



# Toolkit Sites

1. MEADOW & WOODLAND  
PEOPLE FOR POLLINATORS

2. OLD FIELD  
CHAPMAN PASTURE

3. WET MEADOW  
UPPER BROWNING FIELDS

4. GARDEN & LAWN  
BIRCHES SCHOOL



# Meadow & Woodland Toolkit

## PEOPLE FOR POLLINATORS

## EXISTING CONDITIONS

People for Pollinators is a 8,700 sq.ft planted meadow surrounded by fencing, with a planted shrub layer on the south side of the fence, adjacent to woodland edges and open fields abutting the Lincoln Public Schools property. The site is situated on the northernmost portion of a 10.2-acre site owned and protected by LLCT. The soils are mesic and nearly all of the site is in full sun.

Since 2016, LLCT has managed the site for native pollinators by direct seeding and planting a variety of forbs, graminoids and shrubs. Approximately 25-35% of the fenced in meadow remains as non-native grasses and common weeds.

After an initial survey of plant species diversity on the site by Evan Abramson and Adam Kohl of Landscape Interactions in 2019, Dr. Gegeer surveyed the site for bumblebees and at-risk butterflies multiple times in 2020. While pollinator populations at the site were categorized as “high abundance, high diversity” by Dr. Gegeer, a lot of room remains for improvement, not only in native plant species diversity (early season pollen sources and host plants in

particular) but also with regards to aesthetics and the visitor experience.

LLCT’s goals for the site include expanding public education and programming; access to the location, therefore, needs to be more clear and welcoming. The meadow is currently surrounded by an 8 ft. tall chain link fence, with only one gate for entry, situated on the northern side. The fence was initially installed to prevent deer browse and to deter dog



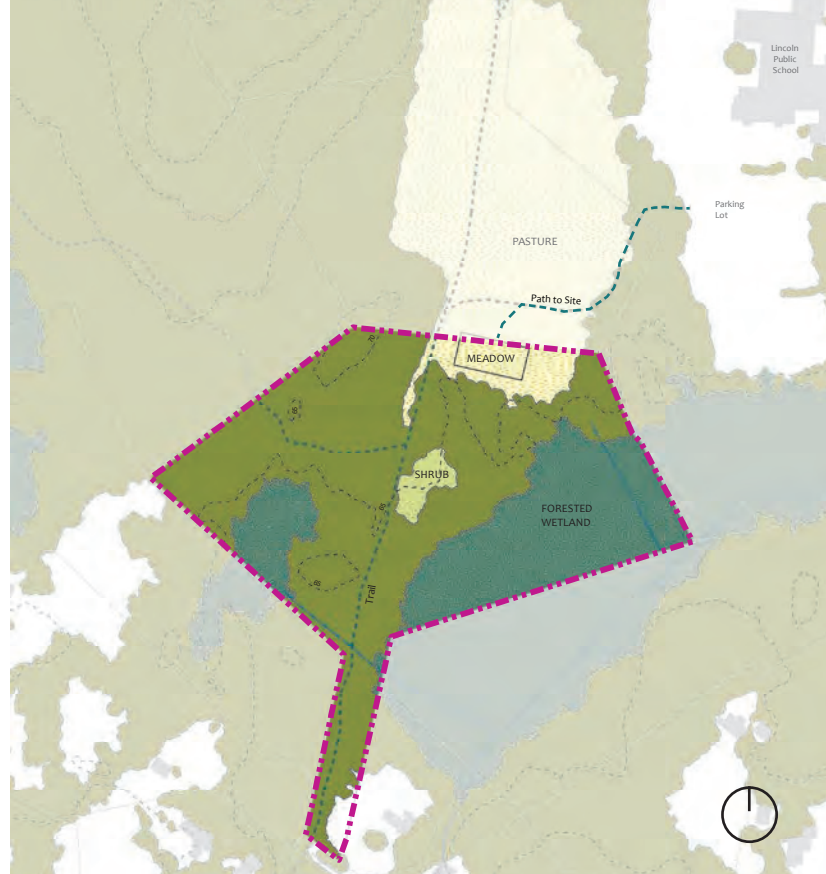


walkers from allowing their dogs off leash. The location is somewhat hard to find, although it is marked by a sign at the edge of the Lincoln Public Schools parking lot. A narrow path through woods and a field leads visitors to the site, with a mowed section of path branching off to the south and leading up to the fence.

While LLCT has been actively stewarding People for Pollinators for several years, no permanent water source exists and establishing new plantings remains a challenge. Additionally, the shrubs planted between the fence and the surrounding woods are being pressured by invasive oriental bittersweet and weeds.

Paths within the meadow and shrub areas are not clearly defined or do not exist, and in order to access the shrubs visitors have to exit the meadow through the gate on the opposite side and walk around the fence. No seating or shade areas exist at the site, nor is there a gathering space for workshops.

After a number of site visits and conversations between designer Evan Abramson and LLCT staff, it was determined that a small gathering space should be added, with a slanted roof to allow for rainwater catchment. The fence will be reduced to a 2' height to deter dogs, with winding paths and gates connecting



the various areas to each other. Plant species diversity on the site will be vastly widened per Dr. Gegear's recommendations in order to attract and sustain a long list of threatened and at risk species from early spring to late fall. Sitting areas will offer visitors the opportunity to take in the site's abundance and diversity at their own pace.

*Composite panorama of field botanist Adam Kohl at People for Pollinators in 2019. Pollinator-supporting plants well established on the site include Asclepias incarnata, Eutrochium fistulosum, Monarda fistulosa, Penstemon digitalis, Salix lucida, S. petiolaris, Symphyotrichum novae-angliae, Vaccinium corymbosum and Zizia aurea. Opposite: sign at site entrance. Photographs by Evan Abramson.*







SHED WITH  
RAIN BARRELS

BEE NESTING  
STRIPS

BEECOLOGY  
RESEARCH  
GARDEN

BEE NESTING  
STRIPS

MOWED PATH

EXISTING  
MEADOW  
(35% TO BE  
RESEED)

# Meadow & Woodland Toolkit

PEOPLE FOR POLLINATORS

LANDSCAPE | INTERACTIONS

16 Center Street #426

Northampton, MA 01060

[landscapeinteractions.com](http://landscapeinteractions.com)





# SITE CONDITIONS

MEDIUM TO MOIST SOILS

FULL SUN TO PART-SHADE

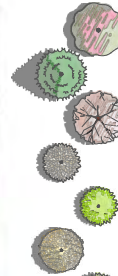
MODERATE FOOT TRAFFIC

FORMER HAY FIELD

EXISTING  
FOREST  
CANOPY

## PLANT SCHEDULE

### TREES



BOTANICAL NAME	COMMON NAME	QTY	REMARKS
Cercis canadensis	Eastern Redbud	2	20' wide spacing
Chamaecyparis thyoides	Atlantic White Cedar	2	20' wide spacing
Quercus ilicifolia	Scrub Oak	3	15' wide spacing
Salix discolor	Pussy Willow	5	8' wide spacing
Salix humilis	Prairie Willow	10	6' wide spacing
Salix lucida	Shining Willow	5	10' wide spacing
Salix petiolaris	Meadow Willow	10	10' wide spacing

### SHRUBS



BOTANICAL NAME	COMMON NAME	QTY	REMARKS
Cephalanthus occidentalis	Buttonbush	4	6' wide spacing
Diervilla lonicera	Northern Bush-honeysuckle	36	4' wide spacing
Hypericum prolificum	Shrubby St. John's-wort	10	5' wide spacing
Rosa carolina	Carolina Rose	7	4' wide spacing
Rosa palustris	Swamp Rose	5	5' wide spacing
Rosa virginiana	Virginia Rose	9	5' wide spacing
Rubus odoratus	Purple-flowering Raspberry	8	7' wide spacing
Rubus pensilvanicus	Pennsylvania Blackberry	4	6' wide spacing
Rubus vermontanus	Vermont Blackberry	10	4' wide spacing
Spiraea alba	Meadowsweet	10	3' wide spacing
Spiraea tomentosa	Steeplebush	10	3' wide spacing
Vaccinium macrocarpon	American Cranberry	7	2' wide spacing
Vaccinium oxycoccos	Small Cranberry	7	2' wide spacing
Vaccinium pallidum	Hillside Blueberry	30	2' wide spacing

### GRASSES



BOTANICAL NAME	COMMON NAME	QTY	REMARKS
Andropogon gerardii	Big Bluestem	75	3' wide spacing
Carex pensylvanica	Pennsylvania Sedge	125	1' wide spacing
Chasmanthium latifolium	River Oats	40	2' wide spacing
Panicum virgatum	Switchgrass	70	3' wide spacing
Schizachyrium scoparium	Little Bluestem	100	2' wide spacing

### PERENNIALS



BOTANICAL NAME	COMMON NAME	QTY	REMARKS
Cirsium pumilum	Pasture Thistle	50	1' wide spacing
Eutrochium dubium	Coastal Plain Joe-Pye Weed	36	2' wide spacing
Hypericum ascyron	Giant St. John's-wort	26	2' wide spacing
Pedicularis canadensis	Canadian Wood Betony	80	1' wide spacing
Prunella vulgaris	Selfheal	116	1' wide spacing
Rumex altissimus	Pale Dock	12	2' wide spacing
Viola pedata	Bird's-foot Violet	40	.5' wide spacing

### GROUND COVERS








BOTANICAL NAME	COMMON NAME	QTY	REMARKS
Dry Mix	Upland Meadow Seed Mix	8,714 sf	Seed 35% of total area

EXISTING  
MOWED  
PATH

Refer to the  
following page for  
more information  
on the plants in  
the design.

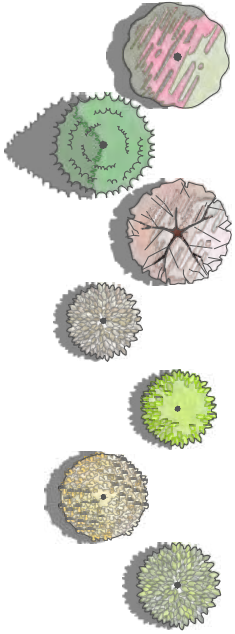


## KEY TO DESIGN AREAS

				
full sun, medium soil	full sun, moist soil	full sun, moist to medium soil	full sun to part-shade, medium soil	part-shade, medium soil

## PLANT SCHEDULE

### TREES



<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>QTY</u>	<u>REMARKS</u>
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Chamaecyparis thyoides	Atlantic White Cedar	2	20` wide spacing
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Salix discolor	Pussy Willow	5	8` wide spacing
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### SHRUBS



<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>QTY</u>	<u>REMARKS</u>
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Diervilla lonicera	Northern Bush-honeysuckle	36	4` wide spacing
Hypericum prolificum	Shrubby St. John`s-wort	10	5` wide spacing
Rosa carolina	Carolina Rose	7	4` wide spacing
Rosa palustris	Swamp Rose	5	5` wide spacing
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































# Meadow & Woodland Toolkit

PEOPLE FOR POLLINATORS

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	Vaccinium macrocarpon	American Cranberry	7	2' wide spacing	
	Vaccinium oxycoccos	Small Cranberry	7	2' wide spacing	
	Vaccinium pallidum	Hillside Blueberry	30	2' wide spacing	
<u>GRASSES</u>	<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>QTY</u>	<u>REMARKS</u>	
	Andropogon gerardii	Big Bluestem	75	3' wide spacing	
	Carex pensylvanica	Pennsylvania Sedge	125	1' wide spacing	
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	Panicum virgatum	Switchgrass	70	3' wide spacing	
	Schizachyrium scoparium	Little Bluestem	100	2' wide spacing	
<u>PERENNIALS</u>	<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>QTY</u>	<u>REMARKS</u>	
	Cirsium pumilum	Pasture Thistle	50	1' wide spacing	
	Eutrochium dubium	Coastal Plain Joe-Pye Weed	36	2' wide spacing	
	Hypericum ascyron	Giant St. John's-wort	26	2' wide spacing	
	Pedicularis canadensis	Canadian Wood Betony	80	1' wide spacing	
	Prunella vulgaris	Selfheal	116	1' wide spacing	
	Rumex altissimus	Pale Dock	12	2' wide spacing	
	Viola pedata	Bird's-foot Violet	40	.5' wide spacing	
<u>GROUND COVERS</u>	<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>QTY</u>	<u>REMARKS</u>	
	Dry Mix	Upland Meadow Seed Mix	8,714 sf	Seed 35% of total area	



# Meadow & Woodland Toolkit

PEOPLE FOR POLLINATORS

## MANAGEMENT GUIDELINES

### SITE ESTABLISHMENT

As previously mentioned, significant portions of the People for Pollinators site had been direct seeded and planted as far back as 2016. Because of this, only about 35% of the fenced in area requires seeding, due in large part to the presence of non-native grasses and weeds. A custom seed mix has been created for the site (see opposite page) and LLCT staff and volunteers will remove the undesired vegetation.

To create the Beecology research garden, LLCT staff rented a push behind sod cutter and, after mowing as low as possible, cut 1-2" deep, removing the well established turf grasses from the site. Some areas were also smothered using black landscape fabric (refer to photographs on opposite page).

If smothering, black plastic or tarp must be well secured on all sides using ground staples, cinder blocks, large rocks or other weighted objects, so that the material does not flap over in the wind. It should be left in place for an entire growing season (May to September) in order to kill off unwanted vegetation.

Direct seeding is best suited for the late fall or early winter, as many, if not most of the native forbs, shrubs and graminoids selected require at least 30-60 days of cold stratification in order to germinate. An additional benefit of fall seeding is that watering is not required. When hand seeding small areas, it is recommended to mix the seeds with a medium such as sand or sawdust (use 4:1 ratio of medium

to seeds) in order to help distribute the seeds more evenly and to provide some cover without burying the seeds too deeply. For seeding larger areas, refer to the Old Field Toolkit on the following pages.

Shrubs, plugs and other plants can be installed at any time during the growing season, but it is recommended to plant either in the early spring or the fall, in order to avoid plants drying out. Late spring or mid summer plantings should be avoided unless adequate watering systems or schedules are in place.

Mulching around new plantings can help suppress weeds and retain moisture. If mulching, use natural, dye-free materials such as shredded leaves, wood chips or straw and leave 2" of bare soil around the crown of the plant. To the extent possible, only mulch around new plantings. Ground nesting bees, which constitute approximately 70% of native bee species in the Northeast, require bare, exposed areas of soil to excavate their nests, which are often found at the base of bunching grasses. Landscaping which includes total coverage of areas in between plants with mulch prevents ground nesting bees from finding suitable nesting locations.

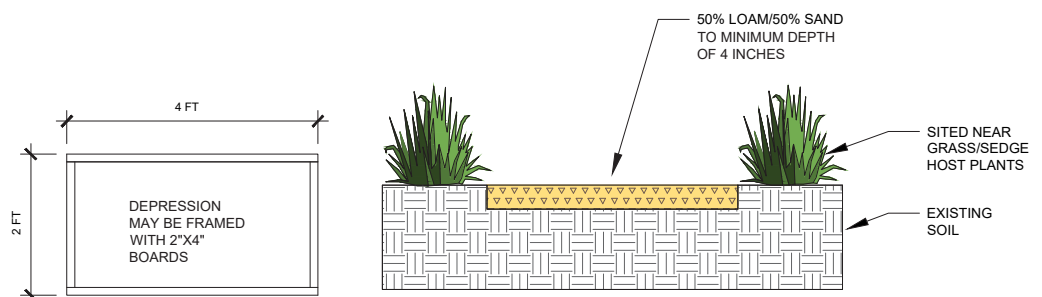
For additional information regarding landscape practices to support native pollinators, refer to the **Best Management Practices** section of this report.

### MOWING REGIMES

For meadow areas which have been recently seeded,

### BEE NESTING STRIP DETAIL

Ground nesting bee habitat can be created by creating a 2'x4' or larger area and removing all vegetation and at least 4 inches of soil. 50% of the soil can be added back in mixed with 50% sand. The area should be well draining, in full sun and kept clear of weeds, grasses or other vegetation. Do not mulch.





## PEOPLE FOR POLLINATORS MEADOW SEED MIX

it is generally recommended to keep all new vegetation in these areas at a height of 8-12 inches consistently, for the first 1-2 growing seasons. When the average height of plants in these newly seeded areas reaches approximately 12 inches, all vegetation in these areas should be cut back to no less than 8 inches. This practice should continue through the entire first growing season, and possibly the second. During the second or third growing season, vegetation should be assessed as to whether it is comprised predominantly of the species that were seeded. If it is, and if turf grass and invasive species pressure is low, the 8-12 inch mowing schedule can be replaced by selective hand pulling (on a small scale) or by a once-a-year weed whack or brush hog (on a large scale). If weed whacking or brush hogging, vegetation should be cut no lower than 4-6 inches, and always during the dormant season after plants have gone to seed. Ideally, the area would be divided into 2 or 3 sections. One section would be cut per year on a rotational basis for the life of the project, in either early spring (before April 1) or late fall (after November 15).

Shrubs		% Count	% Weight
<i>Spiraea alba</i>	Meadowsweet	4.05	0.83
<i>Spiraea tomentosa</i>	Steeplebush	4.05	0.83
Forbs			
<i>Agastache scrophulariifolia</i>	Purple giant hyssop	2.51	1.67
<i>Asclepias incarnata</i>	Swamp milkweed	0.61	7.83
<i>Asclepias syriaca</i>	Common milkweed	0.11	1.67
<i>Asclepias tuberosa</i>	Butterfly weed	0.23	3.34
<i>Baptisia tinctoria</i>	Yellow wild indigo	0.20	2.51
<i>Cirsium discolor</i>	Field thistle	0.17	1.67
<i>Doellingeria umbellata</i>	Tall white aster	1.81	1.67
<i>Eutrochium fistulosum</i>	Hollow Joe-Pye weed	0.99	0.78
<i>Eutrochium maculatum</i>	Spotted Joe-Pye weed	1.20	0.78
<i>Eutrochium purpureum</i>	Purple Joe-Pye weed	1.70	2.51
<i>Geranium maculatum</i>	Spotted crane's-bill	0.20	2.51
<i>Hypericum punctatum</i>	Spotted St. John's-wort	7.82	0.83
<i>Hypericum pyramidatum</i>	Great St. John's-wort	5.12	1.67
<i>Impatiens capensis</i>	Spotted touch-me-not	0.22	3.34
<i>Lupinus perennis</i>	Wild lupine	0.07	4.18
<i>Mimulus ringens</i>	Allegheny monkey flower	29.12	0.78
<i>Monarda punctata</i>	Spotted bee balm	3.42	2.35
<i>Pedicularis canadensis</i>	Canadian lousewort	1.25	2.35
<i>Penstemon hirsutus</i>	Northeastern beardtongue	6.70	1.67
<i>Solidago juncea</i>	Early goldenrod	7.83	1.67
<i>Solidago odora</i>	Sweet goldenrod	3.37	0.83
<i>Solidago speciosa</i>	Showy goldenrod	2.41	1.57
<i>Zizia aptera</i>	Heart-leaf golden Alexanders	0.49	2.51
<i>Zizia aurea</i>	Golden Alexanders	0.45	2.51
Graminoids			
<i>Andropogon gerardii</i>	Big bluestem	0.14	0.83
<i>Carex brevior</i>	Plains oval sedge	3.67	7.83
<i>Carex molesta</i>	Field oval sedge	3.17	7.83
<i>Panicum virgatum</i>	Switchgrass	0.19	0.83
<i>Schizachyrium scoparium</i>	Little bluestem	6.75	27.83

Portions of the People for Pollinators site were prepared for planting by smothering with black plastic (left) and sod cutting (right) in 2020. Photographs by Bryn Gingrich.





# Old Field Toolkit

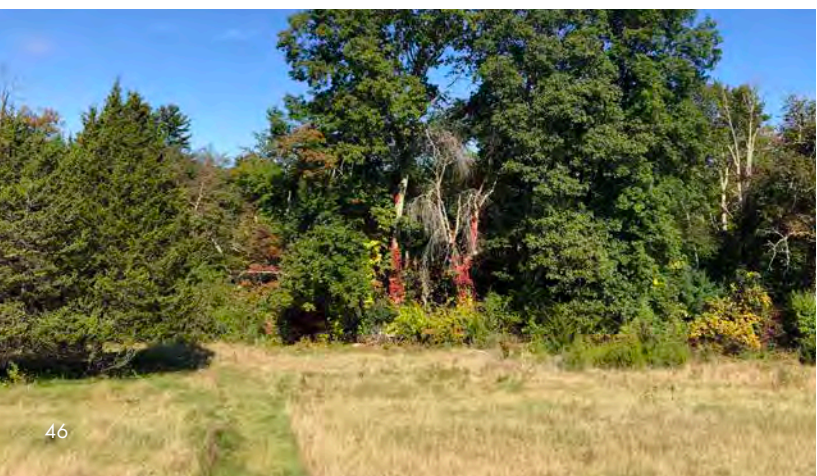
## CHAPMAN PASTURE

Chapman Pasture is a rolling 8-acre grassland that was grazed with sheep for over forty years. The property is unique in that its vegetation is relatively consistent: upland areas of the site are almost all non-native grasses that reach a mature height of less than 3 feet. The property forms part of a contiguous 95-acre corridor of protected land owned and managed by LLCT.

Forested wetlands border the site on both northwest and southeast sides, with an intermittent stream running northward through the center of the field from the southeast corner of the property. This stream, combined with the topography of the site, creates a low point in the center of the field, a wet swale which is comprised predominantly of native vegetation.

Whereas the upland two-thirds of the site are dominated by non-native grasses with small patches of early successional *Pinus strobus* (White pine) and *Juniperus virginiana* (Eastern red cedar), this wet swale contains a somewhat limited range of plants that support threatened pollinator species, including *Carex vulpinoidea* (Common fox sedge), *Asclepias incarnata* (Swamp milkweed), *Symphytotrichum nove-belgii* (New York American-aster) and *Solidago gigantea* (Smooth goldenrod). Field borders and forest edges contain significant portions of invasive *Celastrus orbiculatus* (Oriental bittersweet) as well as *Rosa multiflora* (Multiflora rose).

While Chapman Pasture is somewhat secluded, the site is open to the public and one point of access



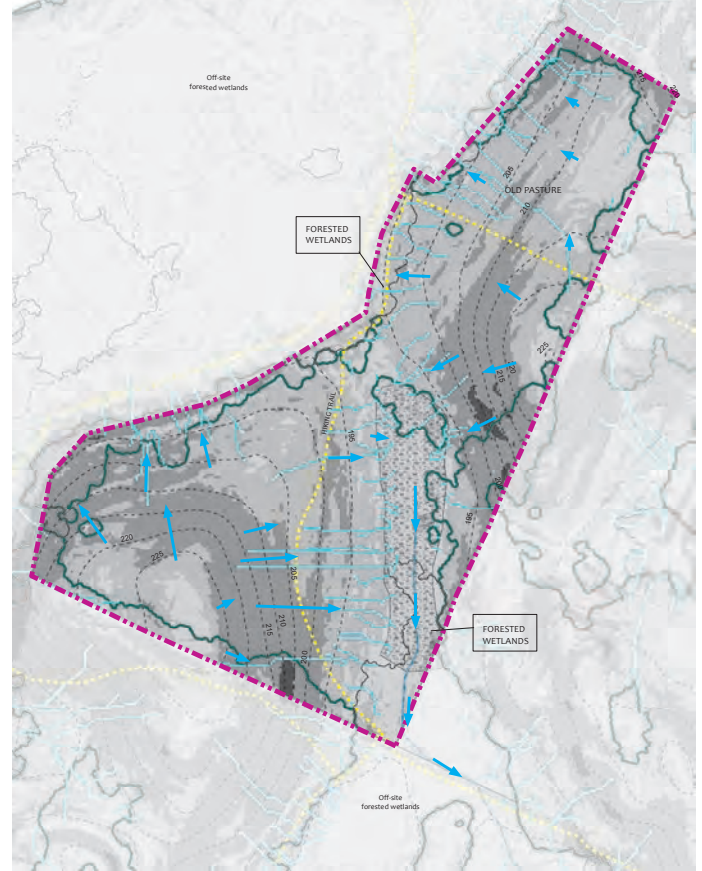
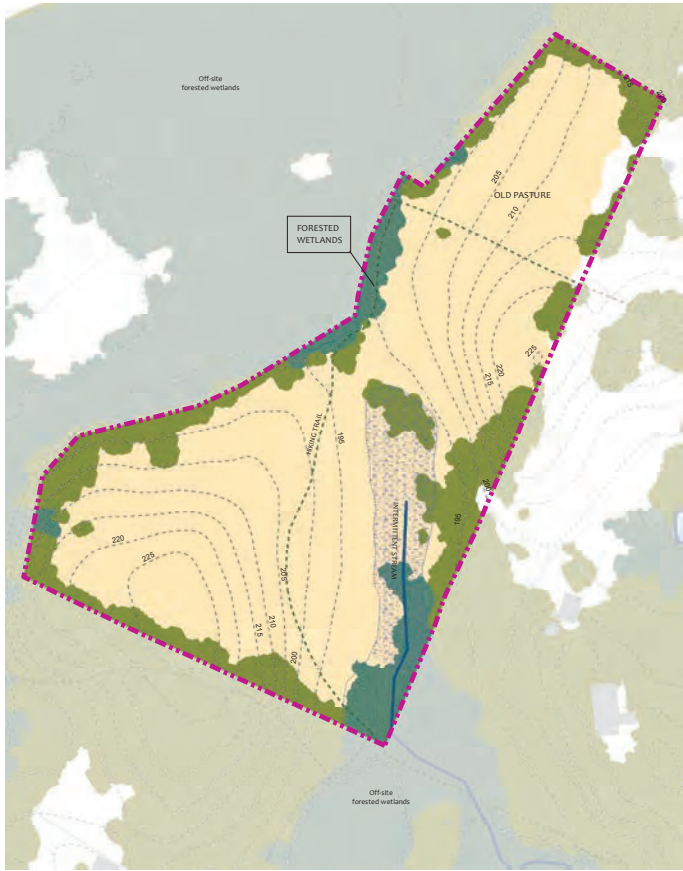
## EXISTING CONDITIONS

originates from another Toolkit site, Upper Brown-ing Fields. LLCT is committed to converting the low habitat value of the grasses at Chapman Pasture to a diverse pollinator meadow with shrub areas. Seven bird boxes at Chapman Pasture are monitored for Eastern Bluebirds and Tree Swallows by a dedicated LLCT volunteer. Enhancements to the site will benefit these birds and wildlife at other trophic levels.

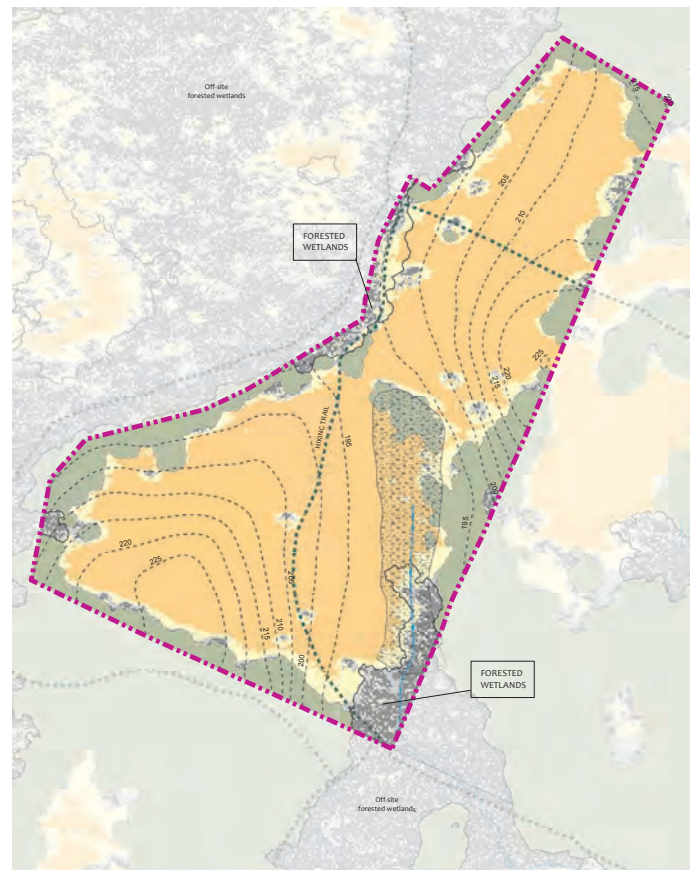
Due in large part to the dominance of the non-native grasses on the site, as well as the large scale of the property, Landscape Interactions proposed that prescribed fire be used to clear the site of existing vegetation and expose the soil for seeding. A proposal was prepared by LLCT and Landscape Interactions and sent to U.S. Fish & Wildlife Service. After visiting the site and learning more about LLCT's town-wide effort to target threatened pollinator species, USFWS agreed to fund a burn plan for the site, and to help find a team to execute the burn. USFWS will clear approximately one acre of field edges in preparation for the burn, which is scheduled for early spring 2021.



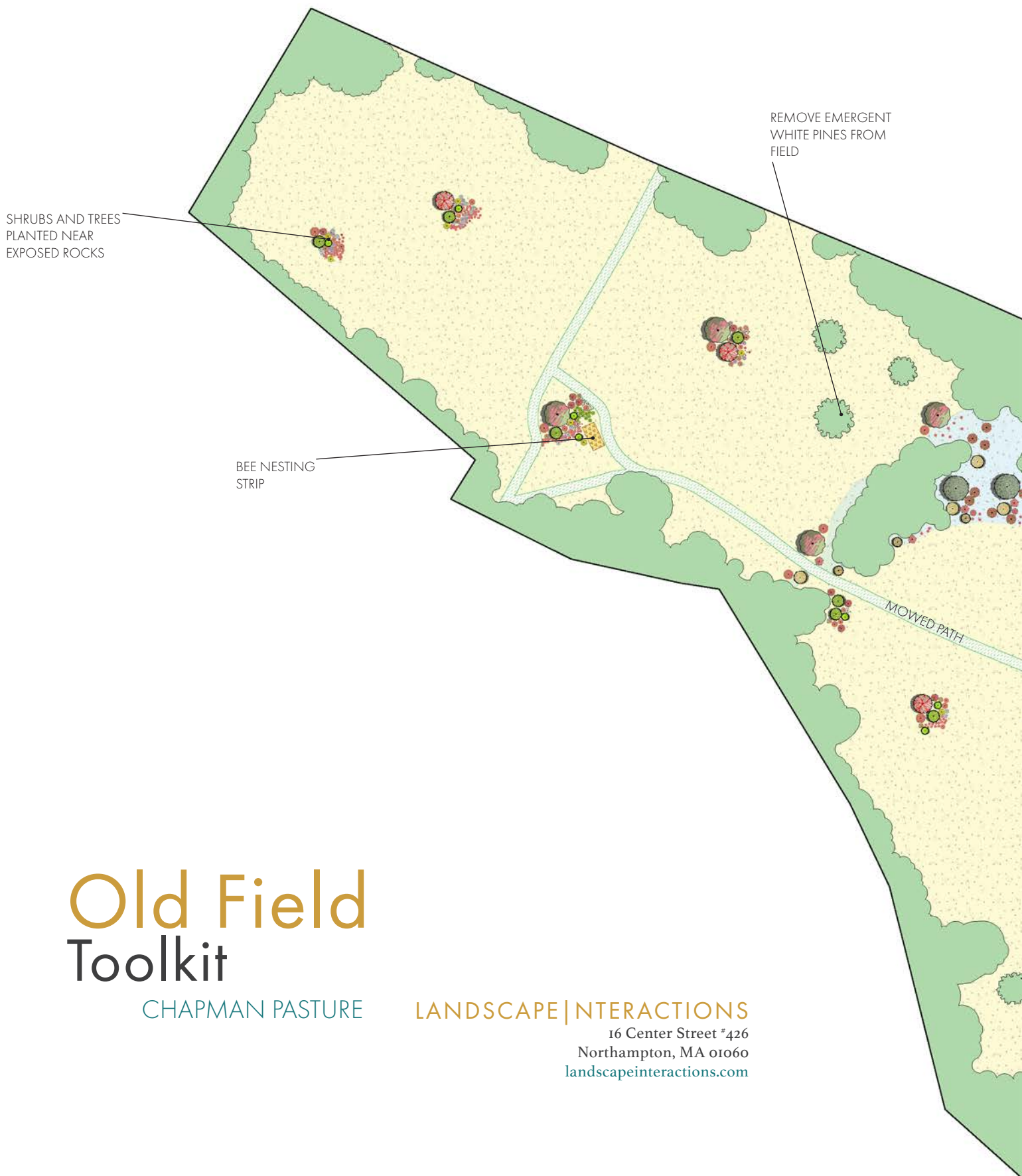




Above and right: some of the site analyses created to interpret the Chapman Pasture site and develop recommendations for habitat conversion and design. Clockwise from top left: Basemap, Slopes and Drainage, Sun and Shade. Below: existing conditions at the Chapman Pasture site in September, 2019. Opposite: Oriental bittersweet climbing a tree at the field edges.







# Old Field Toolkit

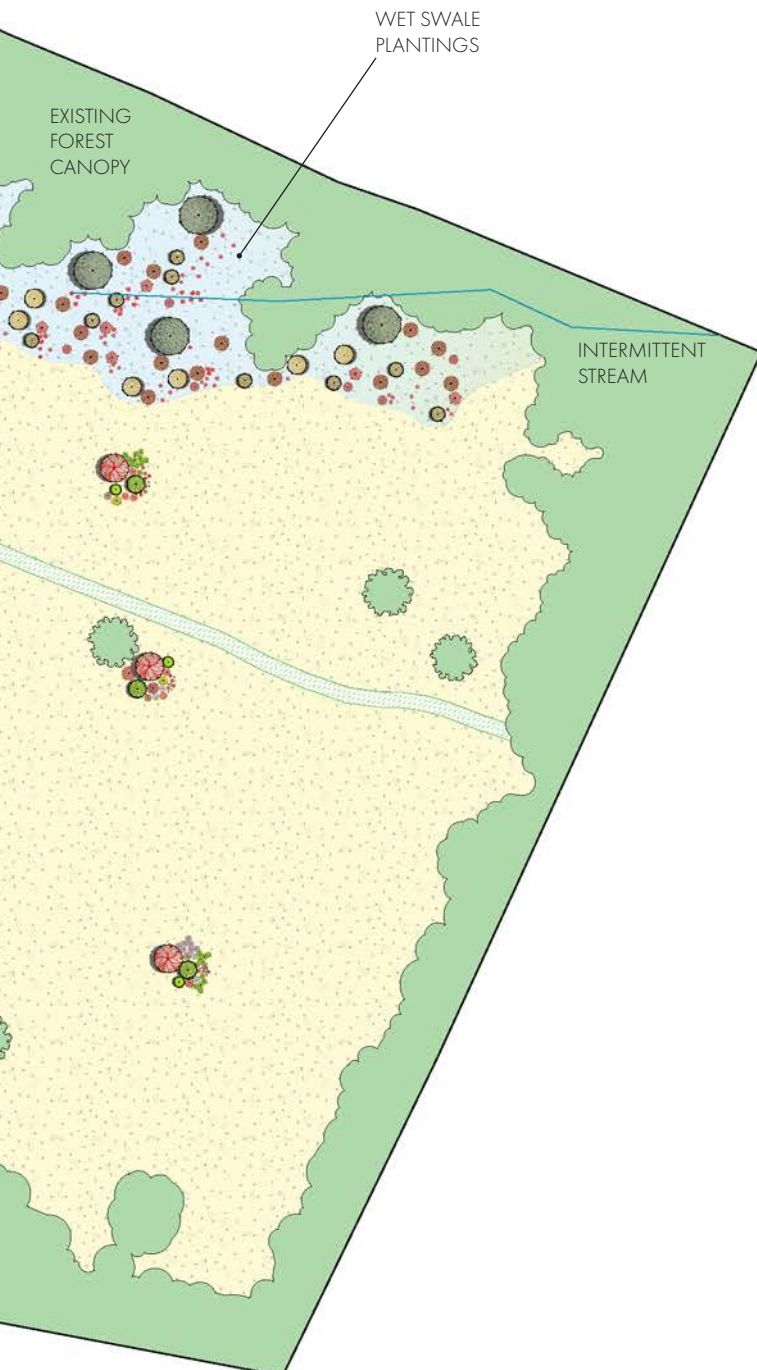
CHAPMAN PASTURE

LANDSCAPE | INTERACTIONS

16 Center Street #426  
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[landscapeinteractions.com](http://landscapeinteractions.com)

# SITE CONDITIONS

DRY SOILS & MOIST TO WET SOILS  
FULL SUN & PART SHADE  
NATURALIZED LANDSCAPE  
OLD FIELD GRASSLAND



## PLANT SCHEDULE

TREES	BOTANICAL NAME	COMMON NAME	QTY	REMARKS
	<i>Cercis canadensis</i>	Eastern Redbud	4	20' wide spacing
	<i>Quercus ilicifolia</i>	Scrub Oak	6	15' wide spacing
	<i>Salix bebbiana</i>	Beaked Willow	6	20' wide spacing
	<i>Salix discolor</i>	Pussy Willow	12	8' wide spacing
	<i>Salix humilis</i>	Prairie Willow	10	6' wide spacing
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	<i>Rubus vermontanus</i>	Vermont Blackberry	10	4' wide spacing
	<i>Spiraea alba</i>	Meadowsweet	22	3' wide spacing
	<i>Spiraea tomentosa</i>	Steeplebush	22	3' wide spacing
	<i>Vaccinium angustifolium</i>	Lowbush Blueberry	36	3' wide spacing
	<i>Vaccinium corymbosum</i>	Highbush Blueberry	24	8' wide spacing
	<i>Vaccinium macrocarpon</i>	American Cranberry	24	2' wide spacing
	<i>Vaccinium oxycoccos</i>	Small Cranberry	24	2' wide spacing
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	<i>Viola pedata</i>	Bird's-foot Violet	40	.5' wide spacing
GROUND COVERS	BOTANICAL NAME	COMMON NAME	QTY	REMARKS
	Dry Mix	Upland Meadow Seed Mix	265,186 sf	Min. 110 PLS/sq.ft
	Wet Mix	Wet Meadow Seed Mix	23,789 sf	Min. 110 PLS/sq.ft

100 FT.



Refer to the following page for more information regarding plants in the design.



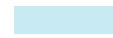
## KEY TO DESIGN AREAS



rock outcrop,  
full sun



rock outcrop,  
full sun to  
part-shade



wet swale, full  
sun



wet swale, full  
sun to part-  
shade

## PLANT SCHEDULE

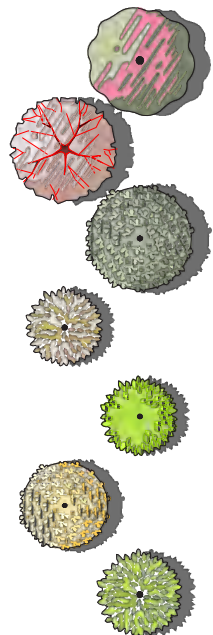
### TREES

### BOTANICAL NAME

### COMMON NAME

### QTY

### REMARKS



*Cercis canadensis*

Eastern Redbud

4

20` wide spacing



*Quercus ilicifolia*

Scrub Oak

6

15` wide spacing



*Salix bebbiana*

Beaked Willow

6

20` wide spacing



*Salix discolor*

Pussy Willow

12

8` wide spacing



*Salix humilis*

Prairie Willow

10

6` wide spacing



*Salix lucida*

Shining Willow

10

10` wide spacing



*Salix petiolaris*

Meadow Willow

10

10` wide spacing



### SHRUBS

### BOTANICAL NAME

### COMMON NAME

### QTY

### REMARKS

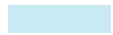


*Cephalanthus occidentalis*

Buttonbush

10

6` wide spacing



*Diervilla lonicera*

Northern Bush-honeysuckle

12

4` wide spacing



*Hypericum prolificum*

Shrubby St. John`s-wort

10

5` wide spacing



*Rosa carolina*

Carolina Rose

8

4` wide spacing



*Rosa palustris*

Swamp Rose

8

5` wide spacing



*Rosa virginiana*

Virginia Rose

8

5` wide spacing



*Rubus odoratus*

Purple-flowering Raspberry

8

7` wide spacing



*Rubus pensilvanicus*

Pennsylvania Blackberry

10

6` wide spacing



*Rubus vermontanus*

Vermont Blackberry

10

4` wide spacing

























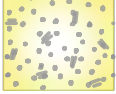
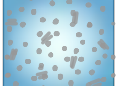


# Old Field Toolkit

CHAPMAN PASTURE

LANDSCAPE | INTERACTIONS

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	<i>Spiraea alba</i>	Meadowsweet	22	3` wide spacing	
	<i>Spiraea tomentosa</i>	Steeplebush	22	3` wide spacing	
	<i>Vaccinium angustifolium</i>	Lowbush Blueberry	36	3` wide spacing	
	<i>Vaccinium corymbosum</i>	Highbush Blueberry	24	8` wide spacing	
	<i>Vaccinium macrocarpon</i>	American Cranberry	24	2` wide spacing	
	<i>Vaccinium oxycoccos</i>	Small Cranberry	24	2` wide spacing	
	<i>Vaccinium pallidum</i>	Hillside Blueberry	100	2` wide spacing	
<u>PERENNIALS</u>	<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>QTY</u>	<u>REMARKS</u>	
	<i>Cirsium pumilum</i>	Pasture Thistle	20	1` wide spacing	
	<i>Eutrochium dubium</i>	Coastal Plain Joe-Pye Weed	30	2` wide spacing	
	<i>Hypericum ascyron</i>	Giant St. John`s-wort	20	2` wide spacing	
	<i>Pedicularis canadensis</i>	Canadian Wood Betony	40	1` wide spacing	
	<i>Viola pedata</i>	Bird`s-foot Violet	40	.5` wide spacing	
<u>GROUND COVERS</u>	<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>QTY</u>	<u>REMARKS</u>	
	Dry Mix	Upland Meadow Seed Mix	265,186 sf	Min. 110 PLS/sq.ft	
	Wet Mix	Wet Meadow Seed Mix	23,789 sf	Min. 110 PLS/sq.ft	



# Old Field Toolkit

## CHAPMAN PASTURE

### SITE ESTABLISHMENT

As mentioned, Chapman Pasture will be subject to prescribed fire in April 2021 as the initial method of site preparation for seeding. The burn will knock back non-native cool season grasses which dominate the site, expose the soil and encourage remnant native plant communities. As soon as 1 week following the burn, the wet swale can be planted with the recommended species depicted in the design. Additionally, exposed rocks and boulders on the site will be planted with the recommended arrangements of plants. Prescribed burns should continue on the site every 3-5 years as a primary method of vegetation management.

In late October or November 2021, the entire site should be mowed as close to the ground as possible, with the exception of those areas planted in the wet swale and in/around boulders in the field. If any emergent trees or invasives are found in the meadow during the 2021 growing season, they should be grubbed or pulled.

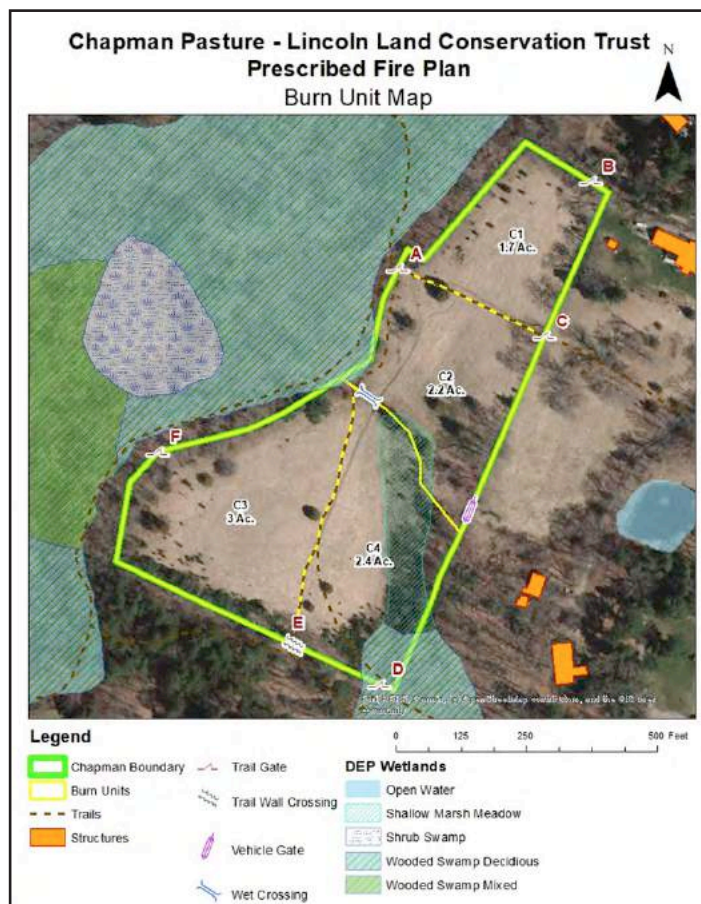
In November or December 2021, the wet and dry mixes should be seed drilled across the site, according to the areas outlined on the preceding page. If a seed drill is not available, the seed mixes may be broadcast; a harrow raking across the site may be required beforehand to ensure sufficient seed to soil contact (if drilling, no harrow raking is required). 100 lbs./acre of winter wheat cover crop should be added when fall seeding (if spring seeding, wild oats

## MANAGEMENT GUIDELINES

should be used instead). The plant lists for each seed mix are on the opposite page.

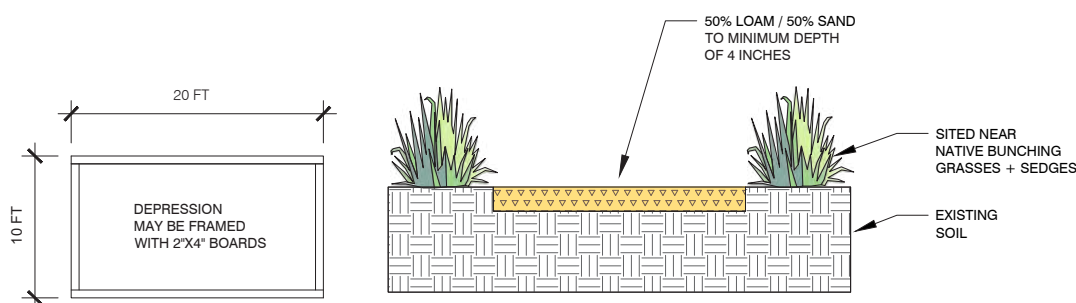
### MOWING REGIMES

For the first growing season following seeding (2022), the entire site should be closely monitored for growth of vegetation. When the average height



Above: Map of burn unit areas from Chapman Pasture Prescribed Fire Plan courtesy Alex Entrup of Entrup Consulting. Left: Due in part to the scale and accessibility of the Chapman Pasture site, rather than having multiple 2'x4' nesting strips, it is recommended to create a single 10'x20' nesting location. Remove all vegetation and at least 4 inches of soil. 50% of the soil can be added back in mixed with 50% sand. The area should be well draining, in full sun and kept clear of weeds, grasses or other vegetation. Do not mulch.

### BEE NESTING STRIP DETAIL



## CHAPMAN PASTURE UPLAND MEADOW SEED MIX

Shrubs	
<i>Spiraea alba</i>	Meadowsweet
<i>Spiraea tomentosa</i>	Steeplebush
Forbs	
<i>Agastache scrophulariifolia</i>	Purple giant hyssop
<i>Asclepias syriaca</i>	Common milkweed
<i>Asclepias tuberosa</i>	Butterfly weed
<i>Baptisia tinctoria</i>	Yellow wild indigo
<i>Cirsium discolor</i>	Field thistle
<i>Geranium maculatum</i>	Spotted crane's-bill
<i>Hypericum punctatum</i>	Spotted St. John's-wort
<i>Lupinus perennis</i>	Wild lupine
<i>Monarda fistulosa</i>	Wild bergamot
<i>Pedicularis canadensis</i>	Canadian lousewort
<i>Penstemon digitalis</i>	Foxglove beardtongue
<i>Penstemon hirsutus</i>	Northeastern beardtongue
<i>Prunella vulgaris</i> ssp. <i>lanceolata</i>	Common selfheal
<i>Solidago odora</i>	Sweet goldenrod
<i>Solidago speciosa</i>	Showy goldenrod
<i>Symphyotrichum lateriflorum</i>	Calico American-aster
<i>Zizia aptera</i>	Heart-leaf golden Alexanders
<i>Zizia aurea</i>	Golden Alexanders
Graminoids	
<i>Andropogon gerardii</i>	Big bluestem
<i>Carex blanda</i>	Common wood sedge
<i>Carex brevior</i>	Plains oval sedge
<i>Panicum virgatum</i>	Switchgrass
<i>Schizachyrium scoparium</i>	Little bluestem

of vegetation in a given area is approximately 12 inches, the area should be brush hogged to a height of no less than 8 inches. This schedule should be continued throughout the first, and possibly second growing season.

In the second growing season (2023), the site should be periodically assessed by a botanist or other individual with vetted plant identification skills. If the majority of vegetation on the site or in a given area is native species from the mixes which were seeded, then the mowing schedule for the site or that area may be transitioned to a once-a-year mow. This should always occur during the dormant season (after November 15 or before April 1), after plants have gone to seed or before they begin next season's growth. Ideally, the site would be broken up into 2 or 3 sections, with each section being mowed once a year on a rotational basis. During this annual mow, vegetation should be cut to a height of 4-6 inches.

If during the second growing season, the majority of vegetation on the site or in a given area appears to

## CHAPMAN PASTURE WET MEADOW SEED MIX

Forbs	
<i>Asclepias incarnata</i>	Swamp milkweed
<i>Doellingeria umbellata</i>	Tall white aster
<i>Eutrochium fistulosum</i>	Hollow Joe-Pye weed
<i>Eutrochium maculatum</i>	Spotted Joe-Pye weed
<i>Eutrochium purpureum</i>	Purple Joe-Pye weed
<i>Impatiens capensis</i>	Spotted touch-me-not
<i>Mimulus alatus</i>	Winged monkey flower
<i>Mimulus ringens</i>	Allegheny monkey flower
<i>Rumex orbiculatus</i>	Great Water Dock
<i>Scutellaria galericulata</i>	Hooded skullcap
<i>Scutellaria lateriflora</i>	Mad dog skullcap
Graminoids	
<i>Andropogon gerardii</i>	Big bluestem
<i>Carex blanda</i>	Common wood sedge
<i>Carex brevior</i>	Plains oval sedge
<i>Panicum virgatum</i>	Switchgrass



remain non-native grasses, then continue mowing to keep the overall height of plants between 8-12 inches. This regime should be followed until the third growing season.

No-till seed drills such as the Flex by Truax pictured above are ideally suited for largescale native seeding without the need for raking. **Sites should never be tilled before seeding native species, as doing so brings dormant weed seeds to the surface, increasing competition.**

By the end of the third growing season (2024), the site should be ready for transition to an annual mow on a rotational basis. Invasive species and early successional trees in the open portions of the site should be closely monitored throughout, and either manually grubbed using a weed wrench ("Puller-bear" brand) or mechanically grubbed using a brush grubber ("Brush Grubber" brand) mounted on a tractor, ATV or pickup truck.



# Wet Meadow Toolkit

## UPPER BROWNING FIELDS

## EXISTING CONDITIONS

Upper Browning Fields is a 13.5-acre conservation property owned by the Town of Lincoln, and managed by the Lincoln Conservation Department. The site is highly diverse in native plant species composition, and includes a mix of wet meadow and transitional wet-to-dry meadow habitat. A perennial stream bisects the site running north to south, and an intermittent stream seeps into the center of the site from the north, creating a wet meadow complex that dominates the majority of the property. A second wet meadow/shrubland exists in the eastern portion of the site. The entire property is MassWildlife Natural Heritage and Endangered Species Program (NHESP) Priority Habitat of Rare Species. A horse ring in the northwest corner of the property is used by the public a few times a year and contributes to overflow parking in the old pasture portion of the site which is south of the entrance.

Native plant species dominate Upper Browning Fields in both wet and dry areas as well as in full sun and shaded portions of the site, contributing to its overall diversity. “Old Pasture” portions of the site (refer to map on opposite page) closest to Weston Road and Conant Road are somewhat less diverse in terms of plant species, and include significant quantities of non-native agricultural grasses. Still, *B. fervidus*, a threatened bumblebee species and one of the target species for this Plan, was found nesting adjacent to the southwest corner of the horse ring by Dr. Gegear, in one of the most highly disturbed portions of the site due to its proximity to overflow parking during events. Similarly, numerous native plant species of high value to threatened and at-risk pollinators were found in marginal areas of the site, alongside the trail and in the shade along the forest edges, oftentimes at risk of competition from more well established plant communities. Refer to the Ecological Communities map on pages 56-57 for a more detailed examination of the plant communities found at Upper Browning Fields.

Invasive *Frangula alnus* (Glossy buckthorn) as well as *Lythrum salicaria* (Purple loosestrife) pose the

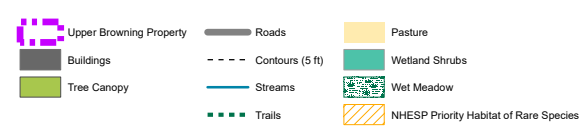
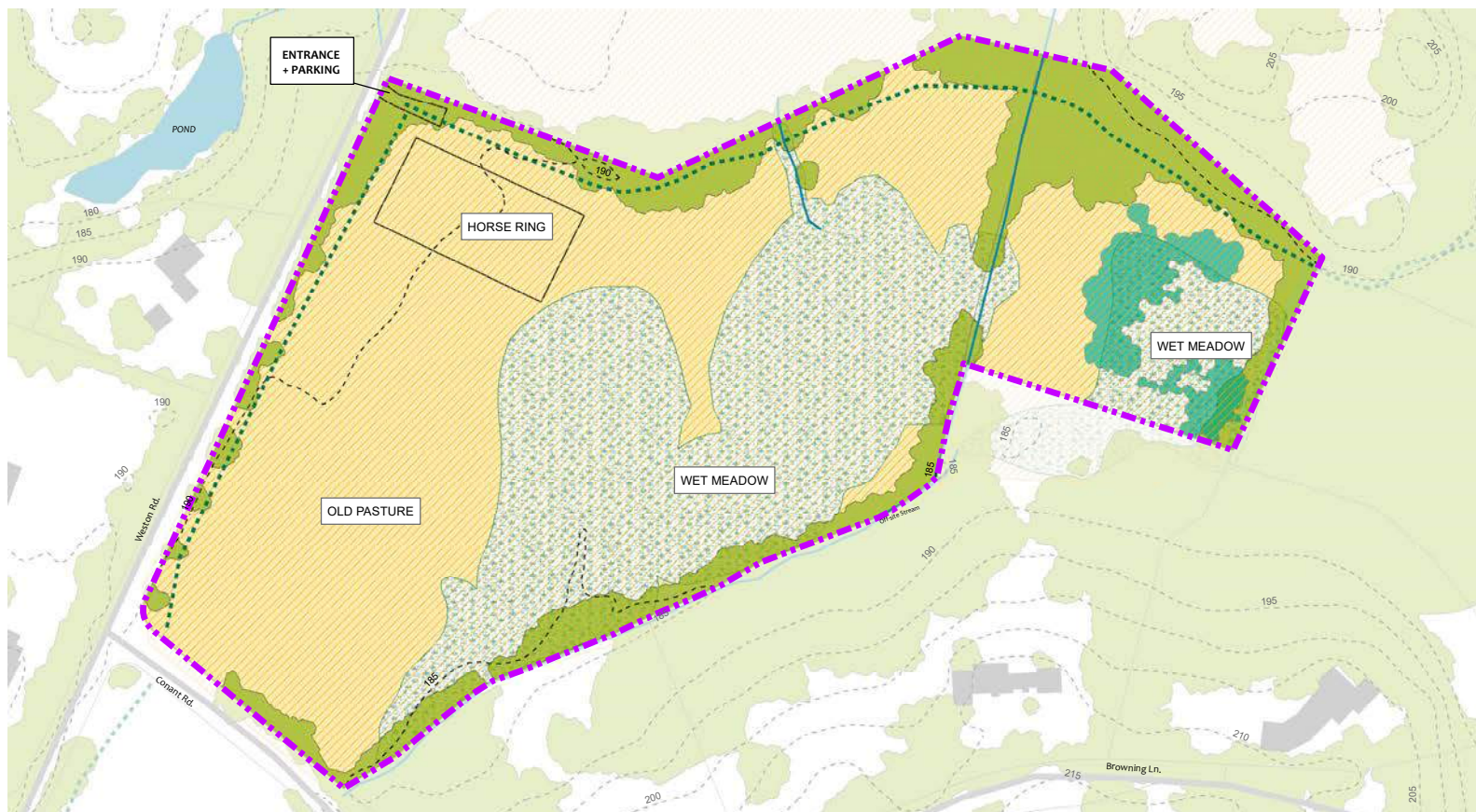
biggest management challenges, as the buckthorn in particular is well established in both wet and dry meadow areas. Glossy buckthorn, responds favorably to mowing, and mature plants that are cut near the base sprout vigorously (CABI). Cutting alone is usually not an effective method for glossy buckthorn removal. If herbicides are not an option, as is the case on most, if not all of Lincoln’s conservation properties, it is recommended to topkill Glossy buckthorn by fire in late spring just after it has leafed out. **Spot burning using a backpack torch is a highly effective method for removing Glossy buckthorn, followed closely by the replanting of desired native species** (Nature Conservancy). A qualified technician should be hired to conduct spot burning. Girdling and buckthorn bags have also been demonstrated to be effective removal methods (CABI). Younger buckthorn plants can be removed by handpulling or grubbing, as can Purple loosestrife. Galeruccella beetles have been an effective biocontrol for Purple loosestrife; unfortunately, these European beetles are no longer being bred for release.

Large conservation sites are complex and the Conservation Department’s management practices reflect this complexity. The maps on pages 58-59 present strategies for stewarding the varied plant communities, habitat types and ecological conditions for threatened and at-risk pollinator species at Upper Browning Fields. Replication of these strategies can be scaled for private landowners as well.

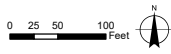
While much in the way of nectar, pollen, host plants and nesting sites is already present at Upper Browning Fields, there are a whole suite of plants which can be added to the site in order to strengthen its ecosystems and expand its biodiversity. This will also help wet meadow portions to regenerate following removal of glossy buckthorn and purple loosestrife.

*Opposite top: landscape conditions at Upper Browning Fields include significant areas of highly diverse wet meadow and upland meadow habitat. Numerous native plants which support at-risk pollinator species are found on the site, including Eutrochium maculatum (Spotted Joe-Pye weed). Bottom: basemap used for initial site analysis at Upper Browning Fields. Wet Meadow areas were much larger than state-level data, and were tracked on site using GPS.*





**UPPER BROWNING FIELDS BASEMAP  
Landscape Interactions**



Property Size: 13.5 acres  
Location: Lincoln, MA  
Client: Lincoln Land Conservation Trust



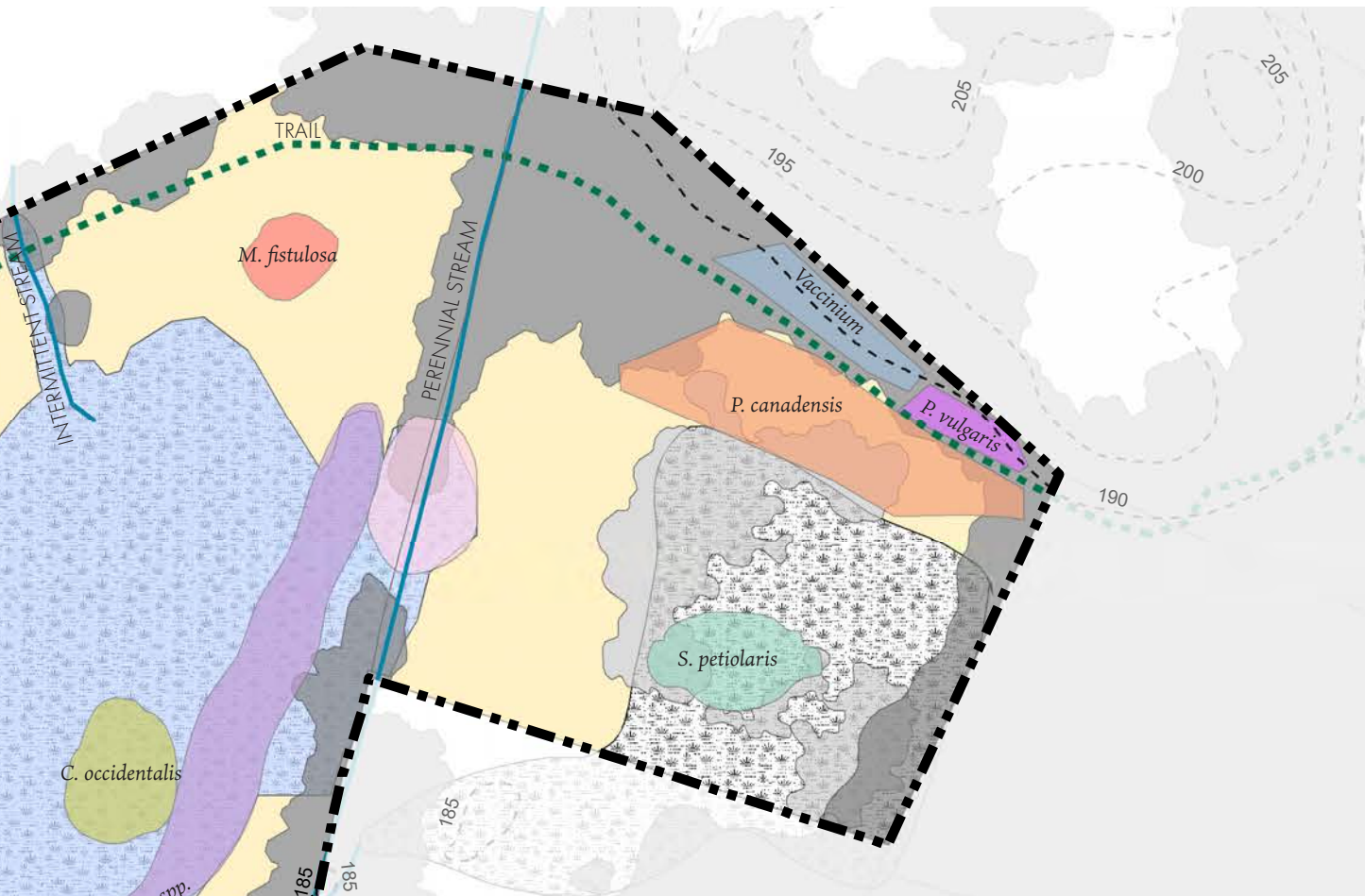
# Wet Meadow Toolkit

UPPER BROWNING FIELDS

## ECOLOGICAL COMMUNITIES



This map of plant species locations on Upper Browning Fields and the mowing/management guidelines presented in the map on the following pages were provided to Lincoln Conservation Department staff and LLCT in the early fall of 2020, to help interpret the varying ecosystems and plant communities present on the site, and understand the diverse management methods each unique area requires in order to better steward the landscape for at-risk pollinators.



#### WET MEADOW

Species present: *Cephalanthus occidentalis* (Buttonbush), *Asclepias incarnata* (Swamp milkweed), *Spiraea alba* (Meadowsweet), *Spiraea tomentosa* (Steeplebush), *Verbena hastata* (Blue vervain), *Eutrochium maculatum* (Spotted Joe-Pye weed), *Solidago juncea* (Early goldenrod) and other *Solidago* spp., *Carex* spp., *Lysimachia* spp. (Native yellow-loosestrife)

#### OLD PASTURE/WET MEADOW TRANSITION AREAS

Species present: *Solidago rugosa* (Wrinkleleaf goldenrod), *Euthamia graminifolia* (Grass-leaved goldenrod), *Solidago canadensis* (Canada goldenrod), *Eutrochium maculatum* (Spotted Joe-Pye weed).

#### ADJACENT CENTRAL STREAM

Species present: *Rosa palustris* (Swamp Rose), *Cephalanthus occidentalis* (Common buttonbush), *Impatiens capensis* (Jewelweed).

#### BOMBUS FERVIDUS NESTING SITE

*Lysimachia* spp. (Native yellow-loosestrife)

*Prunella vulgaris* ssp. *lanceolata* (Common selfheal)

*Pedicularis canadensis* (Canadian wood betony)

*Vaccinium angustifolium* (Lowbush blueberry), *V. corymbosum* (Highbush blueberry)

*Salix petiolaris* (Meadow willow)

*Trifolium pratense* (Red clover)

*Monarda fistulosa* (Wild bergamot)

*Cephalanthus occidentalis* (Buttonbush)

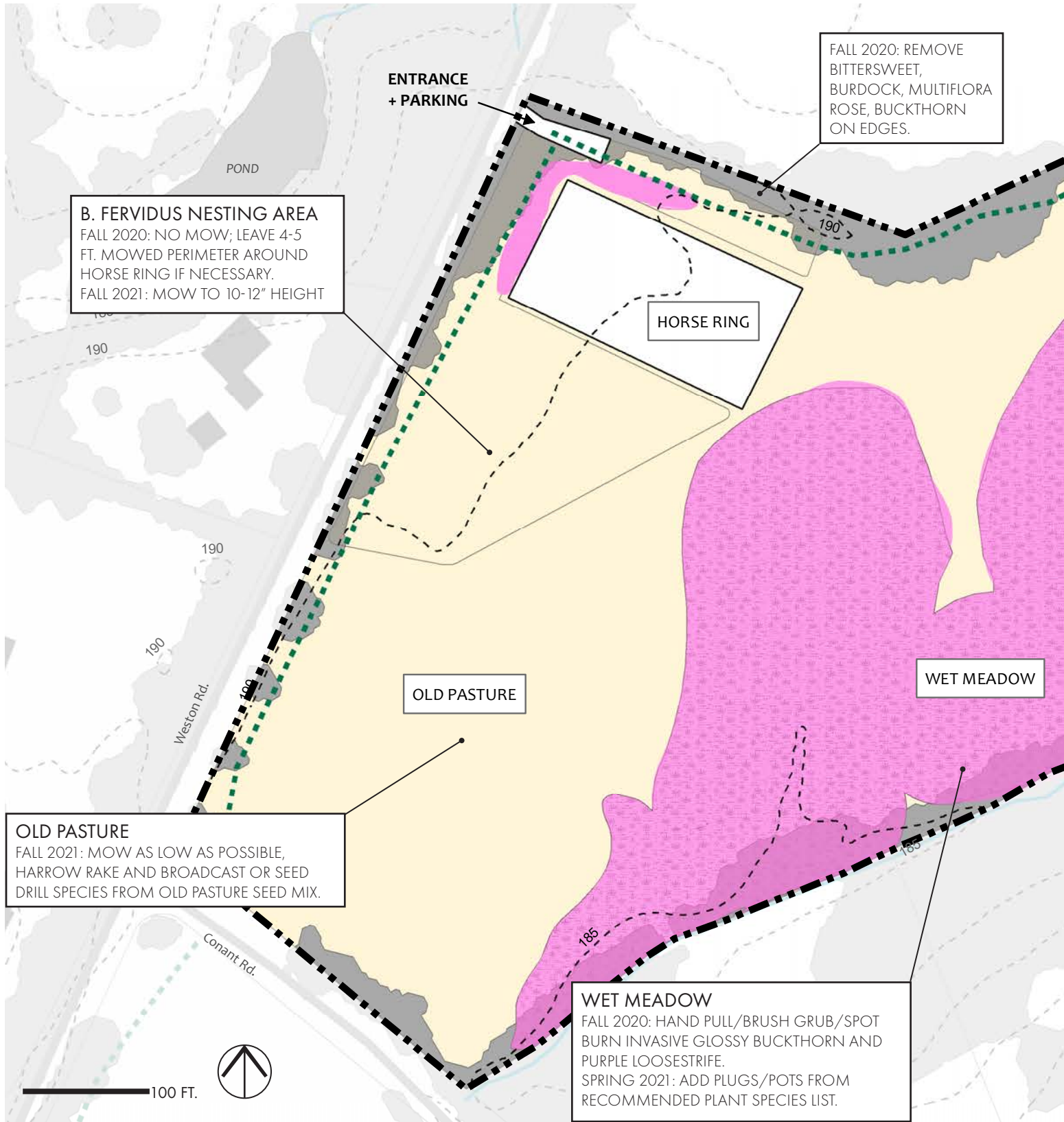


# Wet Meadow Toolkit

UPPER BROWNING FIELDS

LANDSCAPE|INTERACTIONS

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# SITE CONDITIONS

MEDIUM SOILS & WET SOILS

FULL SUN & PART SHADE

CONSERVATION HABITAT






WET MEADOW

## TRAILSIDE

SPRING 2021: SOD CUT ALONG MOWED PATH EDGES, 2-4 FT WIDE ON ONE OR BOTH SIDES; PLANT PENSTEMON, MONARDA, BAPTISIA, PRUNELLA, EUTROCHIMUM, SOLIDAGO, ASTERS, NATIVE GRASSES AND OTHERS FROM LIST.

FALL 2020: MOW TO ENCOURAGE PEDICULARIS CANADENSIS GROWTH IN SPRING. FERNS, SOLIDAGO, ASTERS CURRENTLY OUTCOMPETE.

SHRUB/WET MEADOW  
FALL 2020: MOW FERNS AT EDGES TO ENCOURAGE GROWTH OF OTHER NATIVE SPECIES.

-  NO MOW AND SPOT REMOVE INVASIVES (AREA OF ESTABLISHED NATIVE PLANTS AND WET MEADOW)
-  MOW FALL 2020 (SEE NOTES)
-  MOW FALL 2021 (SEE NOTES)
-  MOW EDGES FALL 2020 (SEE NOTES)
-  REMOVE TREE CANOPY TO PREVENT SHADING



# Wet Meadow Toolkit

## UPPER BROWNING FIELDS

### SITE ESTABLISHMENT

As mentioned, the majority of Upper Browning Fields is intact wet meadow and transitional wet-to-dry meadow habitat. The dominant management challenges are how to deal with invasive Glossy buckthorn and Purple loosestrife, as well as to what extent to dedicate staff time and resources towards invasive species removal along the trailside at the entrance to the property near the horse ring.

Because the site contains well established, diverse native plant communities in so many places, it is recommended to discontinue brush hogging the majority of the site, and in the late spring of 2021, all areas containing Glossy buckthorn in Upper Browning Fields be spot burned using backpack torches, and replanted using species from the Wet Meadow Plant List on the opposite page. Manual weed wrenches (“Pullerbear”) or brush grubbers mounted to a tractor (“Brush Grubber”) can also be utilized to remove not only buckthorn, but also Purple loosestrife, as both methods remove significant portions of a plant’s root mass.

For Trailside locations, in spring of 2021 it is recommended to mow 2-4 ft. alongside one or both sides of the existing foot path as low to the ground as possible, followed by sod cutting to remove existing vegetation. These areas can then be planted using the Trailside Plant List on the opposite page. It is also possible to smother these areas using black tarp or plastic following mowing in lieu of sod cutting, although this would require securing the material alongside all edges for the length of the trail, which is somewhat cumbersome given the scale of the site.

For Old Pasture areas, as described on the preceding page, in the fall of 2021 these upland portions of the site can be mowed low, followed by a harrow raking and then direct broadcast of seeds from the mix on

*Spot burning Glossy buckthorn is considered one of the most effective non-chemical management methods. Image courtesy Woody Invasives of the Great Lake Collaborative.*

## MANAGEMENT GUIDELINES

the opposite page; alternatively, in lieu of raking and broadcasting, these areas could be drilled if a seed drill was available.

For areas where *Bombus fervidus* nesting sites have been located, it is recommended to consult with Dr. Gegear throughout the 2021 and 2022 growing seasons, as he gathers more data in his field surveys.

**Bee nesting strips should also be created** in Upper Browning Fields for ground nesting species. Refer to page 52 of this Plan for a diagram as well as instructions.

### MAINTENANCE

Hand pulling of weeds, non-native grasses and other undesired vegetation in all recently planted areas will be necessary for numerous years following installation. For areas that are direct seeded, refer to the Mowing Regimes section in the **Old Field Toolkit Management Guidelines** on page 52.

Follow up spot burns for areas containing Glossy buckthorn will likely be necessary for several years. Girdling and buckthorn bags are also highly effective removal methods (CABI).



## UPPER BROWNING FIELDS WET MEADOW PLANT LIST

Trees	
<i>Chamaecyparis thyoides</i>	Atlantic white cedar
Shrubs	
<i>Cephalanthus occidentalis</i>	Common buttonbush
<i>Rosa palustris</i>	Swamp rose
<i>Salix bebbiana</i>	Bebb's willow (male)
<i>Salix discolor</i>	Pussy willow (male)
<i>Salix lucida</i>	Shining willow (male)
<i>Vaccinium corymbosum</i>	Highbush blueberry
<i>Vaccinium macrocarpon</i>	Large cranberry
<i>Vaccinium oxycoccos</i>	Small cranberry
Forbs	
<i>Asclepias incarnata</i>	Swamp milkweed
<i>Doellingeria umbellata</i>	Tall white aster
<i>Eutrochium fistulosum</i>	Hollow Joe-Pye weed
<i>Eutrochium maculatum</i>	Spotted Joe-Pye weed
<i>Eutrochium purpureum</i>	Purple Joe-Pye weed
<i>Impatiens capensis</i>	Spotted touch-me-not
<i>Mimulus alatus</i>	Winged monkey flower
<i>Mimulus ringens</i>	Allegheny monkey flower
<i>Rumex orbiculatus</i>	Great Water Dock
<i>Scutellaria galericulata</i>	Hooded skullcap
<i>Scutellaria lateriflora</i>	Mad dog skullcap
<i>Symphyotrichum lateriflorum</i>	Calico American-aster
Graminoids	
<i>Andropogon gerardii</i>	Big bluestem
<i>Carex lacustris</i>	Lakeside sedge
<i>Carex stricta</i>	Tussock sedge
<i>Panicum virgatum</i>	Switchgrass

## UPPER BROWNING FIELDS TRAILSIDE PLANT LIST

Trees	
<i>Cercis canadensis</i>	Redbud
<i>Quercus spp.</i>	Oaks
Shrubs	
<i>Dieruvilla lonicera</i>	Northern bush-honeysuckle
<i>Hypericum prolificum</i>	Shrubby St. John's-wort
<i>Rosa carolina</i>	Carolina rose
<i>Rosa virginiana</i>	Virginia rose
<i>Rubus allegheniensis</i>	Common blackberry
<i>Rubus odoratus</i>	Purple-flowering raspberry
<i>Rubus pensilvanicus</i>	Pennsylvania blackberry
<i>Salix humilis</i>	Prairie willow (male)
<i>Salix petiolaris</i>	Meadow willow (male)
<i>Spiraea alba</i>	Meadowsweet
<i>Spiraea tomentosa</i>	Steeplebush
<i>Vaccinium angustifolium</i>	Lowbush blueberry
<i>Vaccinium pallidum</i>	Hillside blueberry
Forbs	
<i>Agastache scrophulariifolia</i>	Purple giant hyssop
<i>Asclepias syriaca</i>	Common milkweed
<i>Asclepias tuberosa</i>	Butterfly weed

<i>Baptisia tinctoria</i>	Yellow wild indigo
<i>Cirsium pumilum</i>	Pasture thistle
<i>Eutrochium dubium</i>	Coastal plain Joe-Pye weed
<i>Hypericum ascyron</i>	Great St. John's-wort
<i>Lupinus perennis</i>	Wild lupine
<i>Monarda didyma</i>	Scarlet bee balm
<i>Monarda fistulosa</i>	Wild bergamot
<i>Pedicularis canadensis</i>	Canadian lousewort
<i>Penstemon digitalis</i>	Foxglove beardtongue
<i>Penstemon hirsutus</i>	Northeastern beardtongue
<i>Prunella vulgaris ssp. lanceolata</i>	Common selfheal
<i>Solidago odora</i>	Sweet goldenrod
<i>Solidago speciosa</i>	Showy goldenrod
<i>Symphyotrichum lateriflorum</i>	Calico American-aster
<i>Viola spp.</i>	Violets
<i>Zizia aptera</i>	Heart-leaf golden Alexanders
<i>Zizia aurea</i>	Golden Alexanders

Graminoids	
<i>Andropogon gerardii</i>	Big bluestem
<i>Carex blanda</i>	Common wood sedge
<i>Carex brevior</i>	Plains oval sedge
<i>Panicum virgatum</i>	Switchgrass
<i>Schizachyrium scoparium</i>	Little bluestem

## UPPER BROWNING FIELDS OLD PASTURE SEED MIX

Shrubs	
<i>Spiraea alba</i>	Meadowsweet
<i>Spiraea tomentosa</i>	Steeplebush
Forbs	
<i>Agastache scrophulariifolia</i>	Purple giant hyssop
<i>Asclepias syriaca</i>	Common milkweed
<i>Asclepias tuberosa</i>	Butterfly weed
<i>Baptisia tinctoria</i>	Yellow wild indigo
<i>Cirsium discolor</i>	Pasture thistle
<i>Geranium maculatum</i>	Spotted crane's-bill
<i>Hypericum punctatum</i>	Spotted St. John's-wort
<i>Lupinus perennis</i>	Wild lupine
<i>Monarda fistulosa</i>	Wild bergamot
<i>Pedicularis canadensis</i>	Canadian lousewort
<i>Penstemon digitalis</i>	Foxglove beardtongue
<i>Penstemon hirsutus</i>	Northeastern beardtongue
<i>Prunella vulgaris ssp. lanceolata</i>	Common selfheal
<i>Solidago odora</i>	Sweet goldenrod
<i>Solidago speciosa</i>	Showy goldenrod
<i>Symphyotrichum lateriflorum</i>	Calico American-aster
<i>Zizia aptera</i>	Heart-leaf golden Alexanders
<i>Zizia aurea</i>	Golden Alexanders
Graminoids	
<i>Andropogon gerardii</i>	Big bluestem
<i>Carex blanda</i>	Common wood sedge
<i>Carex brevior</i>	Plains oval sedge
<i>Panicum virgatum</i>	Switchgrass
<i>Schizachyrium scoparium</i>	Little bluestem



# Garden & Lawn Toolkit

## BIRCHES SCHOOL

### THE SITE

The Birches School is situated on a privately owned 3.9-acre parcel near Route 2 in Lincoln. The property is part of the former Wang Family estate and the original colonial home remains an important part of the school's compound. As such, the property still retains a residential quality despite functioning as a modern school. The school is adjacent to several protected properties and abuts a town ball field. It is within close proximity to ecologically significant habitat on several sites, including a large wetland complex that extends from Ricci Farm to a portion of the Cambridge Reservoir Watershed.

Birches is an independent, co-educational Pre-K through 8th grade school with an emphasis on nature-based education. As such, use of the landscape surrounding the school building is an important part of the daily learning activities of students. A relatively new construction which completed renovation in 2018, the school's landscape at the start of the project was still evolving and consisted of turf grass, mulch and cultivars of native plant varieties. A large parking lot envelops the school to the north and northeast; to the southwest there exists a mixed oak and pine-dominated forest with an open understory, which serves as a natural playground for students.

### THE PROJECT

The LLCT and Birches have a long-standing relationship and have worked together on past conservation projects. For the Lincoln Pollinator Action Plan, Birches enthusiastically agreed to develop gardens for at-risk pollinators that could serve as demonstration sites and an outdoor learning space for the school community. After

## EXISTING CONDITIONS

several meetings, it was determined that the areas immediately outside the front of the school, between the school entrance, the side entrance and the parking lot, as well as two large parking lot islands would be ideally suited for such landscape conversion.

Soils on site were compacted and constituted predominantly of fill, with several inches of densely packed mulch in most locations where grass was not planted. Parents, administration and faculty were highly motivated to fund-raise for plants and landscaping materials, in addition to installing the plants.

After sharing the Birches School design during a public presentation by Evan Abramson in early March, Lincoln Land Conservation Trust members and members of the public were invited to purchase planting kits from LLCT which were based on the plants used in the design and recommended by Dr. Gegear. These efforts resulted in nearly 2,000 plants being distributed to 43 households in Lincoln as well as in 55 more households in a dozen other communities. A final version of the design was provided to Birches School parents, LLCT members and members of the public who purchased planting kits in May.







*Above: conceptual rendering of the Birches School landscape design seen from the northwest side of the school facing south by Evan Abramson. Below left: the same location one year prior to planting; below right: location during installation of the final design. The School now contains nearly 6,000 sq.ft of planted space dedicated to at-risk pollinators, as well as a vegetable garden constructed and installed by the Grade 2-3 class. Opposite: volunteers review the design and procedures before planting begins. Photographs by Bryn Gingrich.*



## BRINGING THE DESIGN TO LIFE

In September 2020 nearly 160 volunteers gathered at the school to install several portions of the campus-wide design. Both parking lot islands were planted, as well as a large area on the northwest side of the school. Other areas in the initial design, including large areas of lawn conversion to bee lawn, were postponed due to COVID, as outdoor classrooms had been constructed on those sites.





# Garden & Lawn Toolkit

BIRCHES SCHOOL



FLAGSTONE PATH

LOG CLIMBING  
STRUCTURE

HAMMOCKS

SAND  
PLAY

SCHOOL  
BUILDING

RAIN  
BARRELS

20 FT.





# SITE CONDITIONS

DRY SOILS

FULL SUN

HIGH FOOT TRAFFIC

RESIDENTIAL/DEVELOPED

## LANDSCAPE|INTERACTIONS

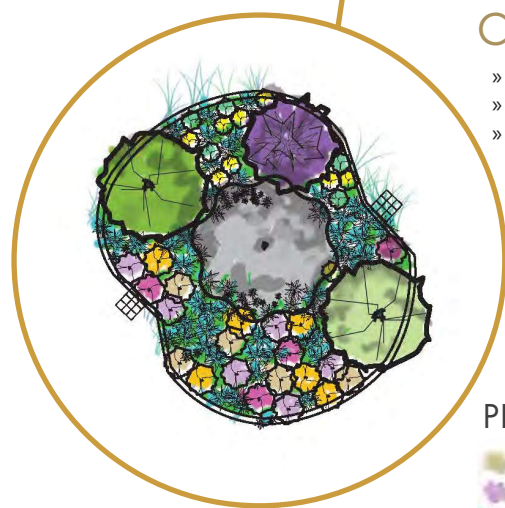
16 Center Street #426  
Northampton, MA 01060  
[landscapeinteractions.com](http://landscapeinteractions.com)







## Area 1



### HABITAT CONDITIONS

- » full sun to part shade
- » medium to wet soils
- » tolerant of snow plowing and harsh environment

### PLANT LIST

- TALL WHITE-ASTER
- COASTAL PLAIN JOE-PYE WEED
- SPOTTED JOE-PYE WEED
- GREAT ST. JOHN'S-WORT
- PURPLE-FLOWERING RASPBERRY
- LITTLE BLUESTEM
- SHINING WILLOW
- MEADOW WILLOW
- AXILLARY GOLDENROD
- ZIG-ZAG GOLDENROD
- (EXISTING RED MAPLE)



## Area 2

### HABITAT CONDITIONS

- » full to part shade
- » dry to medium soils
- » tolerant of snow plowing and harsh environment

### PLANT LIST

- PENNSYLVANIA SEDGE
- CANADIAN LOUSEWORT
- SWITCHGRASS
- COMMON SELFHEAL\*
- LITTLE BLUESTEM
- VIOLET

\*to be sown directly as seed

# Garden & Lawn Toolkit

BIRCHES SCHOOL



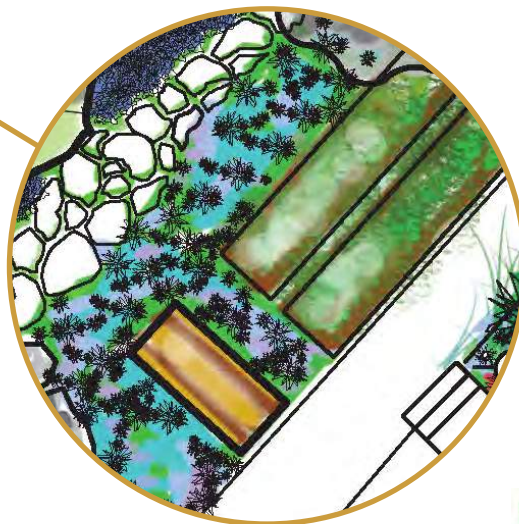
Area 3a

## HABITAT CONDITIONS

- » full sun to part shade
- » dry to medium soils
- » tolerant of snow plowing and harsh environment on exterior edges
- » acidic soils (low pH)

### PLANT LIST

- COMMON MILKWEED
- YELLOW WILD INDIGO
- PASTURE THISTLE
- SHOWY TICK-TREFOIL
- NORTHERN BUSH-HONEYSUCKLE
- SPOTTED ST. JOHN'S-WORT
- NORTHEASTERN BEARDTONGUE
- CAROLINA ROSE
- PRAIRIE WILLOW
- SHINING WILLOW
- MEADOW WILLOW
- LITTLE BLUESTEM
- AXILLARY GOLDENROD
- ZIG-ZAG GOLDENROD
- EARLY GOLDENROD
- WHITE MEADOWSWEET
- HILLSIDE BLUEBERRY
- (EXISTING BIRCH)



Area 3b

## HABITAT CONDITIONS

- » full sun to part shade
- » dry to medium soils
- » tolerant of heavy foot traffic and mowing

### PLANT LIST

- PENNSYLVANIA SEDGE
- COMMON SELFHEAL\*
- LITTLE BLUESTEM\*
- VIOLET

\*to be sown directly as seed





## Area 4



### HABITAT CONDITIONS

- » full to part shade
- » dry to medium soils
- » tolerant of foot traffic and occasional mowing

#### PLANT LIST

- PENNSYLVANIA SEDGE
- CANADIAN LOUSEWORT\*
- COMMON SELFHEAL\*
- AXILLARY GOLDENROD
- ZIG-ZAG GOLDENROD

\*to be sown directly as seed

## Area 5



### HABITAT CONDITIONS

- » full to part shade
- » dry to medium soils
- » high growing (visual screen)

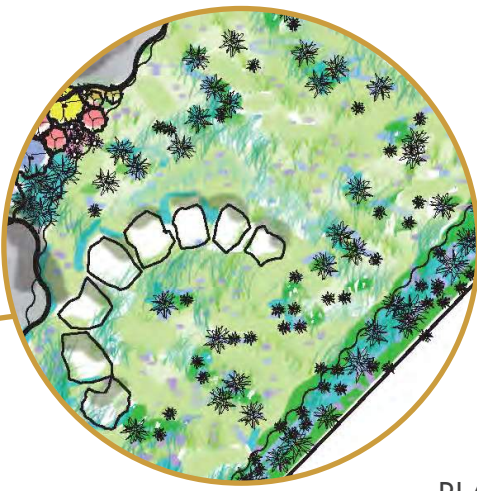
#### PLANT LIST

- BIG BLUESTEM
- PENNSYLVANIA SEDGE
- CANADIAN LOUSEWORT\*
- COMMON SELFHEAL\*
- LITTLE BLUESTEM
- AXILLARY GOLDENROD
- ZIG-ZAG GOLDENROD
- (EXISTING BIRCH)

\*to be sown directly as seed

# Garden & Lawn Toolkit

BIRCHES SCHOOL








## Area 6

### HABITAT CONDITIONS

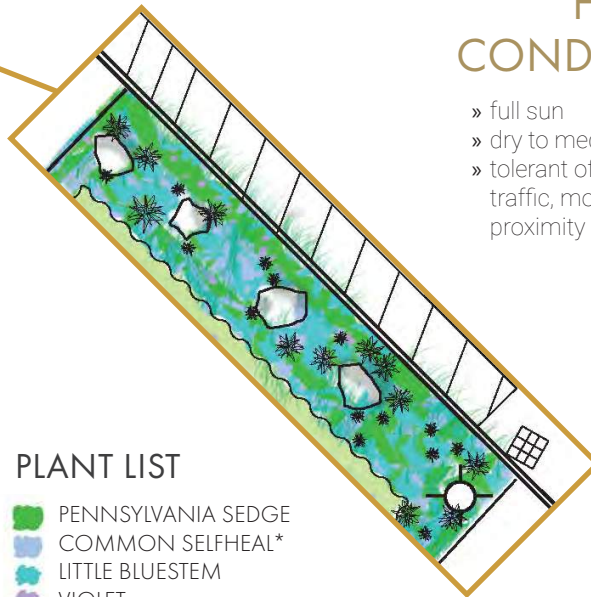
- » full sun to part shade
- » dry to medium soils
- » tolerant of heavy foot traffic and mowing

### PLANT LIST

-  PENNSYLVANIA SEDGE
-  COMMON SELFHEAL\*
-  LITTLE BLUESTEM\*
-  VIOLET
-  (EXISTING TURF)

*\*to be sown directly as seed*





## Area 7



### HABITAT CONDITIONS

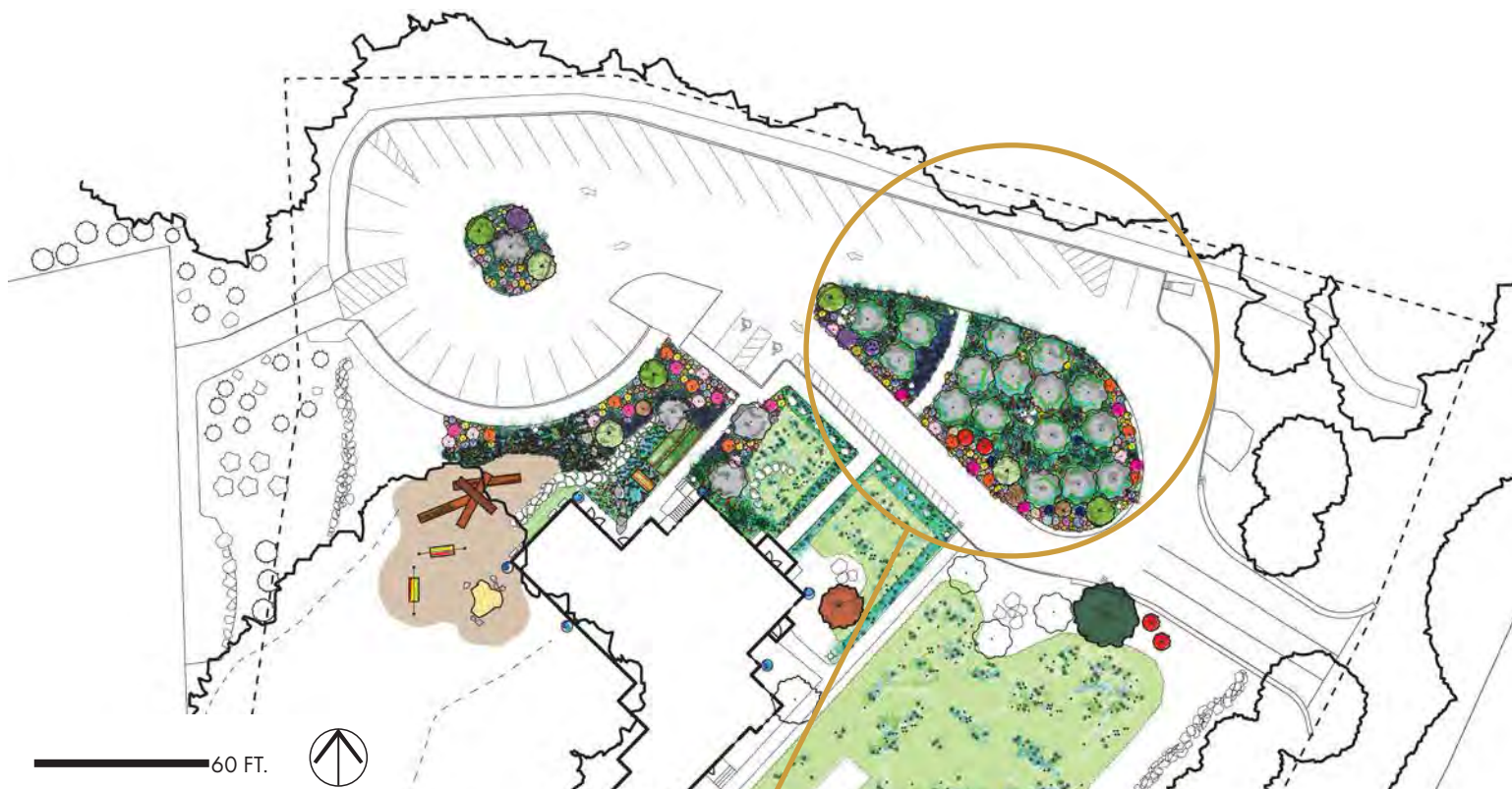
- » full sun
- » dry to medium soils
- » tolerant of heavy foot traffic, mowing and proximity to snow plowing

### PLANT LIST

-  PENNSYLVANIA SEDGE
-  COMMON SELFHEAL\*
-  LITTLE BLUESTEM
-  VIOLET

*\*to be sown directly as seed*





## Area 8

### HABITAT CONDITIONS

- » full sun to part shade
- » medium to wet soils
- » tolerant of snow plowing and harsh environment on exterior edges
- » acidic soils (low pH)

### PLANT LIST

- BIG BLUESTEM
- COMMON MILKWEED
- YELLOW WILD INDIGO
- PENNSYLVANIA SEDGE
- PASTURE THISTLE
- SHOWY TICK-TREFOIL
- NORTHERN BUSH HONEYSUCKLE
- TALL WHITE-ASTER
- COASTAL PLAIN JOE-PYE WEED
- SPOTTED JOE-PYE WEED
- GREAT ST. JOHN'S-WORT
- SPOTTED ST. JOHN'S-WORT
- CANADIAN LOUSEWORT
- SWITCHGRASS
- NORTHEASTERN BEARDTONGUE
- BEACH PLUM
- CAROLINA ROSE
- NORTHERN BLACKBERRY
- PURPLE-FLOWERING RASPBERRY
- LITTLE BLUESTEM
- PRAIRIE WILLOW
- SHINING WILLOW
- MEADOW WILLOW
- EARLY GOLDENROD
- DOWNY GOLDENROD
- SEASIDE GOLDENROD
- WHITE MEADOWSWEET
- HILLSIDE BLUEBERRY
- (EXISTING BIRCH)



# Garden & Lawn Toolkit

BIRCHES SCHOOL



*Birches School student planting parking lot island Design Area 8. Photograph by Bryn Gingrich.*