Ventura Marsh Water Level Management Plan

Iowa Department of Natural Resources

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Ventura Marsh Water Level Management Plan:

NEED

The 2001 Clear Lake Diagnostic and Feasibility Study indicated a clear need to reduce the amount of phosphorus and sediment delivered to Clear Lake to improve water quality in the lake. The study showed that Ventura Marsh, as well as its tributary streams, supplied up to 33% of the total phosphorus load and 42% of the sediment load to Clear Lake. The study concluded that if Ventura Marsh was functioning properly, the marsh would remove 50% of the phosphorus from the water flowing through it. If this was accomplished, Clear Lake's phosphorus load would be reduced by 17%.

To improve the nutrient and sediment processing and storage functions of Ventura Marsh, the study suggested that 1) benthic fish populations should be minimized in the marsh, 2) a pump system should be installed so marsh water levels could be managed independently of the lake's water level, and 3) the marsh should be revegetated and water levels managed to maintain robust emergent and submergent plant communities.

OBJECTIVES

- Increase Ventura Marsh's capacity to process and store nitrogen and phosphorous and thereby reduce nutrient and sediment inputs into Clear Lake.
- Improve habitat for wetland wildlife on Ventura Marsh
- Reduce benthic-feeding fish (primarily carp) production in the marsh and recruitment to the lake
- Improve recreational opportunities for hunters, trappers, birders, boaters, etc.

ACTIONS

- Periodically dewater the marsh to create environmental conditions that will enable emergent plants to become established throughout the wetland as well as eradicate fish populations.
- Annually manipulate water levels to promote aquatic vegetation, optimize the marsh's capacity to process and store nutrients, and to maintain high-quality wildlife habitat.
- Use winter draw-downs to control benthic-feeding fish (primarily carp) populations.

MANAGEMENT GUIDELINES

The following management guidelines will be adjusted as necessary to adapt to changing environmental conditions.

DRAWDOWN PHASE:

YEAR 1 (beginning in late fall):

After ice forms on Ventura Marsh, the water level will be reduced to 3 feet below crest to ensure a complete fish kill over the winter months. In spring, the water level will be allowed to rise to about 1 foot below crest to promote the growth of perennial wetland vegetation. In late spring, the marsh will be gradually dewatered and kept dry, or nearly dry, until after the first frost. If perennial vegetation, such as cattails and bulrushes, is well established by fall, the marsh can be partially refilled to create wildlife habitat as well as recreational opportunities without hurting the established vegetation. This will also help saturate the marsh soils which will improve the germination and growth of perennial marsh plants the following year.

YEAR 2 (beginning in late fall):

After ice forms on the marsh, it will again be dewatered as much as possible. The marsh water level will be maintained at 3 feet below crest until spring. In late spring, the marsh will be gradually dewatered and maintained in a dry, or nearly dry, condition throughout the summer. By late summer, if perennial vegetation is well established, the marsh will be gradually filled to a level of about 0.5 feet below crest. The marsh will be maintained at that level until ice formation.

YEAR 3 - ? (beginning in late fall):

After ice forms on the marsh, the water level will again be lowered to 3 feet below crest if a fish kill is necessary. If a fish kill is not needed, the water level will be maintained at between 0.5 and 1 feet below crest until later winter when it will be lowered to 1-1.5 feet below crest to create reservoir capacity for spring runoff. In early summer, the water level will be allowed to return to crest elevation and stay at that elevation throughout summer and fall.

MAINTENANCE PHASE:

YEARS 4 – ?:

The basic plan outlined in year 3 will be followed to maintain the vegetation in the marsh and minimize fish populations and production. Changes in vegetation coverage, water quality, and wildlife will be monitored annually.

REPEAT DRAWDOWN

YEAR ???:

When the marsh is 75-90% open water and water clarity levels have declined to a predetermined level, the water level management strategies outlined for Years 1 through 3 will be repeated. It is currently estimated this may occur every 7 to 10 years.