Project Report Summary
Hegewisch Marsh Restoration Project
NCWC Phase I
January 2007 to October 2008

Introduction

For the past two years, the Chicago Department of Environment has been conducting Phase I of the Hegewisch Marsh Restoration Project, in partnership with the Office of Lt. Governor Pat Quinn and Conservation Land Stewardship (CLS). The objectives of the project are to improve and preserve 100 acres of this important wetland habitat for native flora and fauna, protect the myriad bird species that use the marsh, and engage students, volunteers, residents and other visitors in local restoration efforts.

The following summary of Phase I restoration work draws on progress reports submitted by CLS for their work completed at Hegewisch Marsh. It provides highlights over the period from the start of the grant in September 2006 through the end of October 2008.

Task 1 – Installation of a Rehabilitation Entrance

Proposed Work

The first step in the restoration process at Hegewisch Marsh was for CLS to install a rehabilitation entrance for work at the site. Pre-cast temporary concrete barriers were to be placed in line with a locked cable gate strung between two straight and cut wooden posts. These posts had to be fabricated from solid trees, preferably from the pool of trees identified for removal. Filter fabric, consisting of synthetic polymers, was to be installed and coarse aggregate laid to a thickness of one foot or more. To complete the entrance, all surface water flowing towards the entrance had to be piped across the entrance to divert water into the marsh.

Accomplishments

CLS constructed the rehabilitation entrance by creating a locking cable between two wooden posts and placing two pre-cast temporary concrete barriers on each side of the entrance. While the lockable gate provides site access to service vehicles, the barriers were placed to prevent unauthorized vehicles from entering the site. In addition, a corrugated metal pipe was installed across and underneath the rehabilitation entrance to redirect surface water into the marsh. Filter fabric was installed and specified aggregate was placed to the appropriate depth. This rehabilitation entrance is temporary and all aspects of its construction will be removed. The disturbed area will be restored to the original grade, seeded, and blanketed once the project is complete.

Task 2 – Trail & Boundary Establishment & Trail Maintenance

Proposed Work

The next step was for CLS to grade and maintain a trail system throughout the site, and complete minor regrading of about 20 rutted areas along the path to remove the vertical edges and provide habitat for amphibians and invertebrates. Temporary establishment of the site boundary was to be achieved as well.

Accomplishments

The layout of the trails was based on older vehicular and All Terrain Vehicle (ATV) pathways that were used illegally to access the site for recreation. In many places deep ruts were formed in the pathways by this illegal access. The pathways were also used illegally to dump garbage. The old pathway layout was used for the new trails to minimize new ground disturbance to the site. Once the layout was complete, the trails were roughly graded using a tractor and box grader. Cut soil from high areas of the trail was used as fill for low areas. These rough trails were then used as the roads for the initial restoration activities.

Some of the deepest ruts from the old pathway were preserved as vernal pools. Feedback from various partners creatively suggested building up the ruts and using them as habitat for aquatic plants, such as rushes and sedges, and invertebrates, such as crayfish and snails, which were known to inhabit the ruts when filled with water. Some vernal pools with steep sides were graded to allow for critters to easily migrate out of the pool as they matured.

On three separate occasions, native plant pugs were installed by volunteers in various vernal pools to reestablish a similar system to what likely existed historically. On June 2, 2007, members of the public planted plugs in one of the largest vernal pools and sampled for invertebrates in an adjacent vernal pool. On October 18, 2008, members of the public visited the site for a behind-the-scenes tour that was part of a Science Saturday event series organized by the Museum of Science and Industry. After learning about the specifics of the restoration project, visitors planted additional plugs in one of the vernal pools. On October 27, 2008, 9th-grade students from Las Casas Occupational High School planted supplementary plugs in two smaller vernal pools. All plant species were selection based on their ability to handle the fluctuation of soil conditions from standing water in spring to complete dryness in late summer. The plants provided valuable habitat and protection for developing amphibians and invertebrates. All species used can be found in other areas of Hegewisch Marsh.

The extensive trail system is approximately 9,000 linear feet and has been mulched with approximately 1,500 cubic yards of wood chips to-date; 500 cubic yards of which the Chicago Park District trucked in from Rainbow Beach. The rest were generated from chipping invasive woody plants, such as cottonwood and buckthorn that were removed from the site. Two hundred cubic yards of those wood chips were added to the trail in September 2008 to repair damage from heavy rains and vehicular traffic.

Task 3 - Debris Removal

Proposed Work

The site contained several tons of a variety of dumped debris. This task entailed the collection and proper disposal of site trash and construction debris, including but not limited to concrete debris, remains of cars and car parts, tires, earth and rock dumps, and mattresses.

Accomplishments

Many years of illegal dumping left several tons of debris littering Hegewisch Marsh. The debris consisted of abandoned cars (7 cars), tires (10 tons), construction debris (160 tons), and miscellaneous refuse (18 tons). The debris was removed using skidsteers while the ground was frozen to minimize soil disturbance to the site. All debris was moved, using the newly installed trail system, to a central stock pile where it was separated, loaded onto semi-trucks, and relocated to appropriate waste disposal facilities.

Task 4 - Tree Removal

Proposed Work

Woody plants serve many other purposes besides beauty and shade. They alter the environment in which they grow by moderating climate, improving air quality, conserving water, and harboring wildlife. The removal of any trees at the marsh was done only under specific circumstances such as: disease, death or damage by non-natural means (storm or beaver activity), weather hazardous conditions (tree is in danger of falling over), or a scheduled tree replacement plan determined to benefit the overall health of the wetland. The main goals of this task were for trees to be removed to make way for a more diverse assortment of native trees; to reduce canopy cover in accordance with Chicago Wilderness goals in order to provide space and light for herbaceous plants to prosper; and to reduce the amount of woody invasive trees and shrubs as well as some non-conservative native species (Cottonwood, Ash, Elm, etc.) of trees that have been dominating the marsh. The main reason for removing some of these non-conservative native species is that they draw excessive amounts of water from the wetland. Removal of trees that draw up an excessive amount of water would, therefore, allow more water to return to the system.

CLS was to provide the services of an arborist (certified by the International Society of Arboriculture) to identify trees for removal. CLS would then remove specified trees under 14" diameter, cut and chip them, and stockpile the chips in specific locations. Chips would be used for trail maintenance. Specified trees above 14" diameter were also to be cut, relocated to the staging area, and hauled offsite.

Accomplishments

CLS conducted a site walk with Tetra Tech (contractor) and certified arborist Scott Franz of Arbor Vision prior to tree removal. Invasive trees and non-conservative native species (Cottonwood, Ash, Elm, etc.) were cut at the base of the trunk and the stumps were treated with appropriate herbicide to prevent re-growth. The first pass of tree removal

was made through Areas 5, 6, and 8. The second pass was through Area 4 with 80% completion and Area 2 with 60% completion. Logs less than 14" diameter were cut, chipped and stockpiled in specific locations. 700 cubic yards of chips were made available and used on the new trail system. Trees above 14" diameter were to be cut, relocated to the staging area, and hauled offsite.

Tree removal was used to achieve the canopy cover for two types of ecological zones per Chicago Wilderness: Wet Savannah (10%-50% canopy cover) and Forested Wetland (50%-80%canopy cover).

Task 5 - Invasive Woody Species Removal

Proposed Work

Invasive woody plants embody the negative impacts that exotic invasive species can have on natural systems. The reduced competition by native species leads to a loss of floral diversity and altered community structure. CLS was expected to manually remove and properly dispose of invasive tree and shrub species, such as White Mulberry, Crabapple, Buckthorn, and Honeysuckle (among others). The work would include herbiciding and disposing of cuttings by burning on-site in brush piles, or shredding or chipping with mechanical equipment and storing the chips on site in a stockpile area.

Accomplishments

All specified invasive woody plants were cut and chipped on-site except for plants located in the No work Zone. Additional seedlings that germinated during the growing season were treated during CLS's regular bi-weekly management visits. Woody plant removal permits more light to reach the ground plane, thus allowing the herbaceous plant layer to return. A diverse herbaceous layer is essential to a healthy woodland ecosystem.

Task 6 - Site Burn Management

Proposed Work

Burning helps replenish nutrients, eliminates invasive weeds (specifically woody plant seedlings), and aids in plant germination, among many other important benefits. Historically, prairies would have been burned annually, most likely. CLS was responsible for burning all management zones (except the No Work Zone) for the purposes of restoring the plant community. The tasks included obtaining necessary permits associated with conducting the burn; preparing and providing a burn plan, burn equipment, and labor; and preparing a post-burn report. Local Chicago Fire Department and necessary parties would also be notified by CLS. The burn had to be conducted between February 1 and April 1, when humidity is 35-65 percent, and winds were forecast to be between 5 to 15 miles per hour from the north to east.

Accomplishments

CLS applied for and obtained the necessary IEPA open burn permit and other required permits and installed firebreaks well ahead of time. The burn plan was submitted to Chief Russell of the Chicago Fire Department 6th District for review and approval. CLS

also notified the local Police Department, Norfolk Southern Railroad, and NictD-South Shore Railroad about the burn plan. Chicago DOE was responsible for notifying the 10th Ward Alderman's office, 311 City Services (and the Office of Emergency Management and Communications), Chicago Department of Transportation, Illinois Department of Natural Resources, U.S. Army Corps of Engineers, Metropolitan Water Reclamation District, Waste Management, Ford Motor Company, and adjacent local businesses and residences.

The burn was slated to occur between February 1 and April 1 (the best time to burn) when humidity is 35% to 65%. In addition to weather conditions being the most critical factor when burning a native area, the winds must be between 5 to 15 miles per hour from the north or east so that smoke does not blow over Torrence Avenue. However, the site was too wet in the early spring of 2007, so the burn was postponed until fall of the same year.

A controlled burn was performed on November 10th, 2007. Most of the site burned completely with the exception being the hemi-marsh (which was still too green). The Forested Wetland, Black Willow Marsh, and Wet Prairie achieved a 70-95% burn rate, the Wet Savanna achieved 65%, and the Hemi-Marsh achieved 15%. Mid- to late-April is usually the best time to burn hemi-marsh, but no activity was allowed in the hemi-marsh after April 1st due to nesting bird species.

Plans were made to attempt a second burn of the Hemi-Marsh in the spring of 2008, however an unusually wet winter and April 1st deadline for the no-work period in the Hemi-Marsh made this impossible. Another entire site burn is to be conducted in December 2008 or April 2009 using other grant funds.

Task 7 - Invasive Herbaceous Species Control

Proposed Work

Invasive herbaceous plant species spread unchecked in local ecosystems as their natural controls, disease, and predators were left behind in their land of origin. Invasive plants threaten native plants and animals, causing some native wildlife to suffer because it evolved to be dependent on native plants for food and shelter. CLS was tasked with applying herbicides to control invasive herbaceous species over five management zones (excluding No Work Zones) to achieve a relative cover of less than 10 percent invasive species over any given acre. Work could not be conducted in the Hemi-Marsh between April 1 and August 1 to avoid disturbing deeper nesting bird species.

Accomplishments

Hegewisch Marsh was dominated by several invasive non-native herbaceous plants including Common Reed, Reed Canary Grass, Purple Loosestrife, and Canada Thistle. Removal of these species was necessary so that existing and newly-seeded native plants have a chance to mature and out-compete the invasive plants. CLS used a combination of hand-pulling, cutting, mowing and selective herbicide treatment to eliminate these weeds. Hand-pulling, cutting, and mowing were effective on annual and biennial weeds such as

white sweet clover, garlic mustard, and rag weed, but perennial weeds were herbicided to eliminate the plant. All targeted species have shown signs of successful initial treatments.

Task 8 – Seeding

Proposed Work

Native plants are generally well-adapted to their particular environment and are more likely to thrive there. Once they are established, they offer a healthy and prosperous habitat. This task consists of installing seed material and includes mowing areas prior to seeding. A revised seed list based on availability was to be provided and seeds bought from vendors within 150 miles of the site.

Accomplishments

Seed installation of the entire site was completed on November 30, 2007. The Hemi-Marsh was seeded by hand while the rest of the site was seeded by a combination of drill seeder and hand seed installation. The seed that was installed in the period has germinated very well in most areas. However, a CLS supervisor monitored a problem spot in the northwest corner of the site, where reed canary grass and garlic mustard were germinating at a very high rate and seemed to impede native seed germination. Treatment was applied as necessary. More seed installation is scheduled for the spring of 2009 using other grant funds.

Task 9 – Tree & Shrub Planting

Proposed Work

As mentioned previously, a scheduled tree replacement plan was issued to replace trees that were removed and to improve the diversity of tree species in the Wet Savannah. Differentiation in tree species is important to an ecosystem, as different species provide different food and habitat for different wildlife. The more diversity that exists in an ecosystem, the more wildlife species are enabled to thrive. This task consisted of installing five species of native trees, including Eastern Hophornbeam, Sycamore, Swamp White Oak, Bur Oak, and Black Oak, and two species of native shrubs, including Red Osier Dogwood, and Nannyberry Viburnum, in the Wet Savannah during the fall.

Accomplishments

As part of a U.S. Forest Service study, volunteer groups installed a combination of native trees and shrubs that were complementary to the trees that CLS planted. In total, 250 trees (including 100 study trees) and 50 shrubs were planted in the Wet Savannah. Study trees and the shrubs were installed by volunteers on November 5th, 6th, and 14th, 2007. CLS watered, mulched, and installed protective fencing around all planted trees and shrubs. Additional tree and shrub planting is scheduled for the spring of 2009.

Special Events

Burn Notifications

A burn list of contact people from local authorities, including Fire and Police Department, 10th Ward Alderman's Office, U.S. Army Corps of Engineers, 311, and other pertinent people, was compiled. These contacts were informed of the upcoming burn well in advance of the burn, the day before the burn, and the day of the burn. In addition, burn notices were distributed to the 10th Ward Alderman's Office, as well as residents and businesses adjacent to the site.

Volunteer Tree Planting

On November 5th, 6th, and 14th, 141 volunteers helped to plant 200 trees and 50 shrubs at the site. The volunteers consisted of people from Ford Motor Company, Carmeuse, Greencorps, TreeKeepers, Centro Communitario Juan Diego, Southeast Environmental Task Force, Grissom Elementary School, Chicago Department of Environment, U.S. Forest Service and Las Casas High School.

Public Tours

First Public Hike

On June 2, 2007, DOE invited the public to take a tour of Hegewish Marsh and learn about the ecosystem and the restoration efforts being carried out. With assistance from many partners, such as the Field Museum and Ford Motor Company, more than 70 people hiked the site, listened to presentations on the various plant species and animals that inhabit the marsh, and learned about future plans for the marsh. Highlights of the tour included the planting plugs in one of the vernal pools along the trails and sampling for aquatic invertebrates in another. These vernal pools consist of deep ruts that were created over the years by ATVs that illegally accessed the site. The children and adults that participated were able to catch and identify various critters in the pools.

Night Hike

On June 23, 2008, DOE led more than 30 members of the public on a summer night hike at Hegewisch Marsh. This was the first of its kind at the site and in the general area. The visitors were led through the marsh and encouraged to learn about nocturnal animals, such as owls, and how they adapt to living in the darkness. They experienced a natural "lights out" moment as they walked through the Wet Savannah in the dark and saw how their other senses take over. They identified the sounds, smells, and feel of the unseen elements around them. They were able to discover new thrills at any given moment, as nature has its own schedule. Visitors were able to enjoy the special challenges and experiences afforded by the night; as their eyes slowly adapted to the lack of light, their other senses helped them answer the questions they had about the dark.

Science Chicago Tour

On October 18, 2008, 11 members of the public visited the site to go on a "behind-the-scenes tour" of restoration activities at the marsh. Since Hegewisch Marsh is a prime example of an altered wetland that is successfully being restored to its natural state, visitors were given a personal tour of the five ecosystems of the marsh. They were led in hands-on activities to help them better understand how this ecosystem plays a vital role in

the landscape, and they enjoyed a short presentation on current restoration activities at the marsh.