

Lakebed Plant Management Suggestions and Recommendations

For: Property owners and land managers of Lake Delhi

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Step 1: Identify the plants and identify the problem

Terrestrial plants growing in the lakebed of Lake Delhi during this extended draw-down are providing benefits and challenges to Lake Delhi property owners. Benefits of plants include: stabilization of soils in the lakebed, reduced bank and lakebed erosion, reduced sediment delivery to the Maquoketa River, habitat for wildlife, and habitat for fish. Potential problems associated with lakebed plants include: plants are unsightly to some owners and visitors, views may be obstructed by tall plants, future water travel lanes may be obstructed by woody plants if left untreated.

Some Lake Delhi residents have expressed concerns about increased lake sedimentation and organic matter accumulation from plant growth, and these concerns are certainly worthy of monitoring. However, it is my opinion that herbaceous plants (grasses and forbs) are unlikely to cause significant long-term impacts to lakebed sediments. Increased channel roughness and decreased water velocity associated with terrestrial plants in lake beds does temporarily increase the sediment trapping efficiency of reservoirs. This phenomena lasts only as long as the plants persist, and that is not very long (days to weeks) for most fully submerged herbaceous land plants. Terrestrial plants contribute to the organic matter in lake sediments after reservoirs are filled, but this contribution should be viewed in perspective to other inputs of sediment and matter. An Iowa cornfield or switchgrass field produces about 6 tons of dry matter per acre and we can expect similar production per acre of “weeds” in the lakebed. This means that about 2,400 tons of organic matter could be produced annually on the dry areas of the Lake Delhi lakebed. This sounds like a lot of material and it is, but keep in mind that it is a fraction of the material delivered by the Maquoketa River during an “average year” (estimates are typically about 60,000 tons per year).

I recommend that landowners concentrate on suppression of woody vegetation such as willows and cottonwoods in areas that will be used as travel corridors for boats, docking areas, or swimming areas. Willow trees are more persistent than herbaceous plants after being submerged and could potentially persist for months or years after being submerged (depending on stem size). Annual weeds such as giant ragweed, smartweed, and barnyard grass are common early invaders of wet areas but they are unlikely to cause any significant long-term environmental or infrastructure problems. Perennial moist soil plants such as Reed Canary Grass and Fowl Mana Grass are common secondary invaders of wet areas, but they too are unlikely to cause long-term infrastructure problems.

Step 2: Identify the treatment

If landowners determine that they do have problematic vegetation they have a variety of options for dealing with that vegetation.

1) Mowing. Mowing is an effective method of controlling woody vegetation (e.g., willow trees) and annual weeds. Mowing typically favors perennial herbaceous vegetation (e.g., Reed Canary Grass).

Pros: maintain erosion control provided by plant roots, low potential for environmental impacts, very effective control for woody vegetation. Cons: requires access with power equipment or hand tools, usually requires at least one treatment per year

2) Herbicides. Herbicides provide effective treatment of woody vegetation, annual plants, and perennial

plants. When using any herbicide it is important to understand the personal and environmental hazards associated with the herbicide. It is also important to precisely identify problematic plants because herbicide effectiveness varies among species. Private individuals without a Category 5 pesticide applicators license and appropriate permits cannot use herbicides to treat water bodies such as the Maquoketa River. However, private landowners can use herbicides to control vegetation on terrestrial areas of Lake Delhi under their ownership as long as they follow all label directions. Contact herbicides (e.g., glyphosate) are typically preferred over persistent herbicides (e.g., pendimethalin) when treating plants in sensitive areas such as the banks and bed of Lake Delhi. Some popular herbicides (e.g., Roundup) are labeled for use on terrestrial area, but are illegal to use over water due to potential environmental contamination. In some cases there are aquatic approved alternatives (e.g., Rodeo) to herbicide formulations not approved for aquatic areas (e.g., Roundup). I recommend that landowners considering the use of herbicide in or near the lake bed of Lake Delhi consult with a professional knowledgeable about herbicides before applying the chemical. Most agricultural cooperatives or farm service providers have staff that is extremely knowledgeable about herbicides. Online resources are available for herbicide labels and general information. Pros: can effectively control a broad spectrum of problematic vegetation, less labor intensive than other methods. Cons: requires access with power equipment or hand tools, usually requires at least one treatment per year, best accomplished by professionals with proper protective equipment and intimate knowledge of herbicides.

3) Disturbance (tillage or cultivation). Tillage or cultivation is a common agricultural practice that effectively controls annual and perennial vegetation. Tillage systems are most effective for controlling perennial plants with a long life cycle (e.g., trees) and least effective for annual plants “weeds” with a short life cycle. Pros: can effectively control perennial vegetation without the use of chemicals or mowing. Cons: “loosens” soils and will increase soil erosion and sediment delivery to the Maquoketa River, requires access with power equipment, usually requires at least one treatment per year, not feasible with hand tools.

4) Planting a cover crop. Cover crops protect sensitive areas from invasion by unwanted plants while providing soil erosion protection. Oats are an example of a common cover crop that can effectively reduce the presence of annual “weeds” while providing additional benefits. Pros: provides environmental benefits through improved sediment retention. Cons: difficult to establish at this stage without tillage or herbicide treatment, may require access with power equipment or hand tools, typically provides incomplete coverage of affected area.

5) Fire. Fire is an effective method of controlling woody vegetation and typically favors deep-rooted grass species. Controlled burns are best performed by trained professionals and should be coordinated with

neighbors and the local fire department Pros: can effectively control woody vegetation without the use of chemicals or mowing, maintain erosion control provided by plant roots, does not require access with power equipment or hand tools. Cons: fire is unpredictable, can only be accomplished in dormant season, requires the presence of adequate fuel to carry the fire, typically provides incomplete coverage of affected area.