

BUNKER HILLS ECOLOGICAL RESTORATION



Ecological Restoration



Project Summary

Bunker Lake is a high quality Type 8 wetland that provides habitat for nesting waterfowl and sandhill crane populations. The upland drainage consists of degraded remnant barren oak savanna habitat. This project focused on the restoration of 53 acres of the upland savanna habitat and enhancement of an additional 28 acres to provide a seamless transition from savanna to wetland. Restoration activities began in June 2010 and consisted of seven primary duties; native plant inventory, removal of non-native woody plant material, thinning of the forest canopy, herbicide application of non-native herbaceous plant materials, maintenance mowing, firebreak trimming/mowing, and seeding. In addition, a prescribed fire of the 81 acre site and planting of native shrub species along the savanna and Bunker Lake wetland transition area was completed in 2011.



Project Specs

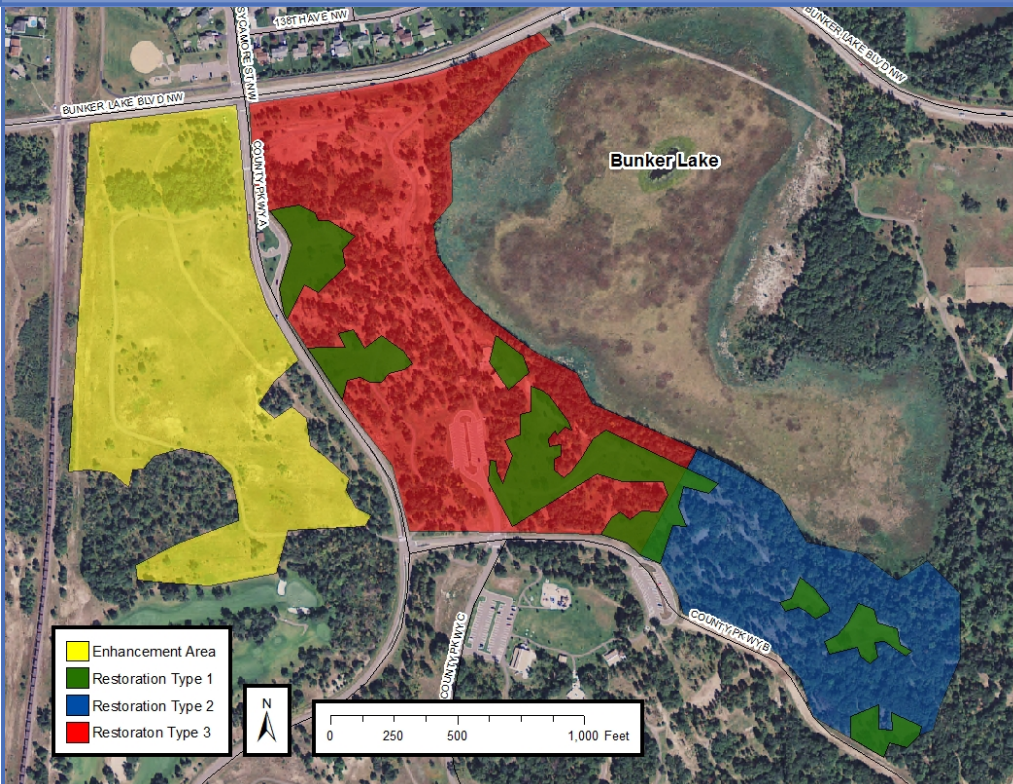
Completion Date June 2011
 Restoration Area 53.18 acres
 Enhancement Area 28.12 acres
 Total Area 81.30 acres

Project Funding

Native Buffers Grant* \$56,136.00
 Anoka County Parks \$20,795.00
 Total Project Cost \$76,931.00

* \$2,500 for administration expenses

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The specific restoration and enhancement project areas are outlined in the map to the left. The management actions corresponding to each of the areas are described below.

Enhancement Area: Prescribed burn

Restoration Type 1: Herbaceous herbicide, Truax seed drill, maintenance mowing, prescribed burn

Restoration Type 2: Poison Ivy/ herbaceous herbicide, cut/stump treat woody invasive, brush mower, tree removal, Turax/Vicon seeding, prescribed burn

Restoration Type 3: Cut/stump treat woody invasive, Vicon seed spreader/hand seeding, herbaceous herbicide, prescribed burn

Restoration and Enhancement Implementation

Nine different activities were conducted across the 81 acre area. The following descriptions provide a detailed explanation of each of the activities.

Native Plant Inventory

A native plant inventory was conducted in June 2010 to assess the current site conditions. The survey consisted of walking the site to identify locations where native plant species existed. Sites identified as sources of native species were marked with wooden stakes and flagging to alert crews prior to other project activities. Numerous small pockets of remnant native prairie species were found throughout the project area. In addition, two sites previously restored to short dry prairie, totaling approximately seven acres, were identified.

Removal of Non-Native Woody Plant Material

Removal of non-native woody plant material was conducted utilizing the cut and stump treatment method. Non-native woody plant species consisted primarily of European Buckthorn, Siberian Elm, and Amur Maple. Plants were cut utilizing chainsaws and hand operated brush saws and immediately stump treated utilizing wick applicators with Garlon 3A to prevent reestablishment. Brush was compiled on site and later transported utilizing the county's log truck to a central burn location within the park.



Thinning of Forest Canopy

Due to the lack of frequent fire to suppress encroachment of woody species, pre-restoration site conditions consisted of dense populations of Red Oak trees with old growth Burr Oak, Black Cherry, Wild Plum, Choke Cherry, Red Cedar, and Red Pines. Thinning of the forest canopy and shrub layer consisted of the use of a skid steer with forestry cutter attachment, chainsaws, and hand operated brush saws. The primary focus of the thinning was the removal of Red Oak trees to create openings to allow light penetration to promote establishment of ground vegetation. Utilizing the forestry cutter, trees up to an eight inch diameter were cut and mulched back into the soil. Staff utilized chainsaws and brush cutters to clear steep side slopes and larger diameter trees. Additionally, the crew removed fallen trees to reduce fuel loads within the project area. Logs generated from the removal of trees were transported to the Central Maintenance Facility where they will be processed into usable firewood for the park's campground facility.

Herbicide Application of Non-Native Herbaceous Plant Material

Non-native herbaceous plants within the project area consisted primarily of smooth brome grass, leafy spurge, and spotted knapweed. Herbicide applications consisted of a three percent solution of Round-Up. Large areas were treated utilizing an ATV with a boom sprayer mount while small infestations were treated utilizing backpack sprayers. Spot spraying was conducted in areas where remnant and restored native plants existed to eliminate non-native species. Additionally, large populations of poison ivy were treated utilizing a Garlon 3A solution. Follow-up spot treatments occurred throughout the summer and fall of 2010.

Maintenance Mowing

Due to weather conditions, prescribed fire was not feasible prior to seeding in 2010. Because of this, maintenance mowing was conducted at sites where seeding was to occur. Mowing consisted of utilizing a John Deere tractor and a flail mower to trim non-native vegetation to a height of less than four inches. Mowing of the site allowed for greater seed to soil contact in areas that were broadcast seeded and allowed for a Truax seed drill to be utilized in openings. In addition, mowing minimized the competition between the newly planted native seeds and existing non-native vegetation.



Firebreak Trimming and Mowing

Firebreak trimming was conducted within the primary restoration area as well as along adjacent prairie parcels that were scheduled for the prescribed burn. The entire prescribed burn area consists of 81 acres. Throughout much of the project area firebreaks consist of bituminous trails and roads, however mowed fire breaks were installed where no breaks existed. Trees along the edges of the firebreaks were trimmed to a height of approximately eight feet to prevent fire from reaching the canopy. Additionally, Red Oaks on the edge of oak woodland within the project area were trimmed as they tend to hold their leaves throughout the fall burn season. Two stands of plantation pines on an adjacent prairie were also trimmed as part of the scheduled prescribed fire.



Seeding

Yellow tag seed was purchased from Prairie Restorations, Inc. in Princeton, MN. The seed mix was customized to meet the project goals and to contain species most prevalent in the remnant oak savanna within the park. Seeding was conducted in late October 2010 after soil temperatures had dropped to sufficient levels to ensure the seed would remain dormant until spring. Seeding was conducted utilizing both a Truax seed drill and Vicon seed spreader. Broadcast seeding was conducted in areas where large amounts of woody materials had been removed as it was not feasible to drill into these areas based on the number of stumps remaining. Seed drilling was conducted in openings which were previously dominated by smooth brome and other herbaceous species.

2011 Project Activities

Anoka County Parks conducted a prescribed burn of the 81 acre project site and planted native shrub species along the savanna and Bunker Lake wetland transition area. Native shrubs were purchased from the Anoka Conservation District and the Minnesota Department of Natural Resources. Species were selected based on availability and site conditions. Native shrubs will consist of bare root seedlings and will be planted utilizing volunteers and staff.