



Chestnut Hill Farm, Southborough Land Management Plan

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Introduction

This Management Plan is intended to provide guidelines for agriculture, forestry, conservation, and recreation uses on Chestnut Hill Farm in Southborough, Massachusetts. Chestnut Hill Farm is located east of Chestnut Hill Road and north of Main Street/Route 30. The Farm is privately owned, and is subject to a conservation restriction (CR) held by the Town of Southborough, under the care and control of the Conservation Commission. The CR is recorded in the Worcester South Registry of Deeds in Book 39037 Page 76.

The CR covers approximately 109 acres of Chestnut Hill Farm, north of Main Street/Route 30, and south of the Hultman Aqueduct (See Figure 1). An additional 23 acres of the farm, located north of the Hultman Aqueduct, is subject to a conservation restriction (13 acres) and restrictive covenant (10 acres) held by Sudbury Valley Trustees, and is not subject to the terms of this Recreation Management Plan.

All three parcels of land transferred ownership in May of 2010 to The Trustees of Reservations (The Trustees), a non-profit conservation organization.

This Management Plan, with its maps and appendices, is intended to comply with the goals and objectives of the Massachusetts Self-Help Program, which helped to fund the town's acquisition of the CR. The original plan was developed by representatives of the Southborough Selectmen, Recreation Department, Planning Department, Conservation Commission, Open Space Preservation Commission, the Philip C. Beals Trust (CR Grantor and previous landowner), and Sudbury Valley Trustees.

Per the requirements of the CR, this plan is being reviewed and updated in 2015 by representatives of the above groups and The Trustees, as it has been five years since the plan was last updated.

Site History and Project Background

The Philip C. Beals Trust purchased Chestnut Hill Farm in 1966 from Charles Donaldson, who had operated a dairy farm on the property. The farm has been kept in active agricultural operation since that time. At one time, an airstrip existed on the property; its location is noted on the 1979 USGS map. Approximately 50 acres of woodlands are managed for timber and firewood production. The most recent commercial timber harvest occurred in 1985.

In 1993 Mr. and Mrs. Beals donated 3.4 acres, called Triangle Meadow, on Main Street and Northboro Road to Sudbury Valley Trustees. In 1995, they donated a CR on approximately 44 acres of the farm on the west side of Chestnut Hill Road and on approximately 4 acres south of Main Street. In 2004, the Beals Trust, which owned the remaining 133 acres of the farm, approached the Town of Southborough to express an interest in permanently protecting the rest of the farm through the sale of a CR.

At a Special Town Meeting on January 21, 2006, the Southborough residents voted overwhelmingly to purchase a CR on Chestnut Hill Farm, using a combination of Community Preservation Act Funds, State Self-Help funds, bonding, and private donations. When combined with the northerly 13 acre CR, plus the donation of an additional 55-acre CR south of the

Wachusett Open Channel (the “Red Gate Parcel” now known as the Philip and Elaine Beals Preserve) the total project yield was 178 acres of permanently conserved land.

Site Description (See Figure 2.)

Chestnut Hill Farm is known for its rolling fields and pastures hugged by stone walls and dense woodland backdrop, and provides a welcome view into Southborough’s agricultural past. In addition to being one of the last working farms in Southborough, the property also provides wildlife habitat for the eastern meadowlark and the bobolink, among many other species. The conservation of the farm provides the benefits of managed woodlands, meadows, and agricultural fields, while providing quality wetlands, wildlife habitat, river and watershed protection, flood prevention, and pollution mitigation. In addition to the obvious conservation benefits, the CR also provides for general public access for the purposes of passive recreation.

Natural Resources

Chestnut Hill Farm consists of a mosaic of fields, pastures, meadows, upland woods, and wetlands. Approximately 44 acres are currently in agricultural use, including pasture, hayfield, , and vegetables. Approximately 9.2 acres of the property consists of wooded wetland, and includes an unnamed stream that flows northward near the northeastern boundary of the property, and dips again into the property in the northwest corner. The remainder of the property is mainly in oak-hickory woodland cover. Typical overstory species include red oak (*Quercus rubra*), white oak (*Quercus alba*), mockernut hickory (*Carya tomentosa*), and red maple (*Acer rubrum*). The understory includes black huckleberry (*Gaylussacia baccata*), maple-leaf viburnum (*Viburnum acerifolium*), american hazelnut (*Corylus americana*), arrowwood viburnum (*V. dentatum*), and low-and highbush blueberry (*Vaccinium angustifolium* and *V. corymbosum*). [See forest plan for more specific information on forest type.] Several acres north of the agricultural fields were used as an orchard and then as pasture, and have now grown up with mid-successional species such as paper and gray birch (*Betula papyrifera* and *B. populifolia*), trembling aspen (*Populus tremuloides*), big-tooth aspen (*P. grandidentata*), and choke cherry (*Prunus virginiana*), as well as the older apple trees (*Malus sp.*). Some non-native shrubs, such as Japanese barberry (*Berberis thunbergii*), common buckthorn (*Rhamnus cathartica*), burning bush (*Euonymus alata*), multiflora rose (*Rosa multiflora*), and honeysuckle (*Lonicera sp.*) occur at woodland edges, at stone wall openings, and under the canopies of early successional stands of trees. While no biological inventory has been done on the site, teachers and students attending a state-sponsored Biodiversity Day event in May 2005 compiled a list of over 400 species of plants, animals, fungi, arthropods, and insects on the property.

Beginning in spring of 2015, the Trustees hired a full-time farm manager to implement a CSA and retail vegetable operation. Approximately 4 acres of previously cropped fields were put into mixed vegetables, berries and cover crops. Cleanup of old farm compost site was completed in 2014 and currently all farm compost is being regularly managed on the concrete pad below the silo. An additional 7 acres of cropland will be plowed in the fall of 2015 and spring 2016 to bring the total amount of cropland in vegetable production to 11 acres.

Adjacent Conservation Land

The farm abuts several existing pieces of conservation land (See Figure 3), including:

- Approximately 4.4 acres of land owned by Sudbury Valley Trustees
- Approximately 14.6 acres of land owned by the Southborough Open Land Foundation
- Approximately 48 acres of land held under a conservation restriction granted by the Beals family to Sudbury Valley Trustees; and,
- The subsurface Hultman Aqueduct and associated land owned by the Commonwealth of Massachusetts and managed by the Massachusetts Water Resources Authority as part of the Sudbury Reservoir public water supply backup system.

Via the Hultman Aqueduct, Chestnut Hill Farm also connects to hundreds of additional acres of conservation land in Northborough and Westborough.

Structures

Under the terms of the conservation restriction, a Farmstead area consisting of approximately five acres has been set aside at the southwest corner of the property (see Figure 4), within which one new home and farm buildings may be constructed. The scope and terms of such development are contained within the CR. Two cottages and several outbuildings are currently located within this envelope. The only structure existing outside the Farmstead envelope is an open-front shed, the foundation of a former barn, which currently is used to store farm machinery. The only other farm infrastructure outside the Farmstead envelope is moveable, electric fencing used in pasturing heifers.

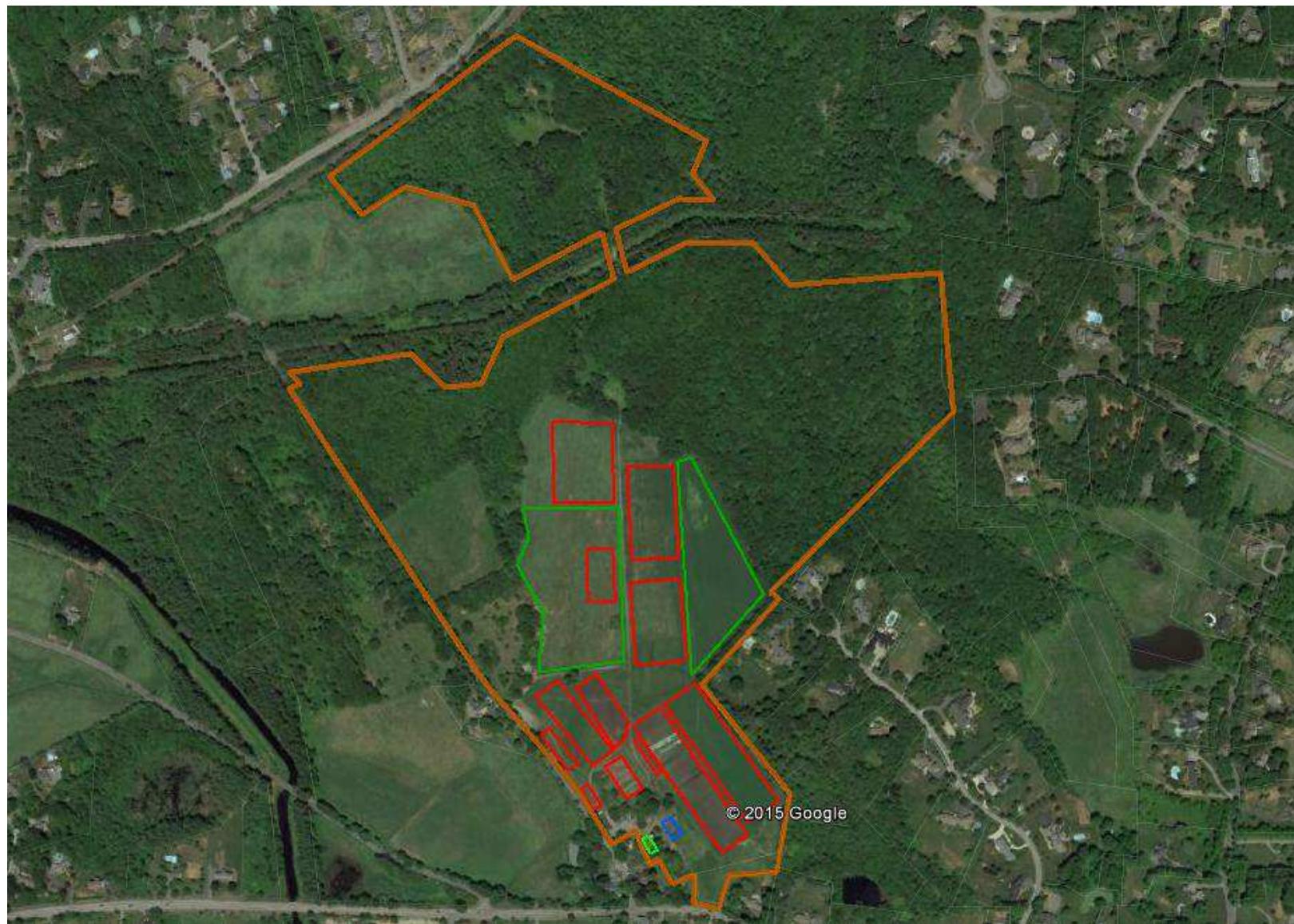
In 2014-15 several outbuildings were renovated to accommodate the Trustees activation of the CSA and farm-stand. The long barn along Chestnut Hill Road was professionally cleared of asbestos siding, cleaned, restained and a concrete floor was poured in four bays. An additional slab was poured on the North end to serve as a produce wash station and town water was run from #7 to supply potable water for produce washing.. New electrical service was provided and the barn was wired with new lighting and outlets. The south end of the barn will serve as a tractor and equipment shop while the middle three bays will be the site of the farm-stand and CSA distribution. The north bay will accommodate a built in walk-in cooler for vegetable storage.

Several smaller outbuildings were cleaned out and are being repurposed for Trustees storage and engagement. The #7 cottage was remodeled for apprentice/farm worker housing, including carpet removal, painting, and floors resanded. The cottage at #9 was remodeled for farm manager housing with professional deleading, new replacement windows, interior and exterior trim paint.

A 34'x72' Greenhouse was built in summer 2015 on the site of the old dairy barn foundation. Several large cottonwood trees were removed from the site to prevent shading of the house.

The lower barn served as a stable for years but has been empty for several years now and is in decline. New electrical service will be run in 2015 and Desiree is housing her family's rabbits and goats (personal use but also in educational programming and engagement in exchange for the space). This barn also needs a new roof and some internal adjustments to make it more habitable for small scale livestock production.

Figure2: Map of Property and Current/Proposed Usage Areas.



Brown outline- Farm boundaries; Red outline-tillable acreage; Green outline- Possible bird reserves of 5acres or more; Light green-Greenhouse; Blue outline-future hoop house site

Legal Protections against Conversions or Disposal

The Chestnut Hill Farm CR was acquired for conservation, agricultural, forestry, scenic, and passive recreational uses only. The property is protected from conversion to other uses by a combination of statutory provisions, the Constitution of the Commonwealth, and the Community Preservation Act. The CR provides permanent legal protection of the site's conservation values. Changes in the use of the property would be possible, though difficult. Such changes would require:

1. A majority vote of the Conservation Commission that the conservation purposes of Chestnut Hill Farm were no longer meaningful;
2. A two-thirds vote of Southborough Town Meeting;
3. Approval by the Secretary of Environmental Affairs;
4. A two-thirds roll-call vote of the Massachusetts General Court (state legislature) and signature by the Governor;
5. Restitution of State Self-Help funding by dedicating a property of similar utility and value, as approved by the Secretary of Environmental Affairs, to the general public for conservation and recreational purposes; and,
6. Restitution of Community Preservation Act funding by reimbursement of funds to the local and state Community Preservation Act Funds.

Property Management

Roles and Responsibilities

The landowner shall have the obligation to manage and maintain the property, including but not limited to the trails as shown on Figure 4. However, should the landowner fail to maintain trails and/or scenic vistas, the Town, at its expense, has the right to maintain the open fields and meadows by mowing, and to maintain the trails by mowing, clearing downed trees, or installing erosion control devices, so long as such activities follow the Notice and Approval requirements described below.

Mowing

Fields on the property are currently being managed very successfully for grassland nesting birds such as bobolink and Eastern meadowlark. Every effort to continue practices that promote such habitat should be made. The first mowing/grazing of hayfields in the spring should be delayed until after July 15th in a bird refuge area(s) of at least 5 acres.. Avoiding nighttime mowing will reduce the risk of injuring nesting birds. Early (mid-May to the first week of June) mowing of hayfields should allow an ample opportunity for birds whose nest are destroyed by early mowing elsewhere to re-nest in the refuge area. Monitoring will confirm that the majority of nestlings have fledged.

Recreation Plan

Property Regulations and Uses

Public access to Chestnut Hill Farm is required per the requirements of the State's Self-Help grant program. Visitors should enjoy the property with the understanding that they use the area at their own risk and that they will comply with all of the regulations below.

Permitted recreational uses on the property include, but are not limited to: walking, trail running, cross-country skiing, snowshoeing, sledding, bird watching, nature study, photography, sketching, and painting.

Prohibited activities include, but are not limited to: recreational hunting (except when authorized for predator or pest control for agricultural or ecological management); motorized vehicle use (including dirt bikes and ATVs, but not including motorized wheelchairs or other specific wheeled mobility devices deemed appropriate when used for those with disabilities); bicycling (including mountain bikes); dog walking (except service dogs who are accompanying their owners during acceptable property uses, must be leashed); parking in other than the designated area; dumping and littering; disturbing, removing, cutting, or otherwise causing damage to a natural feature, sign, trail marker, poster, barrier, building, machinery, or other property; damage to crops and/or fields used for agricultural purposes; camping; organized group activities without permission; horseback riding by the general public; and all activities which conflict with the purposes of the CR.

The following activities are permitted, subject to written approval from The Trustees: educational programs; overnight camping; programs to be held outside of regular public access hours; and other appropriate group activities that do not conflict with the purposes of the conservation restriction. In an effort to increase awareness and use of Chestnut Hill Farm and for their assistance with

community outreach, The Trustees will notify the Conservation Commission of programs and events open to the public.

Both allowed and prohibited uses will be posted on signs at the parking area and within all publications associated with the site.

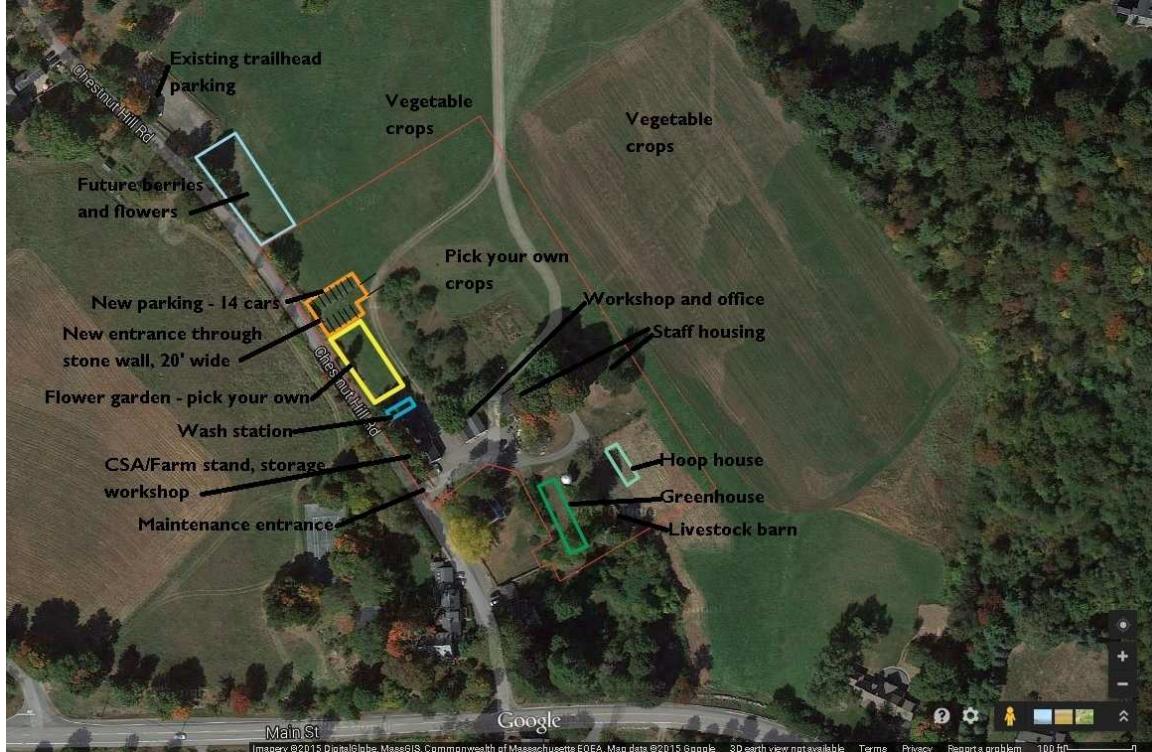
Access and Parking

The property will be open to the public for the purposes described above, from dawn till dusk 365 days per year. Between March 1 and November 15 of each year, pedestrian access will be limited to those trails shown in Figure 4. Between November 15 and March 1, public access to the open fields for the recreational purposes outlined above will be unlimited.. Access in the woodlands is limited to the trails year-round. An additional route off the Blue Trail that lead to vista point was added in summer 2015 to offer an expansive view of farm and distant scenery. Temporary trail loops through the pastures were opened in 2015 to provide the public with an easier way to view farm activities and farm animals.

Parking for approximately 10 vehicles will be available in an unpaved lot off Chestnut Hill Road. Maintenance of the lot, including but not limited to occasional grading and winter plowing, shall be the responsibility of The Trustees.

In 2015 The Trustees gained permission from the town to put a 20' break in the stonewall and build an additional 14 car parking area midway between the trailhead parking and the CSA barn to provide closer access to the CSA and farm-stand without travel through the parking area between #5 (private residence), #7 and #9 (farm worker housing). See Figure 5.

Figure 5: New Parking Area



Trails (see Figure 4)

Trails shall be unpaved, and will vary in width. Woodland trails shall not exceed four feet (4') in width, except as necessary to conduct forestry operations. Trail maintenance and building shall follow The Trustees statewide trail standards and best practices used on other The Trustees properties and other conservation land. The practices espoused in the Appalachian Mountain Club's *The Complete Guide to Trail Building and Maintenance*, 3d Edition, or subsequent editions are excellent examples.

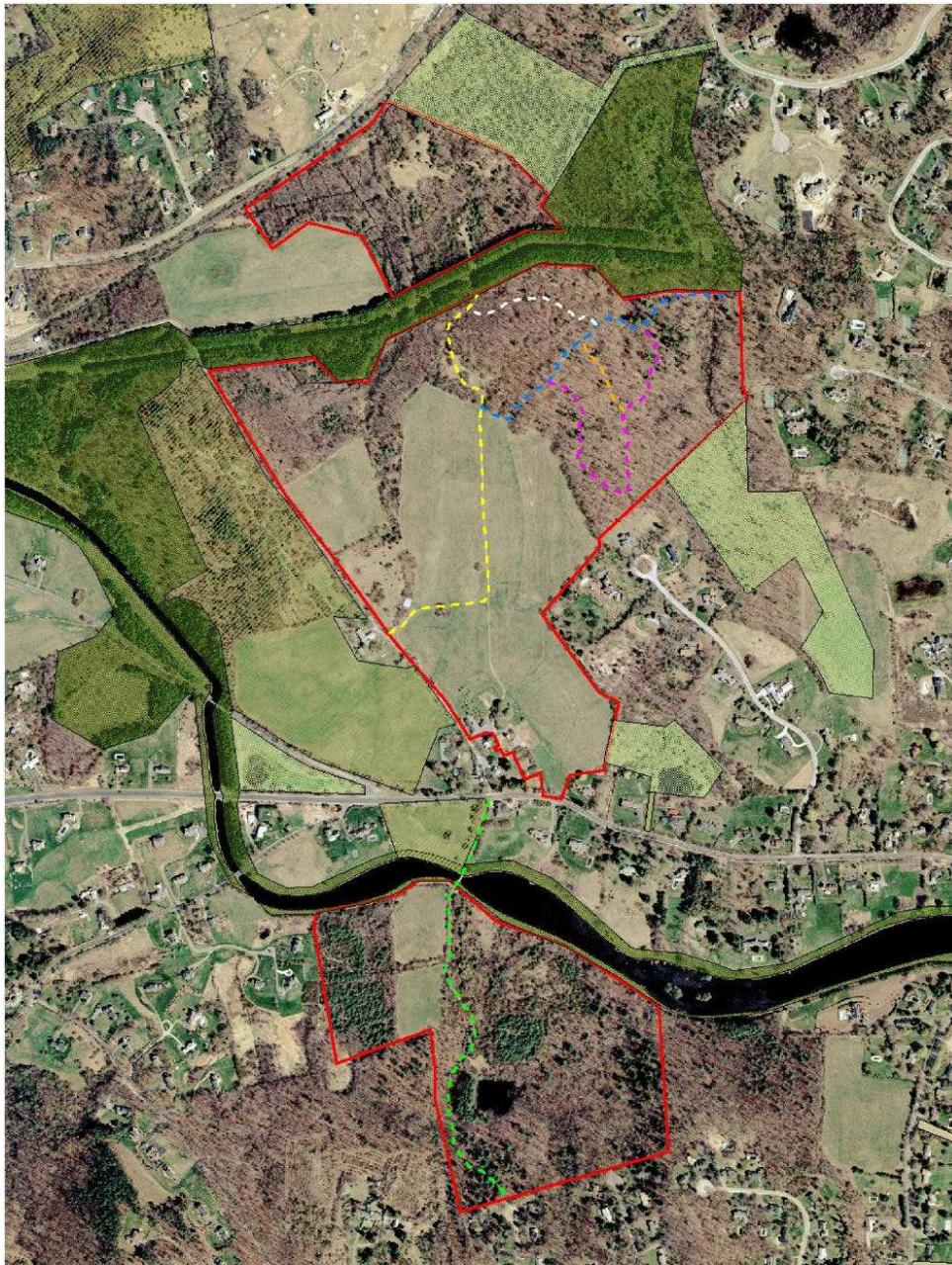
Trails shall be clearly marked with painted blazes, or with small plastic or metal markers, not to exceed 16 square inches, affixed to posts or to low-quality trees. A trail map shall be clearly posted at the trailhead/parking area and shall be replaced or updated as necessary.

Trails shall be mowed from time to time as needed, but as a general rule, no heavy equipment shall be used in trail maintenance.

Trail Relocation

Trails may be relocated or discontinued, and new trails may be added, upon mutual agreement of the The Trustees and the Conservation Commission. Any new or relocated trails shall avoid steep slopes, wetland areas, nesting sites, and rare species habitat. The entire trail system is shown on Figure 4 consists of approximately 1.7 miles of trail, and should not be significantly reduced in scope.

New trail locations should be mapped using a Global Positioning System device and the trail map shall be amended accordingly and posted at the trailhead and website.



Chestnut Hill Farm

Southborough, MA

9-8-05

Trails

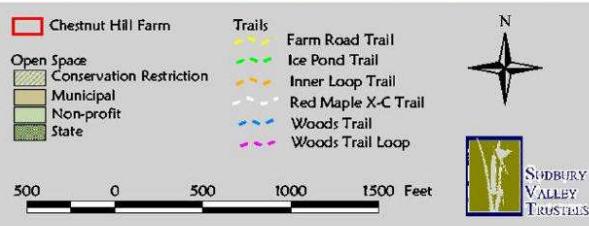


Figure 4: Trails map prepared by SVT

Trail Closings

Trails may be closed from time to time as necessary to conduct agricultural and forestry operations, trail mowing or maintenance, or for reasons of threats to public safety or to wildlife or wildlife habitat. If it is anticipated that the closure would last for more than three days, proper notice and approval is required as per the Notice and Approvals section of this document.

In emergency situations, such as those that would present an immediate threat to human health or safety, The Trustees may close trails without permission of the Town, but must notify the Town within 48 hours that he or she has done so, if closure lasts more than three days.

No section of trail should be closed for longer than three days, except in the case of permanent closure or rerouting, or unless The Trustees and the Town agree that a longer trail closing is necessary for safety, for wildlife protection, for crop protection, or for maintenance purposes.

All trail closings should be posted by the landowner at all public access points as soon as is practical.

Educational or Interpretive programs

While nature observation for educational purposes is included under the passive recreation uses permitted by the CR, organized educational groups must notify The Trustees as per the section below, Special Use Notification, before conducting programs on the property. The Trustees will notify the Conservation Commission of any organized educational outings that are open to the public.

Upon mutual agreement of both parties, The Trustees or the Conservation Commission may erect interpretive signs along trails, though the posts should be no greater in width than 4" on any side, and no higher than 4' tall. No concrete footings may be installed. If numbered posts are used, they should correspond to interpretive points shown on a map and brochure that is made available at the trailhead/parking lot.

Hunting

Hunting will be allowed solely for the purposes of predator and pest control to reduce damage to crops or ecological resources. Notice and approval must be granted by The Trustees and the Conservation Commission, and trails must be closed and posted, as described in "Trail Closings" above, prior to any hunting activities. In the event that the notice and approval process would result in a delay causing damage to crops or livestock, hunting and trail closing may take place as needed, and the landowner must furnish subsequent written notice and details of the emergency pest and predator control to Conservation Commission within 48 hours after such action is taken.

Signage and maps

All signs must be posted where reasonably visible to visitors, and should be kept clear of vegetation. Signs should not be placed in wetlands or other areas of sensitive habitat. A sign must be maintained at the parking area showing the name of the property and acknowledging the Self-Help Program and other contributions to the project. Rules and regulations for use shall be clearly posted at the parking area, at a kiosk or other signboard to be constructed and

erected by The Trustees.

A map of the property should also be posted near the parking area and/or trailhead. This map should show an up-to-date trail layout, delineation of various management zones, and any significant natural resources. Also included should be a list of rules and regulations, hours of operation, and specific uses of the property. It may also include interpretive information. Development, updating, printing, and stocking of the map and any interpretive brochures at the trailhead will be the responsibility of The Trustees.

Special Use Notification

The Trustees must be notified for the following activities: for educational programs, such as organized walks, other events, or presentations, and any programs to be held outside of regular public access hours. Such notification shall be made by contacting The Trustees and completing a Special Use Notification form as attached. The Trustees will notify the Conservation Commission of any events in which the public is invited to.

Notice and approvals

In the event that the Conservation Commission chooses to exercise its right to maintain trails, fields, or vistas, it must notify the landowner in writing at least thirty (30) days in advance that the landowner is in default of his or her responsibility (-ies). Should the landowner fail to take corrective action, the Conservation Commission then shall notify the landowner ten (10) days in advance of performing any such maintenance activities. This notice should contain the proposed scope of the mowing, clearing, or other maintenance activities. The landowner should respond in writing or by email, and may choose to withhold permission or to suggest postponement for such activities, but may not do so unreasonably.

In the event that either the Town or The Trustees must close a trail for the reasons stated above, said party shall notify the other party by phone, email, or in writing a minimum of one week prior to the closing and that party shall have two business days to respond to such notice. Failure on the either party's part to respond shall constitute approval of such action.

Update and Review of Plan

This plan shall be reviewed every five years and upon change of property ownership and updated or revised as necessary. Any group convened to review and update the plan should include representatives from at least the following parties, so long as they continue to exist: the The Trustees, the Conservation Commission, the Open Space Preservation Commission, the Recreation Commission, and a non-profit land trust such as the Southborough Open Land Foundation or Sudbury Valley Trustees. Updates and revisions shall be made with the mutual agreement of The Trustees and the Southborough Conservation Commission. Any substantive changes shall require a public hearing before the Conservation Commission. Any failure to review the plan on such a timeline shall not render it null and void. Should the parties fail to reach agreement on any proposed changes to the Management Plan, protocol for pursuing dispute resolution as outlined in Section VII (B) of the Chestnut Hill Farm Conservation Restriction, shall be followed.

CONSERVATION PLAN

DEVELOPED IN COOPERATION WITH
THE USDA NATURAL RESOURCES CONSERVATION SERVICE &
THE MASSACHUSETTS ASSOCIATION OF CONSERVATION DISTRICTS
HOLDEN FIELD OFFICE

FARMLAND OVERVIEW AND CONSERVATION OBJECTIVES

This document should be viewed as a management tool that records the decisions of the farmer and is intended to be used by the farmer as an aide to the decision making process as choices about how to deal with resource concerns arise.

Preserving the farming landscape is important to many citizens across Massachusetts and throughout New England. Vibrant, sustainable and profitable farms are the key to preserving special landscape features; open fields, grazing livestock, and fresh local food. Small farms are important to the local and regional tourist and agricultural economy, and to the quality of life for local residents.

At the request of the owners (the Philip C. Beals Trust and Philip and Elaine Beals), Whitney Beals developed the original Farm Conservation Plan as an overall voluntary management plan to help

guide decisions as the owners prepare to protect the land under a conservation restriction. The following NRCS Farm Conservation Plan was prepared as part of a comprehensive farm planning process. The original plan addressed the resource concerns, opportunities, and objectives for the 230-acre farm. The following has been amended in 2015 to reflect the new vision for the agricultural activities at Chestnut Hill's 131 acres as laid out in the Trustee's Agricultural Vision. Such ecologically sound whole-farm planning will help ensure the farm's overall long-term sustainability and profitability.

Due to the Food Security Act provisions of the US Farm Bill, the farm is required to have a conservation plan for any highly erodible lands and remain in compliance with the Wetland Conservation Provisions of the US Farm Bill in order for the land to be eligible for any USDA assistance. This helps to ensure that all farming practices on Highly Erodible Land (HEL) adequately protect the soil from erosion and protect wetlands. HEL and Wetlands determinations will be required in the future if participation in a USDA program is desired. Several of the cultivated fields on the northeast side of Chestnut Hill Road have potentially highly erodible soils. There were no fields identified as HEL fields however, because HEL soils did not make up more than 33% of a field and/or currently the potentially highly erodible soils in the steepest sections of the farm are maintained in permanent grass cover or forest which protects the soils from erosion by water.

The following plan consists of farming practices that the owners have chosen to utilize to help

address natural resource concerns and opportunities on the farm. As farm conditions change, practices and/or practice dates can be added, removed, or revised. Both federal and state cost share assistance programs may help with the implementation of various conservation practices listed in this plan. The owners may contact NRCS and the MA Department of Agricultural Resources for information regarding applicable programs, application deadlines and eligibility requirements.

As with any farm activity, conservation practices require operation and maintenance to work effectively for their intended life span. Operation and Maintenance Requirements, included in this plan, should be followed as directed once practices are implemented. Additional Considerations are presented with this plan, and include practices that could be adopted in the future to further address natural resource concerns or changing resource conditions.

Owners & Principle Decision Makers: Previously, Philip C. Beals Trust [land east of Chestnut Hill Road] Whitney Beals, operator; and Doug Stephan, licensee.

Currently, the Trustees of Reservations, non-profit organization, represented by: Michael Francis, superintendent; Leslie Cox, Farm Director; Cathy Wirth, Agricultural Programming Director; Desiree Robertson-DuBois, farm manager.

Planner: The following is a compilation of the original NRCS document provided to the Beals' Family Trust and updated by Desiree Robertson-DuBois on behalf of the Trustees.

Landowner Objectives: The Trustees activated the farm starting 2015 to a working agricultural operation which includes a mixed vegetable CSA and retail farm-stand. The first season will begin with 50 shares and grow to 250 by the third year. The Trustees will also begin a variety of educational engagement activities both free and fee-based and primarily open to the public. Acceleration of volunteer and community opportunities is also planned in concordance with the The Trustees's Agricultural vision.

Serious degradation of soil health and fertility over the last decade leaves the agricultural fields in need careful attention to return balance, biological activity and nutrient density to the soil profile.

NATURAL RESOURCES

SOIL The primary soils for the cropland on the new conservation restriction area are Paxton (305B) fine sandy loam in the northeast of field (3-8% slopes), Woodbridge fine sandy loam (310B) on 3-8% slopes in the southeast and Ridgebury fine sandy loam in the Western (71A).

Soils on the portion of the hay land on the conservation restriction south of the aqueduct *T1 field 6* include Ridgebury (71A) fine sandy loam, 0-3% slopes in the north and Agawam fine sandy loam in the south *T1 field 7*, 0-3% slopes. See Figure 6 below.

Several practices included in this plan address the soil resource concerns. The actively cropped areas are not designated as highly erodible land (HEL), the soils in the steepest slopes, however, have the potential to erode if not managed pro-actively. Crop rotations, mulching, cross-slope farming and cover crops are used to aide in protecting the soil from erosion by water and wind. Occasional ephemeral erosion was reported for portions of the crop fields. Currently, significant Cover cropping and crop residue protect the fields from erosion over the winter. There were no other

erosion concerns, as much of the steeper areas of the site are maintained in permanent grass or tree cover. Semi-permanent raised beds are employed perpendicular to any slopes to prevent erosion.

Soil tests were done on fields in 2014 with results indicating that the main crop field (map field RF1 &2) were excessively high in phosphorus, above optimum in magnesium, and calcium and low in potassium. Soil pH was at 7.1 and a CEC of 25.4. Other tested fields included MF1 &2 which had above optimum magnesium. Optimum calcium but very low potassium and phosphorus; pH is 5.6 and CEC is 14.9. The previous tenant farmer has a history of spreading uncomposted chicken and dairy manure for fertility without soil tests to monitor nutrient needs. As predicted in the original plan, phosphorus levels have accumulated past levels acceptable to the current owners. The farm manager will make every effort to control run off/erosion and will seek sources of fertility that do not add additional phosphorus to RF1&2.

High soil phosphorus levels can contribute to non-point source water pollution, as the phosphorus can leach out of the soil into ground water or run-off into adjacent wetlands and streams during heavy rainfall events that cause soil erosion. By following nutrient and pest management recommendations based on annual soils tests, overall soil fertility, plant productivity and weed control will be improved. Surface and ground water quality will also be better protected because only the amount of nutrients needed by the crops will be added each season. The annual use of cover crops will also aid in taking up excess nutrients and reduce the amount of erosion as well as improve weed control.

The current farm manager will seek the help of NRCS in the development of a Comprehensive Nutrient Management Plan (CNMP) which would help establish the required annual nutrient budget for the crops grown so excess manure and fertilizer aren't wasted in over applications and under applications don't limit productivity. A CNMP aids in increasing overall profitability and productivity. A CNMP analyzes the nutrient needs for each crop, and reviews the soil and manure test results, interpreting the recommendations. The CNMP also highlights sensitive areas on the farm such as wetlands that should be protected by maintaining a vegetated buffer, and soils that are prone to high leaching losses and those that are prone to high surface run-off so should be avoided as manure stacking areas. A CNMP can aid a farmer in better protecting the resources on the farm.

Desiree plans on re-testing in the fall of 2015, applying no-phos fertility on an 'as needed' basis and a careful monitoring of soil biologics, myco-nutrients, kelp and careful use of a myriad of cover crops to bring balance back to the soils.

Lime will be applied to the acidic soils in other areas of the farm. Fertility will be in conjunction with organic and nutrient dense principles to build soil health, organic matter and tilth.

WATER Portions of the northern most woodland contain easements owned by the MA Department of Conservation and Recreation (T1 field 1) which entitles the agency to maintain the ditches in that area. The entire farm is located in a non-point source pollution control area and is adjacent to a back-up public drinking water supply. The farm headquarters has a private drinking water well in close proximity to the crop and pasture land. The Trustees are concerned with the possible point pollution problem of high levels of phosphorus in one of the previously cropped fields. Cover crops will be maintained to take up excess phosphorus and prevent erosion and leaching.

Water Resource Concerns include: water quantity (too much in some areas, and too little in others) and water quality. Other concerns include the potential for fuel spills

from farm and visitor vehicles, especially in farm stand parking areas or farm equipment storage and maintenance areas, nutrient-, pathogen- and sediment- laden run-off water, especially from heavy use areas and from locations where animal waste is stored or field-stacked prior to use on the fields. The primary concern is that contaminants in run-off waters may enter ground and/or surface water. Practices that protect surface and groundwater quality are necessary to protect the important public use sources on and adjacent to the property. Water resource concerns for the farm are addressed in this plan by the use of conservation crop rotations, residue management, nutrient management, and pest management. Portions of some crop fields are droughty while others are too wet. Depending on the year, one type of soil or the other provides productive cropland. Drip irrigation systems are being set up to bring water to crop fields. They currently run off the well that provides water to #9, the greenhouse and the lower barn but in drought years, the well may not be sufficient to supply the water needed to irrigate large quantities of field. Town water or an additional well may be needed to supply additional water. . The southern section of T1 field 5 was tile drained several decades ago.

These will need repairs and maintenance to keep the cropland productive in the future. A portion of T 2 field 3 was sub-surface drained historically. These drains are in dire need of maintenance as there are obvious sink holes along the drain tile lines and broken tile frequently is found in the crop fields. The top middle section of this field is wet in the early spring. The southern end of the field is also very wet due to the unmaintained drainage tile. The Trustees will be making contact with local excavator for an estimate on reinstalling drainage tile in these areas.

AIR Air quality is not a pressing resource concern on this farm. Manure odor is of limited concern as the small amount of manure from the lower livestock barn is mixed into the compost pile adjacent to the barn. It is turned regularly to ensure that the pile is active and hot. ., By the time the compost is applied to the fields, it smells like soil, not manure (otherwise it wouldn't be compost). The farm does not rely on chemical pesticides, fertilizers or fungicides, so chemical drift is not a concern. The air quality will be further protected by the incorporation of Nutrient Management and Pest Management practices, including monitoring of weather conditions and optimizing timing of compost and seaweed emulsion applications to fields to reduce volatilization of nutrients or drift of airborne particles which would cause odor concerns. Seaweed/fish emulsion is usually used only in transplanting as a root drench and is not sprayed in the fields. It is sprayed in the contained environment of the greenhouse, once per week. It is unlikely to cause discomfort to any neighbors especially as the greenhouse does not have exhaust fans but is passively vented on all sides.

PLANTS Chestnut Hill Farm comprises approximately 10 acres of cropland managed in intensive vegetable crop rotation with cover crops. Vegetables are primarily sold through a Community Supported Agriculture program where The Trustees members buy a share of the season's produce and pick it up for a proscribed period of the season (main season is 20 weeks). Vegetables are also available for sale to the public in the retail farm-stand. There are over 40 varieties of mixed vegetables, flowers are fruits in constant rotation. Vegetables are managed according to organic practices. Approximately 20 acres of hay-only meadows was leased for the 2015 season Mike Lobisser, 76 Milford St, Medway, Massachusetts. He was to cut the non-bird refuge fields in late May, early June to push ground-nesting birds into the refuge field, but he did not arrive to hay the fields until August. He made baleage. Due to a combination of drought, circumstances and timing-he was told to not come back for 2nd cutting in late September.

There are 100 acres of forestlands. A forest management plan will be evaluated by a professional forester to manage for sustainable harvests of the mature and valuable species as well as firewood. Whitney Beals currently operates a small firewood operation which utilizes downed trees along the farm's stonewalls and trails and from clearing according to the Forestry plan.

Until 2014, some meadow areas were maintained by a pastured dairy herd which was allowed to overgraze some brittle environments and has led to a degradation in pasture grasses and topsoil-especially on the hill behind the hangar barn. The back pasture has been regularly mowed and maintained and represents a healthy diversity of pasture grasses and herbaceous growth. ..

Bedstraw, English plantain, milkweed and nut sedge present pervasive weed problems to the crop fields. Liming and

fertilizing the fields according to soils test will greatly enhance the forage and crop productivity, which will help the crop plants compete against the invasive weeds. Pasture re-seeding may be beneficial for establishing high quality forage species. Rotational grazing can be considered in the future, as rotational grazing can aide in improving the plant quality. A rotational grazing plan could be developed to determine the maximum number of animals that the pastures can sustain without causing damage to the forage species. Rotational grazing helps protect against erosion and a decline in overall forage productivity caused by overgrazing. Desiree's goat herd was rotationally grazed in portions of the farm, including the hill pasture, stone walls, and other marginal areas. They have been very successful at cutting back invasives such as buckthorn, bittersweet, multiflora, autumn olive and other, native vining problematic species such as poison ivy, grape and others.

No rare or endangered species or priority habitats were identified as existing in the vicinity of the farmland.

Plant Resource Concerns Include: crop, and pasture quality and overall plant productivity, as well as brush management and invasive species control. Pest and Nutrient Management, Pasture Re-seeding, Crop Rotation, Cover Cropping, Mulching, and Brush Management are practices included in this plan that will help address plant quality and productivity concerns.

Matching crops to suitable soil pH and moisture holding characteristics would also benefit plant health and improve productivity. Use of cover crop and residue management or utilization of plastic may aid in weed control and early season soil warming for the denser, wetter soil in the lower crop field. Irrigation water management could also be considered for the drier crop fields.

ANIMALS Starting in 2015, Desiree's goat herd (consisting of 5 dairy does, 3 yearlings, 1 buck, 1 wether and increasing by 9 kids) arrived on the farm and were put to grazing overgrown areas, stonewalls and fencelines. Per her agreement with The Trustees, no more than 15 (8 does plus 7 yearlings, bucks and kids) goats are to be housed on the farm through a breeding cycle. Adequate shade and cover from the elements was made available as needed based on temperature and season. Fresh water is brought to the animals 2x per day at minimum to keep water buckets full. Division of Animal Control Officer made an inspection of animals and signed off on as 'excellent' care, condition and maintenance. Deer, bear, coyote, turkeys and song birds including grassland nesting species are

among the other wildlife that regularly utilize the woodland habitat and fields on the farm. There are no areas of the farm listed as Estimated Habitats of Threatened and Endangered Species

according to the MA Natural Heritage and Endangered Species Program. Areas of the farm are also potential habitats for Eastern Box Turtle. Reclaiming the pasture lands will increase grassland habitat for ground nesting birds which is a habitat that has been declining dramatically in eastern North America with subsequently devastating effects on species that depend on grasslands for nesting and breeding. Cutting the hay 2-3 times per season, along with nutrient management based on soils test recommendations, will improve forage quality and quantity obtained from the hay fields and keep them productive into the future.

HUMANS The farm and farm-stand are located just off a highly traveled section of Main Street in an area where traffic backs up during the afternoon rush hour. The farm stand is easily accessed by an abundance of customers. The addition of grazing livestock enhances the farm's overall aesthetic value and helps in maintaining the farm as open space. The local customer base for the farm stand business is strong.

Approvals (*copy of signatures available upon request from the Conservation Commission*)

We, the undersigned, being a majority of the Conservation Commission of the Town of Southborough, Massachusetts, hereby certify that at a meeting duly held on _____ the Commission voted to approve and accept the foregoing Land Management Plan for Chestnut Hill Farm.

For the Trustees of Reservations:
Hereunto Duly Authorized