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**City of Duluth Parks and Recreation Division**

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**SUBJECT: Hartley Pond Inspection Report Available**

**BY: Amy Norris, Public Information Coordinator**

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## **Hartley Pond Inspection Report Available**

The Minnesota Department of Natural Resources has completed inspections of the dam impounding Hartley Pond before and after the flood of 2012. The inspection reports that vegetation on the earthen dam and in the spillway must be removed. City of Duluth Park Maintenance staff will be performing a clearing of the earthen dam and spillway in the summer of 2013. **For more information, contact: 218-730-4491 or 218-730-4303.**

### **Erosional Effects of Vegetation on Earthen Dams**

Constructed of local, non-organic material, earthen dams can function effectively for many years as long as erosion, the largest threat to an earthen dam, is controlled. Though there can be several causes of earthen dam erosion, the most common and widespread is problem vegetation growth. Trees and woody vegetation can make a dam susceptible to erosion in several ways:

- The decaying roots of dying vegetation create a seepage path in the embankment for stored water or wastewater. This path can lead to internal erosion (piping) of the embankment.
- Woody vegetation shades the embankment and reduces dense grass coverage, which can make affected areas more prone to erosion
- Woody vegetation loosens compacted soils of the embankment
- Roots can penetrate existing cracks and joints in the foundation rock and embankment, potentially leading to internal erosion and seepage.

### **Hydraulic Effects of Vegetation on Earthen Dams**

Like any other type of dam, earthen dams are designed to manage a certain amount of water. Proper management requires that all the hydraulic structures work to their design capacity. Trees and woody vegetation can impair the hydraulic efficiency of the dam in several ways:

- Uprooted or overturned trees and large brush reduce the freeboard of the reservoir
- Vegetation in the emergency spillway reduces the spillway capacity
- Uprooted trees displace a large amount of soil, lowering the dam crest and reducing the effective width of the dam.
- Falling trees and large vegetation can damage dam facilities, such as the emergency spillway and outlet structures.

### **Dam Inspection Effects of Vegetation on Earthen Dams**

Operational inspections are conducted regularly to ensure proper function and integrity of the dam crest, slope, outlets, channel, spillway, and toe. The inspection relies heavily on observation to determine seepage, cracks, slumps, and similar hazards. As such, problem vegetation can decrease the effectiveness of an inspection in many ways:

- Dense ground cover obscures animal burrows, which can undermine dam integrity
  - Dense ground cover obscures dam defects.
  - Heavy vegetation limits access to critical inspection areas.
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