FOREST STEWARDSHIP PLAN

for

Waterford Park
C.O. Doug and Marilyn Reedy
1602 Rock Creek Drive
Frederick, MD 21702

Location
On the south side of Rock Creek Drive Drive,
Between Baughman's Lane and Route 15

583 - 683
Maryland Grid

in

Frederick County

on

9.5 acres forest
8.5 acres of field

Prepared by

Michael Kay, Project Manager

August, 2005

Stewardship
FOREST

Maryland
Department of
Natural Resources

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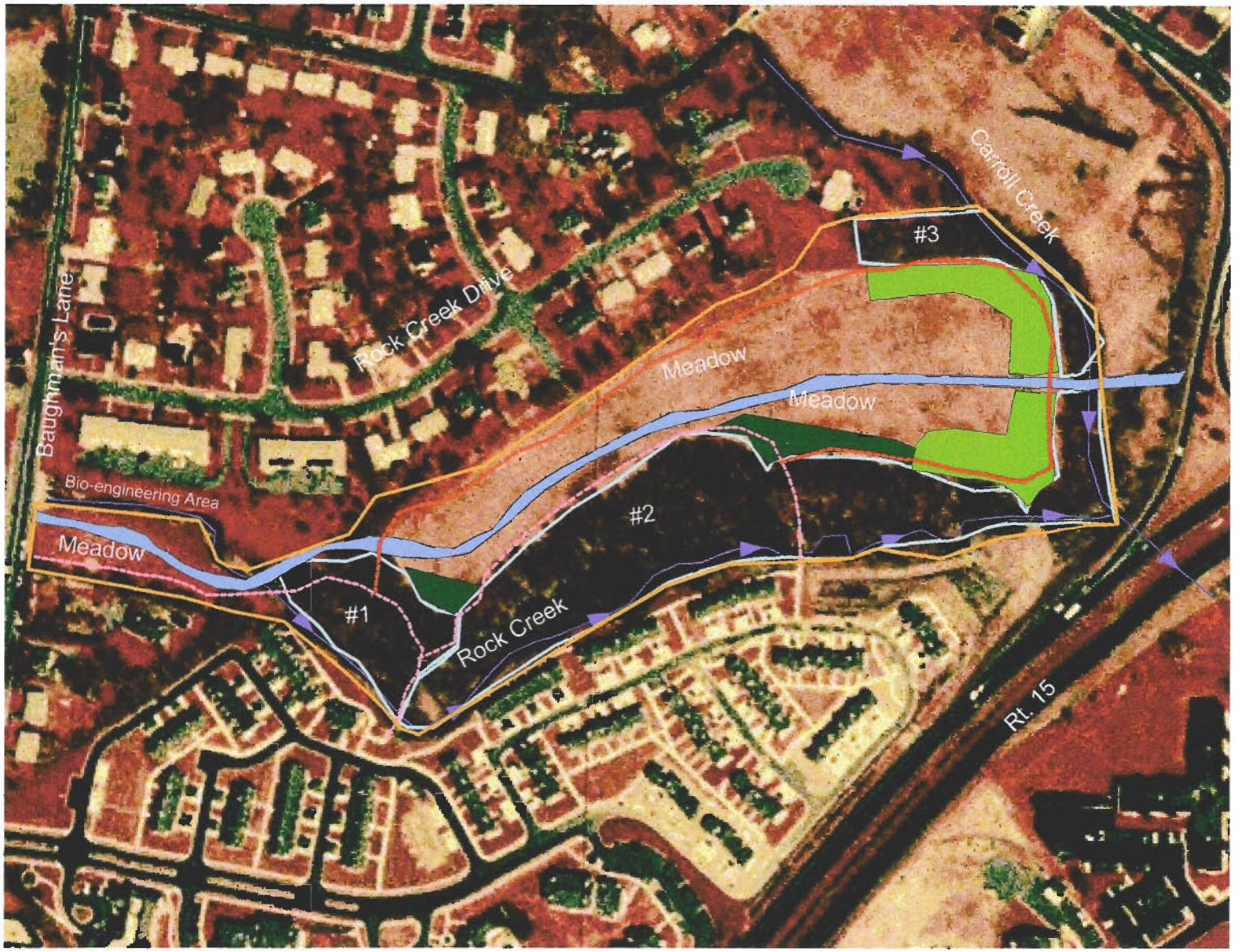
Waterford Park



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W E
S

- Property boundary
- Proposed walkway
- Walkway
- Tree.plantings
- Reforestation potential
- Sewer line
- Forest boundary
- Stream

200 0 200 400 Feet

Stewardship Map
Prepared by: M. Kay
Date: 7-30-05
Scale: 1" = 250'
Acres: 18.0

GENERAL COMMENTS

Property Description

Waterford Park is a section of Frederick City's Greenways system and is located on the south side of Rock Creek Drive between Baughman's Lane to the west and Route 15 to the east. This section of the park consists of 8.5 acres of fields, and 9.5 acres of forest. A paved walking trail meanders through the forest on the southern edge of the tract. This walkway is part of the extensive system throughout the surrounding area. A new section of sewer line was recently constructed that bisects the central portion of the park. Besides the trail and sewer line cleaning, not much development has occurred and the property is being maintained in a natural condition. Rock Creek waterway flows along the southern boundary of the park and Carroll Creek bisects the northeastern section, both streams converge on the eastern most corner of the property.

As stated previously Waterford Park is part of the Frederick City Greenways system. As part of this initiative, sections of this park have witnessed some reforestation; and, some stream restoration work was completed along Rock Creek. An innovative bioengineering venture was also completed in 1995 that helped stabilize erosive sections of Rock Creek next to Baughman's Lane. In addition, individual trees were planted adjacent to the hiking trail to provide overhead shade to these walkways. Adjacent properties along the greenways have also been reforested as part of the overall initiative.

Area residents and Frederick City Officials have been discussing various environmental, aesthetic, and recreational enhancements that can be made in the park. The prevailing notion is to maintain the area in a natural condition devoid of any intensive recreational facilities. These stakeholders wish to have an assessment made of the forests and field areas in order to formulate a working plan for the property. The following plan will make such an assessment and offer suggestions on how to groom the property to achieve the desired outcomes. Many of these suggestions will need to be fine tuned following community input and determination of available funding and resources.

The Duffield and Frankstown soils are associated with the upland areas. These soils are deep, well drained soils that developed from impure limestone. These soils are associated with the Frederick Valley. They are fertile, productive, and easy to manage. Rowland soils are associated with the low-lying areas next to the stream channel. Rowland soils are deep, moderately well drained floodplain soils. Rowland soils are composed of fine material that developed from fairly recent deposition. Rowland soils are chiefly associated with fairly narrow floodplains in conjunction with Bermudian and Bowmanville soils. These areas are occasionally flooded.

Objectives

1) Primary - Soil and Water Conservation
2) Secondary – Aesthetics, Wildlife

Community members wish to enhance the environmental and aesthetic benefits of this park by developing and sustaining, a low maintenance natural ecosystem. Low impact recreational activities, nature observation, and education are other aspects of this endeavor.

Trees arch over the walkway in Waterford Park.

Forests

Forests cover about one half of the acreage on this property and are primarily associated with the stream corridors. The woodland can be divided into 3 separate stands based on the mixture of species present and developmental stage of the community. The older forests having the greatest species diversity, most complex development, and fewest amount of invasive exotic plants. All of the forests contain species that can tolerate damp to seasonally wet conditions throughout the growing season. A name given to this forest association is a Northern Floodplain Forest or "Riparian Forest Community". The difference in each stand is related to the amount of time the forest has been in place. The more time a forest has to develop the greater the opportunity for succession to occur. Forest succession consists of a series of changes that occur whereby fast growing, short-lived species initially occupy a site; and, are gradually replaced with longer lived, slower growing trees that can develop in the shady conditions of the understory. On this site such pioneer species as black cherry, black locust, elm, ailanthus, black willow, red maple, black walnut, green ash and mulberry were the first species to colonize the site. These trees establish a canopy that permits older growth trees like bitternut hickory, beech, hackberry, and boxelder to seed into the understory and begin their development. The older growth individuals eventually make their way to the canopy joining the red maple, green ash, sycamore, and black walnut to develop a older forest community. In time, a mature "climax" forest community will develop that will not change much in composition unless major disturbances occur. No portion of this forest cover has attained a climax condition at present.

The width of forest cover plays a large role in the environmental benefits of a forest. As a rule of thumb, it is recognized that 35' width of forest is necessary to filter most sediments and nutrients from a water source. As such, this is the minimum size recommended for a "riparian forest buffer". A forest needs to be 100' in width to be most effective for most wildlife species. This width is necessary to negate the effects of "edge" which are transitional zones between forests and other habitat types. Finally, the minimum width necessary to create habitat for forest interior dwelling animals is 300' feet in width. Most of the forest in stands 1 & 2 meet the criteria of being 100' in width but very little of the forest fits the criteria as forest interior habitat. Most of the forest in stand three functions as an adequate buffer but very little has much value for wildlife.

Exotic species that aggressively invade our forest communities can be very problematic. These "invasive exotic" plants can overrun an ecosystem and disrupt the natural processes of forest succession resulting in a stagnation of forest development. Retarded development may cause degeneration of forests when the early successional species begin to succumb and nothing but invasives are present to replace them. In addition, this lack of understory development will reduce the habitat necessary for forest dwelling wildlife. Most of these plants have little value for wildlife because they evolved in foreign lands; and, they are not a desired food source for our native animals. Finally, invasive species are not beneficial for stream ecosystems because the small animals living in the stream cannot utilize the "detritus" i.e. (leaves, branches, fruit etc.) of the nonnative so the food quality is reduced and these "macro and micro-invertebrates" disappear. The reduction of invertebrates disrupts the balance of the stream which affects the ecosystem as a whole. The best way to help ensure the overall health of our open areas is to maintain a natural balance of native plants throughout the ecosystem by preventing invasive exotics from taking over.

Invasive plants, like this ailanthus tree, are scattered around the forest being more pronounced in the younger stand and near the wood's edge.

Forest Stand #1: Forest stand one is located in the southwest corner of the property and is 2 acres in size with a fairly uniform width of 200 feet. This is the oldest growth component on the property with most trees being 80 years old. Most of the shorter lived trees have exited the stand leaving a mature component of black walnut, green ash, red maple, bitternut hickory, boxelder, hackberry, and sycamore. Stand one has the most complex understory development, having numerous layers of subcanopy growth. Having this "structural diversity" makes the forest more appealing to forest dwelling birds since they tend to occupy distinct levels of canopy. Much of the subcanopy vegetation is composed of those native species one would expect in a riparian forest community. Species such as boxelder, hackberry, rock elm, bitternut hickory, black haw, spicebush, hawthorne, green-headed sunflower, jewelweed, grapevine, and sensitive fern are fairly common throughout the stand. Some invasive exotics have colonized this stand particularly the outer sections adjacent to the open areas. The exotic bush honeysuckle and periwinkle were the most well established exotics in this stand.

Stand #1 contains the oldest growth forest on the property.

Forest Stand #2: Forest stand two is the largest area of forest (5.5 acres) occupying the southern section of the property. The width of this forest ranges from 50' to 250' in size. Most of the trees in this stand are 60 years old although there are some older individuals near the stream and younger trees adjacent to the fields. Stand two is in its intermediate stages of development containing some early successional species along with the older growth component. Such trees as black walnut, black cherry, green ash, red maple, mulberry, black willow, honey locust, rock elm, sycamore, and silver maple are represented in the canopy. Stand two has less structural diversity and more invasive exotics relative to stand one. Some of the native understory species includes, elm, hackberry, bitternut hickory, boxelder, spicebush, silky dogwood, crabapple, jewelweed, reed canary grass, and sensitive fern. Invasive species are widely distributed in this forest. Some of the most common are bush honeysuckle, ailanthus, multiflora rose, Japanese stilt grass, English ivy, and garlic mustard. Many of the elm trees in the overstory are stricken with or have died from Dutch elm disease.

Area #2 is the largest forest stand on the property.

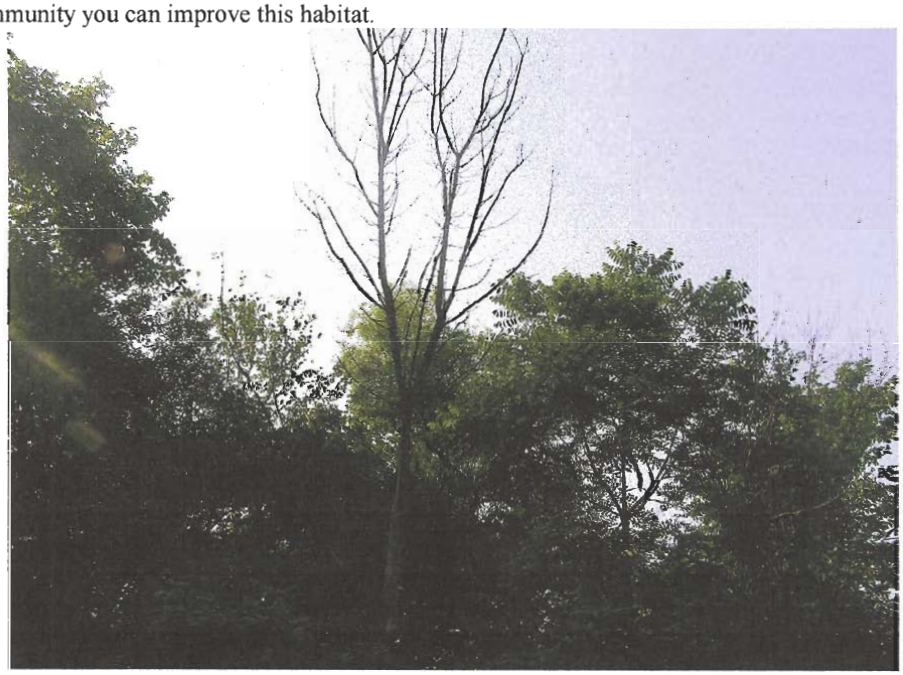
Forest Stand #3: Forest stand three is one acre in size and it surrounds that portion of Carroll Creek, which flows along the northern border of the park. This forest exists in a fairly narrow band ranging between 30' and 100' in width. This tree grouping is of recent origin with most trees being 30 years of age. This stand is almost entirely composed of early successional species and has the largest amount of invasive plants. The abundance of exotics having much to do with the recent origin of the stand and the relatively narrow width of the forest such that much of it is affected by the edge effect. Overstory trees identified in this area include, black cherry, osage orange, red maple, rock elm, black locust, ailanthus, Norway maple, black willow, and red maple. Species noted in the understory include green ash, red maple, sycamore, elm, bush honeysuckle, multiflora rose, spicebush, English ivy, garlic mustard, grasses, and poison ivy.

Stand #3 is relatively young and not very large in size.

New Tree Plantings: Recent sapling-sized tree plantings were inserted next to the existing woodland. These plantings were probably the result of reforestation requirements following the recent sewer line construction. Many of the trees are dying on the western most planting adjacent to stand #1. The trees that are dying seem to be suffering the effects of prolonged waterlogged conditions. The river birch and green ash growing in this area look fine while the cherry, bur oak, mountain ash, and tulip poplar are declining. Those species in decline are not suited for overly wet conditions and it appears that this depressed area would tend to retain water. The planting on the eastern section of the tract lies on higher ground and most of the saplings appear to be in good health.

Recent tree plantings were conducted in the park.

Wildlife: The forest and field covered areas provide very good habitat for the animals that prefer riparian communities. You can maintain and enhance this habitat by retaining dead and hollow trees where they won't pose a hazard to the general public and leave downed woody material on the forest floor. This "coarse woody debris" provides excellent cover for many animals and functions to recycle nutrients in the system as it decomposes. Providing a complex understory dominated by native species will enhance the value for many species of birds. This section of forest can serve as an important flyway for many species of neotropical birds and by extending the width of the community you can improve this habitat.



Many of the elm trees have died from Dutch elm disease.

Recommendations for Forests and New Tree Plantings:

1. **Control invasive exotic plants. The most problematic species on this park include, ailanthus, bush honeysuckle, multiflora rose, Norway maple, English ivy, and periwinkle.**
2. **Reforest the eastern section of the property adjacent to Rt. 15 and Carroll Creek to create a 100' minimum band of forest. This would comprise a 2.0 acre area. These trees will enhance the local environment and create an aesthetic screen and noise buffer from the heavily traveled Rt. 15 corridor. Plant trees suited for seasonally wet conditions like swamp white oak, pin oak, persimmon, sycamore, red maple, river birch, green ash, hawthorne, black walnut, bitternut hickory, catalpa, and beech.**
3. **Replace dead and dying trees in the new plantations with green ash, hawthorne, sycamore, pin oak, bitternut hickory, and swamp white oak.**
4. **Prune back trees that are growing into the walking trail.**

5. **Consider planting a few rows of sapling- sized trees along both sides of the walking trail to develop an overhead canopy.**
6. **Remove vines growing on the desirable understory trees and shrubs to promote their development.**
7. **Retain the dead standing snags (Unless they pose a hazard to the walkway.) and downed woody material for the benefits they impart for wildlife and cycling of nutrients in the forest.**
8. **Underplant native trees and shrubs to enhance species diversity. Such species as beech, black haw, arrow wood viburnum, American hornbeam, bladdernut, and swamp white oak would be well suited for this application.**

Streams

The entirety of this park lies in the floodplain of Rock and Carroll Creeks. The forest surrounding these streams does much to enhance these riparian ecosystems. They stabilize the banks, filter out sediment, nutrients and pollutants from entering the stream, help control flooding, and create the cool, moist conditions necessary for a healthy riparian ecosystem. An innovative bio-engineering project was completed on the site almost 10 years ago, which has been very effective for controlling bank erosion along Rock Creek. I noticed some stream bank degradation on the eastern section where Rock and Carroll Creeks converge. The banks were undercutting and some trees had fallen over. The clearing made for the sewer line removed a 60' section of trees along the bank this will increase bank erosion. I also noticed that many of the willow planted at the bioengineering site have become quite tall and spindly without a corresponding increase in diameter growth along the trunk. This could increase the chances of storm damage if they are subjected to strong winds.

Most of the vegetation was removed from this stream bank during the sewer line construction.

Recommendations for Streams

1. **See reforestation recommendations listed above.**
2. **Consider having a stream corridor assessment made along the entire length of stream. Initiate stream restoration recommendations made during this assessment.**
3. **Stabilize the stream bank associated with the recent clearing using vegetation that would be permitted to be planted in this area.**
4. **Consider reducing the height of the willow trees in the bio-engineering area by conducting crown reduction pruning. Reducing the height will make the plants more wind firm and enhance the view for the residents living in the adjacent property.**

A view of the bio-engineering project completed in 1995.

Open Field

Much of the open areas were recently disturbed by the sewer line construction. The result of this construction is that most sections contain a newly planted grass cover along with herbaceous vegetation that seeded in. Some areas have fractured fragments of the underlying bedrock scattered throughout the soil profile extending to the surface. These rocky areas have little vegetation associated with them. The prevailing sentiment is that these open areas should remain in tact for aesthetics and to supply habitat for field dwelling wildlife. As such,

developing and maintaining a native grassy/wildflower meadow is recommended in the open areas. The development of such a habitat will reduce the amount of mowing and other maintenance required and prevent the destruction of ground nesting bird clutches during the nesting season. For more information on the establishment and culture of native meadows please refer to the contact information enclosed with this plan.

Large growing trees planted near the walkway will someday provide a shady canopy.

Recommendations for Open Fields

1. **Develop and maintain native grass/wildflower meadow.**
2. **Consider extending the walkway around the field so it forms a loop. (See Map for location.) Line the new walkway with trees to provide shade.**
3. **Plant clumps of low growing trees and shrubs in the field to provide some diversity. Such species as crabapple, plum, redbud, hawthorne, serviceberry, and maple would be well suited for this application.**

Other Recommendations

1. Consider placing interpretive/education signs along the pathway to describe such things as the greenways initiative, forest ecology, riparian forest buffers, stream ecology, grassland ecology, items of historical significance, geology, hydrology, wildlife etc.

A native wildflower meadow can be established in the field.

Contacts

1. Kay Schultz : Overall Coordination of Resources 301-694-1741
2. Forest Service (Mike Kay) Tree Planting/Maintenance 301-473-8417
3. Fred Co. Weed Control: (Pete Rupp) 301-694-1586
4. MD Coop. Extension: (Nancy Adamson) Horticulture 301-694-1596
5. Wildlife Division: (Donnie Rohrback) Wildlife/ Meadow Establishment 301-842-3355

Trees along the path can be "elevated" so they don't interfere with the walkway and a line of trees can be planted on the other side so that a canopied archway is established over time.

MANAGEMENT PRACTICE SCHEDULE

COMPLETION DATE	PRACTICE	STAND	Acres
Fall 2005:	Meet with City of Frederick Officials, Residents to discuss plan. Fine tune plan.	All	18
Winter 2006:	Seek out funding sources, prioritize practices, develop long term schedule .	All	18
2006 - 2015	Complete recommended practices.		

To provide you further assistance and advice in carrying out the recommended practices, please contact Mike Kay, Forester.

Telephone Numbers

Wildflower Farm

"The Wildflower Source"

A Guide to Meadow Establishment

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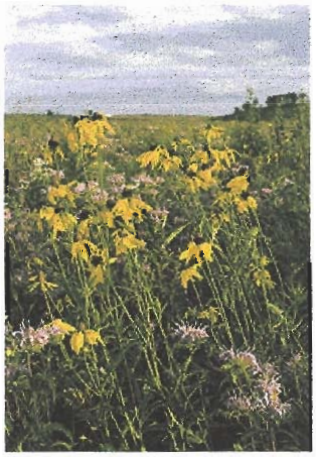
Successful Wildflower meadows require attention to your site conditions and adherence to the following procedures.

Site Selection

Wildflower meadows require sunny, open sites with good air circulation. A minimum of one half day of full sun is necessary for most wildflowers to thrive and bloom. Any sunny, level site is suitable for a wildflower meadow. On hills, south-facing slopes receive more sun than level ground, are hotter and drier, and thus well-suited to prairie meadows. West-facing slopes are subject to dessication from prevailing westerly winds and the hot afternoon sun, and are also good sites for meadows. East-facing slopes are good candidates as well. Steep north-facing slopes are protected from the sun, stay cooler and moister, and are usually not well-suited to meadows. Wildflowers and native grasses will also do well when planted on the east, west and south sides of a building in full sun. The north side is too shady and is better suited to ferns and woodland wildflowers.

Be careful of aggressive, weedy plants located adjacent to your future meadow. Some of these



Beware of attempting to establish a wildflower meadow on sites that have a long history of weedy vegetation. Extended site preparation will be required to kill off existing weeds growing on the site and to also reduce the weed seeds that are harboured in the soil. This typically requires one to two full years to accomplish, using Roundup herbicide, cultivation, or a combination of the two. Please refer to the section on Site Preparation

Tallgrass and Shortgrass Meadows

You may want to plant some areas of both tall and short meadow to create two different landscape effects and habitat types. Place the tallgrass meadow to the back, and shortgrass meadow in the front to create a layered effect. Beware that if you plant a tallgrass meadow to the west or north of your shortgrass meadow, the seeds of the taller plants may be blown into the short prairie to the east and south. Eventually your shortgrass meadow may become a tallgrass meadow, as the invading seeds from the tall plants grow and mature.

For a prominent display of wildflowers, plant them with the shorter bunchgrasses, such as little bluestem, prairie dropseed, and side oats grama. These low-growing, clump-forming grasses allow the flowers to show off better than when planted with the taller prairie grasses. Large, robust flowers should be planted with the tall grasses.

Beware of planting only one type of flower in an area.

plants can creep into your meadow by means of underground rhizomes, while others have seeds that blow in on the wind. Problem neighbors include quackgrass, smooth bromegrass, johnsongrass, Canada goldenrod, tall goldenrod, Canada thistle, grey dogwood, sumac, buckthorn, Tatarian and Japanese honeysuckle, and multiflora rose, to name a few.

If there is an oldfield next to your site, expect some incursion by unwanted visitors, some of whom may attempt to make your prairie their home. To prevent this problem, maintain a mowed strip 5 - 10 feet wide between the meadow and the oldfield, and if possible, mow the adjacent fields every summer in late July, before the plants go to seed.

The Eastern Tallgrass Prairie once covered the midcontinent from central Kansas east into Ontario, from Texas north to Manitoba. On the richer, moister soils grew many taller plants. On poorer, drier soils, shorter plants predominated. Today, we use combinations of these plants to create the landscape effects we desire. Short meadows are a good choice for around homes and buildings. Tall meadows are best when planted on larger acreages or in background situations. Include trails through your meadow so you can enjoy its different moods and intricacies up close.

Most flowers do not have sufficiently thick root systems to squeeze out weeds by themselves. They require help from other flowers and grasses. Tap-rooted flowers seem to grow better and produce more flowers when growing together with clump grasses. The complementary root systems of the wildflowers and grasses work together to squeeze out weeds. By occupying different parts of the soil, the plants co-exist with one another as a tight-knit plant community. The inclusion of a wide variety of native flowers and grasses is the secret to creating low-maintenance flower gardens that require little chemical inputs and less work than typical flower beds. By understanding plant behavior and working with nature, we can let the plants do most of the work for us.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