARON
and the CITY OF TAUNTON

WITH SUPPORTING FINDINGS

Following an extensive formal review required by the regulations of the Executive Office of Environmental Affairs (301 CMR 12.00) including nomination review, on-site visits, research, public information meetings, a public hearing and written comment period, and evaluation of all public comment and assembled data, I, the Secretary of Environmental Affairs, hereby designate the Canoe River Aquifer, Snake River, Watson Pond and Lake Sabbatia and associated areas, located in portions of the Towns of Easton, Foxborough, Mansfield, Norton, Sharon and the City of Taunton, as an Area of Critical Environmental Concern (ACEC). I take this action pursuant to the authority granted me under Massachusetts General Laws Chapter 21A, Section 2(7).

I also hereby find that the wetland resource areas included in the Canoe River Aquifer ACEC and associated areas are significant to the protection of groundwater supply and public and private water supplies, flood control, the prevention of pollution, the prevention of storm damage, the protection of fisheries, and the protection of wildlife habitat. Each of these environmental factors is a public interests defined in the Wetlands Protection Act and regulations promulgated thereunder.

In addition, I find that the waters included in the Canoe River Aquifer ACEC and associated areas to be significant and high quality waters, and recommend that the water classification of "Class B, High Quality Waters" and the antidegradation provisions of "protection of high quality and other significant resource waters" be applied to these waters pursuant to the Massachusetts Surface Water Quality Standards, 314 CMR 4.00.

I. Boundary of the Canoe River Aquifer and Associated Areas ACEC

Upon review of the boundaries as recommended in the nomination letter and information gathered in the course of EOEA agency review, the final boundaries are largely those proposed in the nomination letter, except for revisions made by my Office, upon consultation with the nominators, in the Towns of Easton, and Norton and Mansfield. The final boundaries are shown on the attached map taken from the 1987 Brockton and 1987 Taunton United States Geologic Survey (USGS), 1:25,000-scale metric topographic maps. An official map and supplemental maps noted below are on file at the offices of the Massachusetts Department of

Environmental Management, Division of Resource Conservation.

The USGS map is supplemented by the following maps: a) the Official Zoning Map of the Town of Norton, dated May 2, 1988 and the Town of Norton Assessors Map 24, dated July 7, 1989, showing the ACEC boundary as it runs along the boundary of the residential/agriculture and commercial zones between South Washington Street and Interstate 495 in Norton; b) the Town of Easton Assessors Maps U44, U45, U49 and U50, dated 01-01-91, showing the ACEC boundary as it runs along property lines between Highland and South Streets in Easton; and c) the City of Taunton Assessors Maps 8-37 and 8-39A as of May 18, 1991 and the 1990 City of Taunton Street Map, showing the ACEC boundary as it runs along a utility easement between John Quincy Adams Road and Bassett Street in Taunton.

The boundary generally follows streets and roads and other rights-of-way. Specifically, the boundary is defined in two different portions, both adjacent to the Hockomock Swamp Area of Critical Environmental Concern (ACEC), as follows:

1) Beginning at the most northerly point in the Town of Sharon, the intersection of Mohawk and East Foxboro Streets, the ACEC boundary proceeds southwest on Mohawk Street to its terminus at the Conrail right-of-way; south along the Conrail right-of-way to its intersection with Chase Drive; west along Chase Drive to its intersection with Wolomolopoag Street; west in a direct line across Wolomolopoag Street to Old Wolomolopoag Street; southeast along Old Wolomolopoag Street to its intersection with the Conrail right-of-way; southwest along the Conrail right-of-way to its intersection with the Foxborough-Mansfield town boundary; northwest along the Foxborough-Mansfield town boundary to Oakland Street; southwest along Oakland Street to Swett Street; south along Swett Street to Hope Street; south along Hope Street, continuing directly across Pratt Street (Route 106) on Hope Street to East Street; northeast along East Street to Ware Street; south along Ware Street to Short Street; south along Short Street to North Washington Street; southeast along North Washington Street, directly across East Main Street (Route 123) to South Washington Street; southeast along South Washington Street to that line, west of the intersection of South Washington and Hill Streets, shown on the Official Zoning Map of the Town of Norton, demarcating commercial and residential zones, beginning at South Washington Street, extending in a northeasterly direction 62 feet along the intersection of parcels 22 and 23, Assessors Map 24, and extending in a direct line approximately 2,438 feet to Interstate Route 495 (I-495); southeast along I-495 to the Norton-Taunton corporate boundary; northeast along the corporate boundary to Bay Street; north along Bay Street to Lincoln Street; northeast along Lincoln Street to Dean Street; west along Dean Street to Bay Road; north along Bay Road to its intersection with Highland Street; west along Highland Street to its intersection with a property line, a point on the northern side of Highland Street at the western bound of Assessors Map U50-Lot 7; thence running northerly along the entire western bound of U50-Lot 7 and continuing northerly along the entire westerly bound of U50-Lot 2 to a point; thence running easterly along the northern bound of U50-Lot 2 to a point in the southern bound of U45-Lot 17; thence running northerly along the western bound of U45-Lot 17 to a point in the southern bound of U45-Lot 15, thence running westerly along the entire southern bound of U45-Lot 15 to a point; thence running northerly along the western bound of U45-Lot 15 to a point in the southern boundary of U44-Lot 45; thence running westerly along the entire southern bound U44-Lots 45 and 44 to a point on the eastern side of

South Street; north along South Street, directly across Foundry Street (Route 106), and north and west to Poquanticut Avenue; north and northwest along Poquanticut Avenue to its intersection with Massapoag Avenue; northwest along Massapoag Avenue to Lakeview Street; northwest along Lakeview Street to East Foxborough Street; north along East Foxborough Street to the starting point at its intersection with Mohawk Street;

2) Beginning at the southeast intersection of the I-495 right-of-way and Bay Street in the City of Taunton, the ACEC boundary proceeds south along Bay Street to its intersection with Industrial Park Boulevard; west along Industrial Park Boulevard to its intersection with John Quincy Adams Boulevard; southeast along John Quincy Adams Boulevard to its intersection with a utility easement (former right-of way of Bassett Street) adjacent to land owned by the Commonwealth of Massachusetts, shown on Assessors Map 8-39A; southeast along the utility easement to Bassett Street, as shown on Assessors Map 8-37; southeast along Bassett Street to its intersection with Watson Street; east along Watson Street to Bay Street; south and east and southeast along Bay Street to its intersection with Scaddings Street; north along Scaddings Street to its intersection with Prospect Hill Street; northeast along Prospect Street to its terminus at Interstate 495; west along I-495 to the starting point at its southeast intersection with Bay Street.

Unless otherwise specified, the boundary described above extends to and includes the entire width of the rights-of-way of public and private streets, roads and highways, other rights-of-way such as utility easements and existing or former railroad rights-of-way.

The final boundary differs from the boundary suggested in the nomination letter as follows: 1) in Norton, the boundary is located along North and South Washington Street; this boundary more closely approximates the drainage divide for the Canoe River watershed and delineates a more focused concentration of resources, according to the GIS mapping prepared for the review of the nomination, field visits by DEM staff, and discussions with members of the Canoe River Aquifer Advisory Committee; 2) in Mansfield, the boundary is located along North Washington, Short, Ware, East, and Pratt Streets, based on the same factors as those described above for Norton; and 3) in Easton, the final boundary is located along property lines between Highland and South Streets, in the Furnace Village area; this boundary includes the entirety of Mulberry Brook and adjacent wetlands and floodplains, according to USGS topographic maps, GIS mapping, Town Assessors Maps, field visits, and discussions with members of the Canoe River Aquifer Advisory Committee.

The Department of Environmental Management, in the course of administering the review of the nomination, gathered and prepared a series of maps of several categories of environmental data regarding the nominated area. This information has been mapped using the Geographic Information System of the Executive Office of Environmental Affairs. This mapped information, which was used to assist in the evaluation of the nomination and determination of final boundaries, is part of the public record of the Canoe River Aquifer and associated areas ACEC designation, and is on file at the offices of the Department of Environmental

Management, Division of Resource Conservation.

The size of the Canoe River Aquifer ACEC, according to GIS data, is approximately 17,190 acres. The respective acreage located in each municipality is as follows:

Easton - 3,660 acres Norton - 4,520 acres
Foxborough - 1,020 acres Sharon - 1,580 acres
Mansfield - 4,380 acres Taunton - 2,030 acres

II. Description/Designation of the Resources of the Canoe River Aquifer and Associated Areas ACEC

The letter of acceptance of the nomination stated that the nominated area met the minimum regulatory threshold for consideration as an Area of Critical Environmental Concern. The nomination cited the presence of nine of the resource categories listed in the ACEC regulations at 301 CMR 12.06. These categories include fishery habitat, inland wetlands, inland surface waters, water supply areas, natural hazard areas, agricultural areas, historic/archaeological resources, and special use areas. The public review process corroborated the existence of these resources in these categories and provided additional information to support the designation of the ACEC.

As mentioned above, the EOEA Geographic Information System (GIS) was used to map and evaluate several of these categories of information. The categories mapped included groundwater features, public well sites, surface water and surface water drainage basins, wetlands, floodplains, archaeological and historic resources, rare and endangered species and locally significant habitats, and protected open space (state, municipal and nonprofit-owned conservation and recreation lands). The nomination document, dated December 20, 1990, contains detailed descriptions of many of the resources located within the area.

The ACEC is characterized by an extensive system of surface waters, wetlands, floodplains and high-yield aquifers. The Canoe River and its tributaries and the underlying Canoe River aquifer form the heart of the nominated area. The Canoe River begins its headwaters south of Massapoag Lake in Sharon and flows in a southerly direction through Foxborough, Mansfield, Easton and Norton to Winnecunnet Pond. Mulberry Brook in Easton also flows south to Norton and Winnecunnet Pond, which is approximately 148 acres in size. From Winnecunnet Pond the Snake River flows east into Taunton and the southwestern portion of Hockomock Swamp, then south to Lake Sabbatia (237 acres) and Watson Pond (94 acres). Other major surface waters include the Little Canoe River and Poquanticut Brook, and Beaumont (19 acres), Whiteville (14 acres), New (13 acres) and Black (9) Ponds. The nomination cites the presence of 101 known rivers, brooks, streams and brooks within the nominated area.

The topography of the Canoe River, Mulberry Brook and Snake River sub-basins is characterized by isolated linear hill formations separated by expansive lowlands. The lowlands

are comprised of shallow bedrock, till or semipermeable clays, and stratified drift. In these areas, wetlands ecosystems thrive due to the presence of water close to the surface. According to the nomination, wetlands constitute approximately 15 percent of the Canoe River watershed. These wetlands are listed by the United States Environmental Protection Agency (EPA) as priority wetlands, valuable for water quality maintenance, flood control and aesthetics. Extensive floodplains are located adjacent to the surface waters and wetlands of the ACEC.

The surface waters are hydrologically connected to an extensive system of high yield aquifers. A study of the Canoe River aquifer was prepared by I.E.P. in 1988 for the Canoe River Aquifer Advisory Committee; this study includes an extensive description of the hydrogeology and water supply characteristics of the watershed and aquifer. Highly permeable stratified drift deposits make up approximately 60 percent of the Canoe River watershed and contain large quantities of high quality drinking water. According to review comments submitted by the Department of Environmental Protection, in New England a desireable aquifer for municipal water supply purposes should have a minimum saturated thickness of 30 feet. The Canoe River aquifer has a saturated thickness range of 20 feet to 71 feet underlying municipal wells.

There are ten municipal wells and numerous private wells located within the ACEC. Easton, Sharon, Mansfield and Norton rely on the Canoe River aquifer as the primary source of water for close to 66,000 people. Also, in Taunton, a high-yield aquifer has a potential yield of 1.5 million gallons per day; three wells are located on the property of the Dever State School.

The extensive system of surface waters and wetlands also supports a rich and diverse habitat for wildlife. Upland areas are a mix of open fields, deep woods, farmland and transitional woodlands. According to the nomination, there are almost 600 species of vegetation, birds, mammals, reptiles, amphibians and fish within the nominated area. Mammals include red fox, white-tailed deer, otter, mink and coyote (recently sighted). There are occurrences of rare and endangered species within the ACEC, as well as increasingly rare Atlantic White Cedar swamps. According to the Natural Heritage & Endangered Species Program of the Massachusetts Division of Fisheries and Wildlife, state-listed species include the Plymouth gentian, Philadelphia panic-grass and the spotted turtle.

There are over 1,000 acres of diverse and productive agricultural lands within the ACEC, which include dairy, cattle, horse and egg farms, cranberry bogs, and grain, fruit and vegetable production. In addition, according to the nomination, there are about 3,500 acres of municipal and non-profit conservation, recreation and open space lands. These farmlands and conservation and recreation lands are an important component of the open space that is critical to the long-term protection of the water quality and wildlife of the watershed area.

Human habitation of the area dates back at least several thousand years. According to the Massachusetts Historical Commission, the Canoe River and its tributaries, as well as Winnecunnet and Watsons Ponds and Lake Sabbatia, are known to have been a focus of Native American Indian settlement spanning the period between 7,000 and 500 years ago.

Documented archaeological resources show campsites, burial sites and settlements throughout the area. Bay Road in Easton and Norton, now on the National Register of Historic Places as an historic district, originally was a Native American path linking the Neponset and Taunton Rivers, Massachusetts Bay and Narragansett Bay, and the territories of the Massachusetts and Wampanoag peoples. Other historic resources include the Furnace Village National Historic District in Easton and the colonial architecture and stone walls found throughout the area.

As mentioned above, additional information regarding the resources of the area is included in the nomination; also, information can be found in material submitted for the review of the nomination, and in the "Discussion of the Criteria for Designation" below.

III. Procedures Leading to ACEC Designation

On October 22, 1990, a letter of nomination, prepared by the Canoe River Aquifer Advisory Committee (with members from the Towns of Easton, Foxborough, Mansfield, Norton and Sharon) and representives of the City of Taunton was received by the Office of the Secretary of EOEA. The Secretary requested additional information regarding the nomination by letter dated November 26, 1990. The nominators submitted this information on December 20, 1990, and the Secretary formally accepted the nomination by letter on December 27, 1990. Copies of the acceptance letter and a summary of the nomination were sent to the boards of selectmen, planning boards, conservation commissions, mayors and city councils of the communities included in the nomination, state legislators representing the area, regional and state agencies, environmental organizations and other interested parties.

Public information meetings were held on February 7, 1991 in Taunton, February 14, 1991 in Mansfield and April 3, 1991 in Norton. A public hearing was held on April 10, 1991 in Mansfield. Public notice of the April 3 public information meeting, the April 10 public hearing, a ten-day written comment period following the hearing, and summary information regarding the nomination was sent to the above parties on March 8, 1991. Public notice was also published in the Brockton Enterprise on March 9, 1991, the Attleboro Sun Chronicle on March 9 and the Environmental Monitor on March 8, 1991. Over the course of the public review process numerous articles appeared in local and regional newspapers and on local cable television stations.

At the public hearing held on April 10, 1991, oral testimony was received from 25 persons representing a variety of groups and organizations. A ten-day period for the submission of additional written comment followed the public hearing. Written and oral testimony was received from a total of 81 individuals, private organizations and public agencies in the course of the public participation and review process. This testimony was unanimously in support of ACEC designation. No written submissions or oral testimony was given in opposition to designation.

IV. Discussion of the Criteria for Designation

In the review process leading to the designation of a nominated area, the Secretary must consider the factors specified in Section 12.09 of the ACEC Regulations regarding the designation of Areas of Critical Environmental Concern. As stated in the regulations, the factors need not be weighed equally, nor must all of these factors be present for an area to be designated. The presence of even a single factor may suffice for designation, if that factor is found to be extraordinarily significant.

Based on the information presented in the letter of nomination, at the public hearing, in written comments received throughout the public review process, and in agency research and review, I find the following factors relevant to the designated ACEC:

(1) Threat to Public Health Through Inappropriate Use

The ten municipal wells of the Canoe River aquifer are the primary source of drinking water for approximately 66,000 people. These ten wells have the ability to pump 8.4 million gallons per day. According to the Department of Environmental Protection, Division of Water Supply, the aquifer is highly permeable and therefore highly threatened by inappropriate land uses and accidental spills in well recharge areas. Most of the letters of comment received cited the importance and vulnerability of the area's water supply and the need to protect it.

In addition, the Taunton River Basin Plan, prepared by the Department of Environmental Management, Office of Water Resources and approved by the Water Resources Commission on April 8, 1991, states that the Canoe River Sub-Basin is a "stressed" sub-basin within the larger Taunton River basin. According to the basin plan and comments submitted by the Office of Water Resources, there is no additional available yield. During a moderate drought there will be insufficient water in the Canoe River Sub-Basin for additional supply. The threat to the resources and to public health caused by potential inappropriate use is heightened by this situation, brought about by increased development pressures over the past several decades.

The vulnerability and significance of the resource in terms of public health alone is reason enough to designate the Canoe River aquifer and associated areas as an Area of Critical Environmental Concern.

Further, there is a threat to the public through inappropriate use of the natural flood storage capacity of the watershed. A 1979 report of the Army Corps of Engineers, Assessment of the Flood Problems of the Taunton River Basin, concludes that only proper management of undeveloped land will reduce future irreversible and irretrievable flood damage to natural resources and biological systems. Inappropriate use and development in the watershed could increase the threats to the public health downstream.

(2) Quality of the Natural Characteristics and the Uniqueness of the Area

The high quality of the extensive system of surface waters, wetlands and floodplains, wildlife habitat, and underlying aquifers is critical to the region, and is particularly unique in light of the development that surrounds the core resource areas. EPA has listed the wetlands of the area as priority wetlands due to their quality and vulnerability. The Canoe River Aquifer Protection Plan prepared by I.E.P. in 1988, along with ongoing municipal testing of water from public wells, has documented the exceptional drinking water quality of the aquifers of the area. Finally, the historic resources, acres of public and private open space, and remaining farmlands add to the richness and uniqueness of the area.

(3) Productivity

The nomination documents the high diversity of wildlife that the surface waters, wetlands and the adjacent uplands support, all the more remarkable because of the development that has taken place in the region.

(4) Irreversibility and Magnitude of Impact

In light of the dependence of several communities on the Canoe River aquifer for drinking water, and the vulnerability of the resource, contamination could have irreversible consequences, and the adverse effects to the availability and quality of public drinking water supplies would be highly significant.

5) Imminence of Threat to the Resource

The imminence of threat to the resource can be summed up in the finding contained in the Taunton River Basin Plan mentioned above that the Canoe River Sub-Basin is stressed, and that that there is no additional available yield. In addition, for several years regional growth rates have been high; for the past ten years, the approximate average rate of growth for the six communities was 13 percent. The stress on the drinking water supplies extends to the entire ecosystem of the ACEC, and includes pressures on wildlife, wetlands and floodplains, and the remaining farmlands and open space.

(6) Ecomomic Benefits

Without adequate sources of drinking water, communities and local and regional economies cannot be sustained. The economic costs of finding new water sources or treating contaminated sources are enormous, especially in difficult fiscal times. The loss of sustainable resources, including wildlife, is incalcuable.

(7) Supporting Factors

Every facet of supporting factors listed at 301 CMR 12.09(9) strongly favors designation. Strong public consensus on and awareness of the intrinsic value and importance of the area is reflected by the fact that the 81 oral and written comments received were unanimous in supporting critical area designation. Written support for the nomination was received from 23 municipal boards and commissions from the 6 communities located within the ACEC; from 6 state legislators, Senators William R. Keating and Erving H. Wall, Jr. and Represenatives Marc R. Pacheco, Kevin Poirier, Philip Travis and William B. Vernon; from 13 civic and environmental organizations; and from 11 regional, state and federal agencies.

The environmental and civic organizations supporting designation included the Easton Garden Club, Easton Rod and Gun Club, Lake Winnecunnet Neighborhood Association, Lake Sabbatia Neighborhood Association, Land Preservation Society of Norton, Massachusetts Audubon Society, Massachusetts Houndsmen for Conservation Association, Natural Resources Trust of Easton, Natural Resources Trust of Mansfield, Nature Conservancy, North Taunton Neighborhood Association, Save the Bay, and Taunton River Watershed Alliance. Regional, state and federal agencies included the Metropolitan Area Planning Council, Old Colony Planning Council, Southeastern Regional Planning and Economic Development District, the Massachusetts Departments of Environmental Management (Office of Water Resources), Environmental Protection (Division of Water Supply), and Fisheries, Wildlife and Environmental Law Enforcement (Division of Fisheries and Wildlife), Massachusetts Executive of Environmental Affairs (Division of Conservation Services), the Massachusetts Historical Commission, and the United States Environmental Protection Agency (Region 1).

Legislative identification of the value of the resource dates back at least to 1987, with the passage of state legislation establishing the Canoe River Aquifer Advisory Committee. This legislation directed the committee to educate the public about water conservation and the condition of the Canoe River Aquifer, and to advise member towns regarding development, conservation and zoning within the Canoe River Aquifer.

Since the ACEC is located in several municipalities, designation will support and encourage current and future efforts to manage the resources on a regional basis. The work of the Canoe River Aquifer Advisory Committee is an exemplary model of regional cooperation for ACECs throughout the Commonwealth. The area is located within the jurisdiction of three regional planning agencies, all of which submitted written comment supporting designation and regional efforts to protect the Canoe River Aquifer. Also, approximately 3,500 acres within the ACEC are
owned by municipal and non-profit conservation organizations, further emphasizing the value of the resource area and the need for a regional cooperative approach to land and resource protection and management. In addition, Borderland State Park, approximately 1,250 acres in size, is located adjacent to the ACEC, affording opportunities for state and municipal coordination regarding resource management and preservation.

Finally, the Canoe River Aquifer, Snake River, Watson Pond and Lake Sabbatia ACEC is located adjacent to the 16,800-acre Hockomock Swamp ACEC. The combined acreage of the two ACECs is approximately 34,000 acres, the largest area of contiguous ACEC in the Commonwealth. The ACECs are hydrologically connected through surface and ground waters. The sub-basins of the Canoe River, Mulberry Brook and Snake River drain directly into the Hockomock Swamp. The potential of creating innovative approaches to researching, managing, and preserving these resource areas further supports ACEC designation.

Conclusion

I am pleased to designate the Canoe River Aquifer, Snake River, Watson Pond and Lake Sabbatia as an Area of Critical Environmental Concern. The significance of this ACEC requires that the highest standards of environmental review and protection be applied to actions that may affect its resources. Further, the comparatively large size of the designated critical area and the adjacent Hockomock Swamp ACEC requires that local communities, state and regional agencies, environmental and civic organizations, and individual residents collaborate to an unprecedented extent to preserve and manage these critical resources.

The work of the Canoe River Aquifer Advisory Committee deserves special recognition in bringing the review to a successful conclusion, and in providing an example of dedication, cooperation and achievement in the protection and preservation of our natural resources.

(*signed*) Susan F. Tierney June 10, 1991
Secretary of Environmental Affairs

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