APPENDIX D - MAINTENANCE

ROUTINE MAINTENANCE

Routine maintenance involves a recurring program of activities (weekly, monthly, seasonally, annually) to tend the landscape and perform minor repairs. In the Alewife Reservation, restored areas are expected to develop into largely self-sustaining natural systems, although there are infrastructure elements (e.g., stabilized aggregate paths and wooden overlooks) that will require periodic care. The Alewife Brook Greenway will receive more intensive human activity and consequently will require a higher level of care.

CLEAN-UPS AND TRASH REMOVAL

Keeping the Alewife Reservation, Alewife Brook, and Parkway free of debris will require frequent clean-up. Litter and trash should be removed weekly from all paths, walkways, roadways, parking lots, lawns and other planted areas. Trash receptacles should be limited (encourage carry-in, carry-out).

A major clean-up of all debris should be done in early spring and late fall. Storm drainage structures should be inspected and cleared of obstructions. Manholes, catch basins, and drain inlets should be opened and cleaned. Plant waste (e.g., fallen branches and leaves) should be collected from paved surfaces, boardwalks, overlooks, and lawn areas and composted on site. Composting should be established in a location with limited public access, yet close enough for easy access by maintenance staff. Invasive plant species, weeds with ripe seed heads, diseased plants, or unshredded woody debris larger than ¼" diameter should not be composted. Composted material can be used to amend the soil in mown grass areas and in tree and shrub beds, saving the cost of both waste disposal and soil amendments.

SNOW REMOVAL

Snow removal is not recommended in the Alewife Reservation. Conversely, the roadways and paved walkways of the Alewife Brook Parkway will need to be cleared. In this ecologically sensitive area, snow removal should be conducted in a manner that causes minimal harm. Mechanical methods (plowing, shoveling) should be favored over snow and ice melting chemicals. The increased costs

for physical labor should be offset by reduced costs for chemicals and replacement/repair of damaged landscape and infrastructure elements.

When de-icing compounds are necessary, the least harmful chemicals should be used. Chemicals should be evaluated for their potential to damage vegetation (evidenced by foliage burn on grass at the edge of pavements, stunted perennial growth, and deformed buds on trees and shrubs), metals (corrosion and accelerated rusting of railings, furniture, grates, and drains), and hardscape (scaling or flaking of surface layers of concrete). Environmentally friendly ice control agents are available that have been shown to have fewer adverse effects on roadways, infrastructure, vehicles, and plants. For example, calcium magnesium acetate (CMA) can be used as an alternative to salt in environmentally sensitive areas. The compound has been found to have few serious negative effects, however, it is effective only to 21 degrees Fahrenheit (–6 degrees Celsius) and has a higher cost than conventional chemicals. Anti-icing agents, which prevent the formation of ice, are also available. Ice Ban, made from agricultural residues, is one commercially available compound with minimal negative impacts.

Abrasives such as sand and gravel are frequently used, alone or in conjunction with salt, to provide traction on slippery surfaces. However, large amounts will clog drains and waterways. An interesting alternative that has been used successfully in various locations (e.g., the University of Manitoba, Canada) is poultry grit. Used primarily as a feed supplement to aid digestion in chickens and turkeys, poultry grit has been found to be effective in increasing traction on snow or ice-covered pavements. In addition to its low cost, the grit is nontoxic and can be swept up in the spring and reused. However, its effect on drains and waterways with respect to clogging requires further investigation.

Invasive Plant Control

Invasive plant species should be monitored in both the Alewife Reservation and the Alewife Brook Greenway on a monthly basis and acceptable threshold levels should be determined. If the invading plants are limited in scope, then physical removal including the rootstock may be the most appropriate measure. As invasive populations of specific species rise, then other control measures might be necessary. Herbicide applications, mowing, harvesting, controlled burns, or a combination of these approaches might be considered. Long-term monitoring is critical to a successful control program because once an invasive species enters the landscape (or even remains in the "neighborhood"), it is very difficult to eradicate completely. The full range of invasive species should be monitored and managed, including aquatic, herbaceous, and woody types. See Appendix C for the Massachusetts list of invasive plant species.

Turf And Plant Maintenance

Weed Control

Monthly weed control should be performed throughout the Alewife Brook Greenway during the growing season (April through October). Nonchemical methods (hand pulling, hoeing) are preferable, although limited application of herbicides may be needed under some circumstances. Any herbicide used should be applied according to the manufacturer's label and all state and federal laws governing the application of horticultural chemicals. The least toxic herbicides should be used whenever possible.

Pest And Disease Control

An Integrated Pest Management (IPM) approach should be adopted for pest and disease control activities. The goal of IPM is to reduce pests to acceptable levels using a combination of biological, physical, mechanical, cultural, and chemical controls. The practice of IPM rests on regular inspections to collect information for treatment decisions. Treatments are used only when the numbers of pests reach a specified level rather than being applied on a schedule. Also, IPM uses the smallest amounts of the least toxic compounds to achieve desired results.

In the Parkway section, all turfs, trees and shrubs should be monitored on a regular basis for the appearance of pests and disease. For identification of specific pests and diseases and recommendations for treatment, consult a county Extension Agent.

Watering

Once established, native plants do not require additional watering beyond normal seasonal rainfall. However, any new plantings will require additional water in the first three seasons until they become established; this is especially critical during the first season. In the Parkway section, additional watering during drought periods will benefit both newly planted trees and shrubs as well as established larger trees. Taking such a preventive approach will help maintain vigorous plant health and reduce the need for costly replacements.

Fertilizing Plantings

New plantings and existing tree and shrub beds that warrant special attention should be fertilized once in the spring with a granular slow-release fertilizer complying with state and federal laws. Fertilizer should not be over-applied. Organic fertilizer is preferred (100% by weight of the nitrogen content should be derived from organic materials). See Appendix D for a list of organic fertilizer resources.

Mulching

Trees and planting beds in the Parkway section should receive a protective

layer of mulch over root areas, similar to that provided by leaf litter in a natural forest. Mulch has many benefits: it reduces competition by grass roots with tree and plant roots, controls weeds, prevents and reduces soil compaction, preserves soil moisture, and discourages potentially injurious practices like mowing and string trimming near tree trunks or woody stems.

Mulch should be predominantly high quality aged hemlock bark, with the balance being spruce and pine bark. The depth of mulch in any tree or shrub bed should not exceed 3 inches.

In biofiltration areas, mulch is a key component that should be replaced annually.

Pruning

Trees and shrubs along the Parkway should be pruned annually to remove dead, dying, and diseased branches. Most pruning should be done during the dormant season, however, branches that constitute health or safety hazards should be pruned as soon as possible. Pruning above 15 feet should be done by a professionally trained, state-certified arborist.

Mowing

Areas in the Reservation and the Parkway are designated as either low- or high- maintenance mow zones. Existing or proposed meadows are low-maintenance mow zones that should be mowed once or twice a year to a height of 6 to 12 inches. Mowing in early spring before most perennial wildflowers appear allows for greater control of weeds and unwanted cold-season grasses. However, spring mowing should be planned with regard to the likely arrival of ground-nesting birds. Mowing in early fall allows for maximum seed head production and distribution and cuts backs woody growth, but does not control cold-season grasses.

Meadows take an average of three years to become established. During that period, weeds and invasive species must be rigorously controlled. The MDC should expect to mow three or four times during the first season of growth. (Annual controlled burns are also a beneficial maintenance practice.)

Some turf grass areas along the Parkway will be replaced with a low-mow turf mix. This mix will produce a slow-growing ground cover than can be mowed as needed to a height of 6-9 inches, allowing for an intermediate landscape between meadow and lawn. Maintenance requirements are considerably less than those of conventional turf, but higher than for meadows.

In the Parkway area, playing fields and turf strips along the roadway and walkways will require frequent mowing. These high-maintenance mow

zones should be mowed throughout the growing season to a minimum height of 4 inches. Turf areas should not be mowed when the grass is wet or during a drought.

Seeding

Meadow areas may require overseeding during the first three years to combat weeds and invasives. Turf areas that are not covered with a satisfactory growth of grass and/or wildflowers should be seeded in late summer. See Appendix B for recommended seed lists. Seeded areas should be watered only during the first 6 to 8 weeks after seeding and the soil should be kept moist to a depth of 2 inches.

Replanting

Replanting of trees and shrubs in the Reservation and along the Parkway, when necessary, should occur in the spring prior to bud break after the ground has become firm enough to support vehicles without rutting. Some trees and shrubs may be planted in the fall. However, refer to Appendix B for plants that have a fall planting hazard rating and for recommended plant lists. Stumps of dead trees should be removed.

Paths and Walkways

Throughout the site, paths and walkways should be inspected each spring and repaired as needed. Debris and weeds should be removed and cracks should be filled using appropriate materials and methods. The full width of paths should be maintained; pavement edges should be uniform and not allowed to break down. Wood structures such as boardwalks, overlooks, and bridges should be inspected and repaired as needed based on safety concerns. Wood should be treated with Seasonite every 3-5 years to prolong its life. Overhanging or obstructing vegetation should be cut back to maintain views and visibility.

Site Amenities

Furniture, playground equipment, signage, and other site amenities should be inspected and repaired annually, or more frequently if staffing and budget permit. However, repairs that involve public health and safety, for example, broken light fixtures, should be carried out on an as needed basis.

Replacement

Over time, infrastructure and site amenities wear out and must be replaced. The MDC should identify those elements that will require periodic replacement, along with a schedule and budget to ensure that necessary improvements are made over the long term. Elements subjected to natural wear and high use, such as paved walks, wooden boardwalks, and overlooks, will eventually require reconstruction or full replacement. Re-

placement of plantings should also be anticipated as trees and shrubs age and decline significantly. Periodic catastrophic natural events will likely also require complete replacement or major repair of severely damaged site elements.