**Project Overview**

Williamstown Township is a suburban/rural community with a strong and growing commitment to natural resource conservation and environmental stewardship. The Township has a 132-acre free Park between Grand River Road and the Red Cedar River. The extensively used Park attracts residents of the township and surrounding communities to participate in its active and passive recreation. The south-eastern and northern parts of the park are developed for youth sports, family recreation and trails in a prairie bordered by the Red Cedar River. A 12-acre south-western part is to be prepared, designed, and maintained as a sustainable and diverse demonstration forest with significant recreational values. At least 10 genera of Michigan native trees, more adapted to the expected increase in extreme weather events as Michigan becomes warmer and wetter, will be planted in the forest. Both the Township Parks and Recreation Committee and the newly established Environmental Committees are committed to alternative ways to develop the Park to advance both their recreational and environmental objectives. The Parks and Recreation Master Plan has guided the development of the park for over 25 years. The Environmental Committee is currently developing an environmental action plan. Although environmental justice scores are not available for townships, access to the Park and the proposed educational events will be free and equally available to residents and non-residents.

***Project Description***

1. Develop and maintain a 12-acre diverse forest in the Park with the help of adult and youth volunteers from several local organizations. The DNR ‘Tree Planting Guidelines’ will be followed.
2. Provide educational opportunities through interpretive signage in the Park and at least three workshops to increase the knowledge of our residents of the value of forests, the reasons for increasing the tree canopy to 40%, and the proper care of trees in the Park, residential landscaping and farm land.

***Project Motivation***

This grant offers a unique opportunity to address our growing environmental concerns related to climate change, the need to increase resilience and to reduce our carbon footprint. The township government and residents are resolved to increase the tree cover with native trees adapted to a warmer and wetter climate. Our project includes developing a resilient Park forest and provide educational workshops to: (1) demonstrate how planting and caring for different species of trees can contribute to climate adaption, increase community resilience and reduce the Township’s carbon footprint, and (2) enhance understanding of the different value(s) of trees as part of landscapes and farm production.

***Project Challenges and Priorities***

As residential development takes place in Williamstown Township on previously farmed or forested land, we have a unique opportunity to advocate for enhanced use of trees in landscaping and retention of forested land. We will also conduct a forest planting and care workshop for farmers interested in converting agricultural fields to forests and/or improving the productivity of existing forested land. The 12-acre community park site, which was previously farmed, will serve as a location for the practicum component of workshops. Workshops will cover planting objectives/purposes, site and species selection, source of plant materials, site preparation, and care of trees. We will involve experts including existing and retired MSU natural resource professors, retired DNR interpretive specialists, a landscape architect/nursery owner, as well as landowners who have transitioned farm fields to tree covered parcels.

**Project Outcome and Impacts**

Major outcomes of the project will occur over many years. They are: (1) establishing a Park Forest to sequester and store carbon and provide passive recreational and educational opportunities, (2) increasing use of native trees in landscaping, (3) engaging youth in tree planting projects and (4) increasing the quantity, quality, and productivity of forested land.

***Beneficiaries of the new Park Forest and educational programing***

Many persons among both current and future generations, not limited to township residents, will benefit from visiting the forest when it is established and from the demonstration and educational workshops. the carbon storage The parks aesthetics and recreational values will be enhanced. The forest will be inviting and well suited for passive recreational (e.g., hiking, birding). It has been shown that trees promote social interaction and a sense of community. The demonstrations, interpretation and educational programs will encourage persons to support and engage in tree planting on public land and their own property. This will make the community a more appealing place to live. More owners of farmland may engage in the production of trees.

 ***Connection and Contribution to Michigan Forest Action Plan***

The purpose and plan of the Williamstown Community Forest is consistent with many of the priorities identified in the Action Plan. (1) We will be planting to create a species diverse forest. (2) We will increase forest canopy and educate visitors about the importance of forest canopies. (3) We are planting to sequester carbon which according to the Action Plan is most significant for 30-60 years old trees and will utilize this as an opportunity to educate about the importance of reducing carbon released into the atmosphere. (4) We will be establishing a young forest which are according to available data declining statewide. (5) We are planting species that are better able to survive climate extremes. (6) We will employ and demonstrate prescribed burns in some areas of the forest to control invasive species and achieve forest plan objectives. This will be coordinated with the prescribed burns conducted in the Park’s prairie.

**Project Implementation and Timeline**

 We have completed the preliminary site analysis including soil sample, drainage, wind and sun exposure, animal species (deer) and vegetation inventory in the planting location. This information has been used to select the species and plan the post-planting care and maintenance methods. There are invasive woody species on site include: multiflora rosa, common buckthorn,  honeysuckle complex (a hybridized mix of non-native species and autumn olive*.*  These will be removed during site preparation, except possibly a single example of each will be identified by signage and used for educational purposes.

With the assistance of our consultant, we have selected native Michigan tree species that are compatible with the site characteristics. A list of the selected species and a map of their general location in the park are shown in Appendix 2. Where possible Michigan genotype will be obtained to increase resilience. Existing trees, such as silky dogwood and red cedar will be incorporated into the planting. Not all trees are easily found in the nurseries and therefore in addition to bareroot plants, some will in containers, and some may need to be grown from seed. Alternative species are listed in case some selected speciesare unavailable next spring.

 **Fall 2020:** After the grant begins, our consultant will prepare an architectural design of the forest to meet the educational and recreational goals of the forest and the space requirements of the trees. The location of the forest begins about 100’ north of Grand River Road to insure there will be no interference with utility.

The site assessment identified invasive woody species on site including multiflora rosa, *Rosa multiflora*; common buckthorn, *Rhamnus cathartica*; honeysuckle complex (a hybridized mix of non-native species) *Lonicera spp.*; and autumn olive, *Elaeagnus umbellate.* They will be removed as part of the preparation.  Where possible, a single example of each invasive species will be retained, identified by signage and used to educate visitors in recognizing and effectively eliminate them.

**Winter and Early Spring 2021:** Purchasing will occur in the winter to ensure trees will be delivered in the spring. Late winter or early spring the field will be mowed. When the growing season begins, Township staff will mark where trees are to be placed in the Park. A few days before planting a herbicide will be used create a saucer around the tree locations.

**Spring 2021:** Township staff and volunteers will plant the trees as indicated in the DNR document ‘Tree planting diagram’ (Appendix 1). To protect the trees from deer, trees will be caged with chicken wire at least four feet tall with at least four heavy bamboo stakes. Cages will be removed after 3 to 5 years. Deer damage will be monitored and if necessary protective cages will be restored.

**Spring, Summer and Fall 2021(for at lease three years):** As indicated in the DNR document ‘Tree Maintenance Guidelines’ adequate maintenance during the first three years is critical for the survival of the trees. Rainfall will be monitored and weekly supplemental water will be provided. Periodic inspections by an entomologist and a forest manager will be conducted several times each year for at least five years to identify any emerging insect and disease problems. Regular care will include controlling weeds, mulching, repairing or replacing damaged cages, and pruning trees, if necessary, to maintain proper tree form.

 ***Demonstration and Education Program***

 ***Interpretive Signage***

**Winter and Summer:** Interpretive signs with QR codes describing the purpose and value of the forest plantings will be placed at the forest trail entrance and at strategic locations on the trails (e.g., species clusters, examples of invasive species). Trail signs with QR codes will provide additional information about the tree characteristics, planting and care, plus wildlife utilization of the forest. They will be designed in the winter and placed in the summer.

***Seminars and Demonstrations***

**Fall, 2021:** Elementary age children will have an opportunity to plant acorns in a Township plant bed. They will be able to see the trees grow during 2022.

**Spring:** Proper planting techniques will be demonstrated to residents before volunteers begin planting trees. Planning for three educational seminars available to residents and non-residents will be completed.

**Summer:** Three seminars will be presented. One on the value of trees and how different species of trees can: (1) maintain and enhance natural processes (e.g., rainfall interception) and contribute to climate adaption and (2) the value of native tree species when developing residential landscapes. The second seminar will focus on the environmental and economic costs of invasive species and methods to controlled/eliminated them. Another session will focus on the practical aspects of tree planning including: (1) determine the type of tree species appropriate for your property and goals (2) cost, (3) supply sources, (4) planting methods and (5) maintenance.

The Township will maintain a photographic and video history of the site preparation, tree planting, after planting care and benchmarks (e.g., survival rate) of the relative success of the plantings and make this available on-line with supporting reference materials, contact information for various experts and reference materials.

**Key Individuals and Organizations**

**Wanda Bloomquist**, Williamstown Township Supervisor, is Project manager and contact person.

**Laska Creagh**, President Elect of Williamston Sunrise Rotary will Coordinate Rotary’s volunteer effort in developing the forest and educational programs.

**Earl Wolf,** retired DNR sign developer and Rotarian, will design the interpretive signs for the forest.

**Ed Mahoney, Ph.D**. Professor MSU Department of Community Sustainability and Environmental Committee member will coordinate the educational programs.

**Jim Flore**, retired MSU (dept?), and member of the Township Planning Commission and **Jim Miller, Ph.D.** retired MSU entomologist, will provide technical assistance in tree maintenance and will direct volunteer activity and will be contributors to the Educational programs. Jim Flore and Jim Miller are Environmental Committee members.

**Jim** **Conroy**, Rotary Liaison with Williamston Scout Troup #......, . will coordinate the Scouts’ participation in the tree planting project.

**Janet Eyster, PhD**, Township Trustee and chair of the Environmental Committee and **Mark Steinberg**, Township Trustee and chair of the Parks and Recreation Committee, will be responsible for on-going coordination between the work of these committees and the activities of the project, including selecting trees and purchasing trees and all other materials.

**Bill Schneider,** Owner of Wildtypes Plant Nursery, is the consultant who will prepare theforest architecturaldesignand consult on the care of the forest.

**Sharon LaPointe, Attn.**, Environmental Committee member is completing the Environmental Action Plan

**Williamston Sunrise Rotary Club** has agreed to assist with the planting and care of the trees on a volunteer basis.

**Post Project**

 Maintenance of the forest will be a high priority of the Township, particularly in the first 3 to 5 years. For several years trees will be added to the forest to replace trees that died. The forest, its signage and trails become an increasing asset for recreation and education in the Park as the trees mature. The Environmental Committee will utilize the forest as a setting for continuing educational programing related to climate change, mitigation strategies and actions the Township and its residents can take to reduce our environmental footprint. If elementary children planting acorns is a success, the Township will develop annual hand-on tree activities for them.

Budget

Project Title: Williamstown Township Forest in the Park

Total Project Cost: $33,900

Requested Grant Funds: $15,000

Anticipated Matching Funds: $18,900

|  |  |  |
| --- | --- | --- |
| Expenditure | DNR | Township |
| Township Personnel  |  |  4,500 |
| Supplies (trees, mulch, cages) | 13,800 |  |
| Supplies (Signage, seminars) |  |  5,000 |
|  |  |  |
| Volunteer hours |  |  5,600 |
| Contractional Services |  1,200 |  3,800 |
| Total | 15,000 | 18,900 |

The Williamstown Township Community Pa Type of Seedlings to Acquire for Planting: We considered three different sizes of seedlings for planting. The Tree Selection table in Appendix 2 indicates the genus and species selected for this project. Funding is based on purchasing bareroot stock. rk is owned by Williamstown Township.

I will be revising the budget page.

**APPENDIX 1**

**DNR DOCS**

**Appendix 2 Selected Trees**

Tree List

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Genus | Species | Common Name | Quantity | Alternative Species |
| Acer | Saccharinum | Silver Maple |  20 | Rubrum |
| Carpinus | Caroliniana | Musclewood |  20 |  |
| Carya | Ovata | Shagbark Hickory | 100 | Glabra |
| Cercis  | Canadensis | Redbud |  20 |  |
| Crataegus | Crus-galli | Cockspur Hawthorn |  50 | Mollis  |
| Juniperus | Virginiana | Eastern Red Cedar |  50 |  |
| Liriodendron | Tulipifersa | Tulip Poplar |  20 |  |
| Malus | Coronaria | Wild Crab Apple |  80 |  |
| Prunus  | Americana | Wild Plum |  20 | Serotina |
| Quercus | Alba | White Oak | 100 | Macrocarpa |

Where possible, an alternate has been indicated if the selected tree species is unavailable for delivery in the spring of 2022. We may need to select another genus if a selected one is unavailable.

Alternative Genera:

Genus Species Common Name

|  |  |  |
| --- | --- | --- |
| Celtis  | Occidentalis | Hackberry |
| Nyssa  | Sylvatica | Blackgum |
| Ostrya  | Virginiana | Ironwood |
| Platanus | Occidentalis | Sycamore |

1. Under the guidance of the Jim Flore, PhD, Retired MSU professor of Horticulture , Ed Mahoney, PhD, MSU Department of community Sustainability and Jim Miller, PhD Retired MSU Entomologist, Township staff and volunteers will prepare the planting site. We have decided on a combination of mechanical and chemical methods to eliminate invasive and competitive vegetation.
2. Establish Desired Objectives or Results: Significant time and effort have gone into deciding the purpose and objectives for the planting since they determine the type of species and the number and spacing of the seedlings. Both the Township Parks and Recreation Committee and the Environmental Committee provided input for deciding the objectives. The planting plan will help achieve the overall goals for the Community Park and contribute to the stewardship priorities of the Environmental Committee.
3. Preliminary site analysis including soil sample and existing vegetation inventory: Since the planting area is located in the township park which has been in development over the last 25 years significant information is available about the soil, drainage, wind and sun exposure, animal species and vegetation in the planting location. This information has been used to decide on the species and also the post-planting care and maintenance methods. There are invasive woody species on site include: multiflora rosa, *Rosa multiflora*; common buckthorn, *Rhamnus cathartica*; honeysuckle complex (a hybridized mix of non-native species) *Lonicera spp.*; and autumn olive, *Elaeagnus umbellate.*  These will be removed during site preparation, except of possibly of a single example of each species which will be identified by signage and used for educational purposes.

1. Selection of Tree Species and Size(s) of trees to be Planted: We have employed persons with various related expertise (e.g., tree species, planting stock) to assist in identifying Michigan native species that would achieve the planting objectives and are compatible with the site characteristics. A list of the selected species and their general location in the park are shown in Appendix 2. Existing trees, such as silky dogwood  and red cedar will be incorporated into the planting.

Where possible Michigan genotype will be obtained to increase resilience. Not all trees are easily found in the nurseries and therefore in addition to bareroot plants, some will in containers and some may be grown from seed. Alternative species are listed in case some selected speciesare unavailable next spring.

1. Type of Seedlings to Acquire for Planting: We considered three different sizes of seedlings for planting. The Tree Selection table in Appendix 2 indicates the genus and species selected for this project. Funding is based on purchasing bareroot stock. Ordering will occur during the winter to assure delivery in early spring. It is likely, given supply issues, alternative species may need to be selected for some genera and some genera may need to be replace by other native tree genera. Also both containerized and bareroot stock may be planted. Alternatively some species may need to be grown from seed.
2. Forest Planting Design and Site Preparation: During the fall our consultant will prepare architectural design of the forest to meet the educational and recreational goals of the forest and the space requirements of the trees. The location of the forest begins about 100’ north of the road to insure there will be no interference with utility. Purchasing will occur in the winter to ensure plants will be delivered in the spring.
3. The site assessment identified the following invasive woody species on site including multiflora rosa, *Rosa multiflora*; common buckthorn, *Rhamnus cathartica*; honeysuckle complex (a hybridized mix of non-native species) *Lonicera spp.*; and autumn olive, *Elaeagnus umbellate.* They will be removed as part of the preparation.  Where possible a single examples of each invasive species will be retained, identified by signage and used to educate visitors in recognizing and effectively eliminate them.
4. Tree Planting. Protection, and Post Planting Care/Maintenance: Trees will be planted as indicated in the DNR document ‘Tree planting diagram’ (Appendix 1). The site to be planted has a significant population of white tail deer. Trees will be caged to protect them from deer. Chicken wire at least four feet tall will surround each tree with no less the four heavy bamboo stakes woven through the wire. Cages will be removed after 3 to 5 years; deer damage will be monitored and if necessary protective cages will be restored.

As indicated in the DNR document ‘TREE MAINTENANCE GUIDELINES’ adequate maintenance during the first three years is critical for the survival of the trees. Rainfall will be monitored and during dry periods the trees will receive supplemental watering. Periodic inspections will be conducted several times each year for at least five years to identify any emerging problems. Regular care will include controlling weed competition, repairing or replacing damaged tree protection cages, and pruning trees to maintain proper tree form.