

# EXHIBIT D

## CHEROKEE MARSH MANAGEMENT PLAN FOR EASTERN WETLAND (Currently owned by CPI)

### Background

This peat wetland is part of a large wetland complex in Cherokee Marsh that covers 4,000 acres. It is adjacent to a DNR State Natural Area (SNA) to the north and east that contains high quality wet prairie, sedge meadow, and fen plant communities. This large peat marsh is ecologically unique because it was historically fed only by rainwater and underground seepages, but very little from runoff or flooding. The SNA is managed under the guidelines of the Cherokee Marsh SNA Management Plan, adopted in 1991. The City's intent is to purchase the CPI Eastern Wetland, and manage it as a Conservation Park in conformity with the State Natural Area. The following recommendations apply specifically to the Eastern Wetland, and should be incorporated into future updates of the SNA Management Plan.

### Monitoring, Research, Education, and Public Use

Monitoring of plant and animal communities is recommended. Research is encouraged. Educational use should be limited to specialized ecological, restoration and management study that does not require trails or other facilities. Permits would be required for any monitoring, research or educational use.

General public use is not encouraged. Current regulations of Madison Conservation Parks restrict access to designated trails (none are proposed in the wetland). Public trails may be placed on upland adjacent to the marsh on the west and south. Public hunting is not allowed in Conservation Parks. A deer control program is conducted in Cherokee Marsh Conservation Park, but would not be conducted in the treeless open meadow of the Eastern Wetland.

### Management Unit Descriptions

#### **Unit A:**

This 40-acre unit contains high quality sedge meadow and wet prairie plant communities. It lies between City of Madison conservation parkland located to the north and south.

#### **Unit B:**

This 40-acre unit is located immediately north of the Maple Bluff 40 acre parcel. It is good quality sedge meadow, probably degraded by drainage ditches that nearly surround the unit.

#### **Unit C:**

This 44-acre unit contains numerous drainage ditches and was row cropped for agricultural crops in the past. Currently it is highly degraded with Reed Canary Grass as the dominant exotic species. Located at the base of the "High Hill" it may be a site of ground water discharge that has been intercepted by the ditches.

**Unit D:**

This 97-acre unit lies east of North Sherman Avenue. Fair quality sedge meadow with a rare grass (*Calamagrostis inexpectata*) was noted in 1974 publication Wetlands of Dane County, Bedford, et al. A drought in 1976 allowed part of this unit to be plowed and cropped. Another portion was disturbed when shrub cover was bulldozed into piles. Later it was occasionally mowed for marsh hay. Lack of mowing in recent years and an influx of nutrient rich storm water from the southwest has degraded the southern portion of the unit. Reed canary grass and cattails dominate in that area.

**Unit E:**

The Village of Maple Bluff owns this 40-acre parcel. The southeast 23 acres was formerly used as a dumpsite. The northwest 17 acres is a wetland of undetermined quality. It is bounded on the north and west by a drainage ditch that drains to the north.

**General Land Management Recommendations**

This property should be managed in a manner consistent with the goals of the adjacent Cherokee Marsh State Natural Area. The City of Madison should work with the Wisconsin DNR to update the management plan for the Cherokee Marsh SNA. Four primary land management goals are recommended: Control trees and shrubs, control exotic species, close ditches to restore water levels, manage stormwater to reduce the impact of warm, fertile runoff in high quality wetlands.

The study Wetlands of Dane County describes the Eastern Wetland as “a cork in the horizontal bottle, keeping the whole marsh wet by retarding westward flow of water toward the Yahara.” It recommends that the ditches be closed to restore the natural hydrology, and further states the need for a comprehensive groundwater study. If groundwater withdrawal for human use dries out the peat allowing it to oxidize or burn it will release nutrients to Lake Mendota. Adequate groundwater levels are also essential to maintaining the large fen (a plant community dependent on groundwater upwelling through the peat) complexes that exist. There is evidence that groundwater levels have been altered since this 1974. What was described as a large spring located west of the dead end of Hoepker Road no longer produces spring flow.

Units A and B should be considered for inclusion as part of the Cherokee Marsh SNA. Woody tree removal, exotic species control, and drainage ditch closures are some of the management needs to restore this natural area. Elimination of current, and future nutrient rich urban storm water inputs into these wetlands is essential for vegetation restoration to be successful. Ditch closures cannot take place until this important issue is addressed. Fire as a management tool should be reintroduced on a periodic basis when staff and or monies allow.

**Specific Land Management Unit Recommendations****Unit A:**

The highest priority is to fill the drainage ditch on west boundary to restore natural hydrology. The former drainage ditch on the north boundary was filled in 2004-5 as part of a joint wetland mitigation project (City of Madison, DNR, Dane County Regional Airport, FAA, and DOT). A total of 2 miles of ditches were filled as part of that project. Remove woody plant growth along ditch. Scout interior of unit and remove exotic shrubs.

**Unit B:**

First priority is to fill drainage ditches surrounding this unit to restore natural hydrology. Second priority is to remove all tree cover along the ditches. Third priority is to control any exotic shrubs in the unit. The south boundary of this unit is adjacent to Unit E (Village of Maple Bluff) so they will need to be consulted before that ditch is closed.

**Unit C:**

This unit will require extensive work to restore natural area values due to drastically altered hydrology, exotic species prevalence, and woody tree growth. It would be ideal to do all the restoration work in one phase, but due to cost may have to be done in phases. Priority #1 would involve removing all woody growth along the ditches, and in the abandoned wetland agricultural fields. Priority #2 would involve scraping off the reed canary sod and using it to fill some of the drainage ditches. This would hopefully remove the reed canary seed bank, and then native wetland plants could be seeded. Any remaining ditch bank spoils would be pushed in to cap the ditch fill. Prairie restoration on the adjacent private upland (in the proposed conservation easement area) would also be desirable.

Some trees along the extreme north edge of the unit may remain to provide screening from the current and planned development to the north on the "High Hill". Higher value native trees and shrubs could be added in the future.

**Unit D:**

The top priority goal for this area is to reduce the current and future impacts of stormwater runoff. Detention, infiltration, and diversion should all be considered as ways to protect this unique wetland. Feasibility, cost and permitting issues will have to be evaluated for these alternatives. Priority #1 would be to manage the storm water that currently enters the area from the far southwest corner. The warm, nutrient-rich water has degraded the southern boundary of this unit, where it has become dominated by exotics (hybrid cattail and reed canary grass). Currently this water runs east, turns north, and finally heads west to go under North Sherman Avenue to enter the golf course at the west boundary of Unit C. Consideration should be given to piping this flow to the west side of North Sherman near the Cherokee Country Club buildings and then north to enter the golf course drainage system. For the proposed development south of the marsh, diverting the majority of runoff southeast to Starkweather Creek should be considered. This small amount of treated stormwater would have minimal impact on the riverine system of Starkweather, but could have major negative impacts on the infertile peat wetlands in Cherokee.

Priority #2 would involve closing the drainage ditch along the east boundary with Unit E (Village of Maple Bluff). They will need to be consulted prior to closing this ditch.

Priority #3 should include mowing the dense shrub growth with a brush mower to reduce shading of native sedges and grasses. It would also be desirable to find a landscape contractor or farmer interested in using this property to harvest marsh hay. This process harvests and removes nutrients from the site, which will help move the plant community toward the natural low nutrient conditions that existed prior to human disturbances that added nutrients. High nutrient conditions and warm water favors exotics like hybrid cattail and reed canary grass. When this unit was used as a mowing meadow in the past there was an observable improvement in the growth of native plants vs. exotics.

**Unit E:**

This unit is included because it is contiguous with the Eastern Wetland currently owned by CPI, and contains some ditches that are recommended for closure. It would be desirable to work out a management agreement with the Village of Maple Bluff to facilitate management of the larger wetland.

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