

**DAM REMOVAL GUIDELINES FOR OWNERS**  
**Michigan Department of Natural Resources**  
**Michigan Department of Environmental Quality**  
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Michigan has over 2500 dams, many of which were built decades ago. As dams age, they require regular inspection, periodic maintenance and sometimes very costly repair. As dams outlive their usefulness, and their condition deteriorates, consideration should be given to remove, rather than repair a dam. Old dams may be less costly to remove, than they are to repair.

The driving forces for consideration of dam removal are 1) the cost of maintenance and repair when the benefits of maintaining a dam are diminished; 2) public safety and liability concerns, and 3) potential fisheries, water quality and recreational use improvements that can be realized with dam removal.

The purpose of this guidance document is to suggest issues that may need to be considered when deciding the future of a dam, and to assist in implementing a dam removal project. The steps outlined here are by no means complete; however, they can help dam owners and their communities develop a long-term plan for the dam which includes consideration of financial, public safety and environmental issues. If you have questions about the laws regulating dams, please contact the Department of Environmental Quality, Dam Safety Program staff in the Geology and Land Management Division, 517-335-3195 or visit the web site at: <http://www.michigan.gov/deqglmd> and click on "dam safety".

**First Step: Consider What Purposes the Dam Serves**

- A. Consider whether the dam itself provides any benefits, such as:
  - a. Power production.
  - b. Prevents movement of sea lamprey or other aquatic nuisance species.
  - c. Fish exclusion for fisheries management purposes.
  - d. Historic significance.
  - e. Provides bridge, rail or road crossing.
  
- B. Consider whether the impoundment created by the dam may serve one or more of the following services:
  - a. Water supply for irrigation, fire suppression.
  - b. Flood control.
  - c. Navigation and transportation.
  - d. Recreational boating, fishing, swimming or park use.

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<sup>1</sup> Drafted by the MDNR Habitat Management Unit of the Fisheries Division and the DEQ Dam Safety Program of Geology and Land Management Division.

## **Second Step: Consider Problems with the Dam Structure**

- A. Safety and Security of the Dam
  - a. Do boats, canoes or swimmers frequent the site – are they at risk?
  - b. Does the site attract anglers?
  - c. Is the dam itself in poor condition and/or subject to an order from DEQ to repair or remove the dam?
  - d. What potential property damage would occur if the dam was to fail?
- B. What are the Costs and Liabilities of Keeping the Dam
  - a. Repair cost estimate.
  - b. Maintenance cost estimate.
  - c. Operational concerns.
- C. What Environmental Impacts Should Be Considered? (Consult your local DNR and DEQ offices for assistance).
  - a. Water quality and aquatic habitat benefits of stream restoration.
  - b. Improvement of fisheries and wildlife habitat.
  - c. Recreational uses of the impoundment compared to a restored stream.
  - d. Other ecological or economic considerations.

## **Third Step: Considerations for Dam Removal**

- A. Would Removal Eliminate or Reduce Safety and Security Problems?
- B. Would Removal Improve Recreational Use of the Site?
- C. Cost Estimates
  - e. Preliminary estimate of dam removal cost.
  - f. Sediment removal or management.
  - g. Stream bank restoration.
  - h. Replacement of dam dependent services (water supply, road or bridge crossing, etc).
- C. Potential Funding Sources
  - a. Private or Community Foundation funding
  - b. Environmental Grants
  - c. State or Federal Assistance Programs

**Fourth Step: Working with DEQ Dam Safety Program and/or DNR Fisheries Division**

- A. Contact the DEQ dam safety program for information about the condition of the dam, and for permit application requirements and procedures.
- B. Contact the DNR, Fisheries Division for Information about the fisheries and wildlife values with and without the dam.
- C. General guidance on the removal of a dam (if a viable option).
- D. Information about potential funding sources for dam removal (if a viable option).
- E. Other requirements for planning, design and modification of the dam.

**Fifth Step: Explore Resident and Community Concerns Including Local Watershed Council, Conservation Clubs, Economic Development Groups, others**

- A. Historic and aesthetic values of the dam and or impoundment
  - a. Does the dam help define the community or suggest specific important aspects of its history? What alternatives may be considered to retain a portion of the dam as a monument to its history in the community?
  - b. Would creation of an off-channel pond retain recreational uses or aesthetic values, while allowing return of a free-flowing river?
  - c. What fisheries and wildlife values would likely occur in the area with and without the dam?
- B. Property Owners Interests
  - a. Residents of the impoundment may or may not have riparian rights to the water (access).
  - b. Property values may change with and without the dam.
  - c. Lake association or other resident or adjacent park owners may be interested in taking over ownership and maintenance of the dam.
- C. Other Social Issues
  - a. Public safety issues with or without the dam
  - b. Park or other public and use of the area: projected changes
    - i. Alternatives to preserve or replace valued recreational uses
  - c. Flooding concerns – hydraulic analysis may be needed to project how floodplains would be altered if the dam were breached
  - d. Other local economic considerations (waterfront business development with and without the dam).

**Sixth Step: Collect and Assess Information (Professional Engineering and/or Legal Services Necessary)**

- A. Legal Issues
  - a. Who owns the dam structure and surrounding lands?
  - b. Any riparian ownership or flowage rights?
  - c. Any potential sources of sediment contamination?
  - d. Regulatory concerns or limitations?
  
- B. Engineering Issues
  - a. Condition of the dam and deadlines to take action (if appropriate).
  - b. Accessibility to the dam for repair or removal.
  - c. Potentially affected structures (e.g. bridges, utility crossings).
  - d. Sediment quantification and removal.
  - e. Flood storage capacity and changes in floodway.
  - f. Upper limit of the impounded stream.
  - g. Hydrology (gage data or hydrologic model).
  - h. Alternatives to modify or remove the dam.
  
- C. Economic Issues
  - a. Final cost estimate of dam repair/rehabilitation of the impoundment.
  - b. Potential liability in the event of dam failure.
  - c. Potential operation, maintenance and repair cost savings.

**Seventh Step: Taking Action**

- A. Secure Local, State and Federal Permits.
  
- B. Complete Site Land Survey, Final Design Engineering Plans.
  
- C. Secure Funding (construction, site restoration and monitoring).
  
- D. Determine Sediment Management Plan (may include dredge and disposal or in place stabilization as recommended by DEQ and DNR).
  
- E. Secure Authorization for Site Access.

## Resources

For further information about dam removals in Michigan:

<http://www.michigan.gov/dnrdams>

For dam removal information from the conservation organization, American Rivers:

<http://www.americanrivers.org/damremoval/default.htm>

From the River Alliance of Wisconsin, information on the small dam removal program:

[http://www.wisconsinrivers.org/SmallDams/prog\\_dams.html](http://www.wisconsinrivers.org/SmallDams/prog_dams.html)

From the Heinz Center for Science, Economics and the Environment, 2 reports on Dam Removal Research:

<http://www.heinzcenter.org>