Dam Safety- Fact Sheet

Montana Watercourse and Montana Department of Natural Resources and Conservation
Water Resources Division

Inspection of Structures

Fact Sheet: 15

Routine inspection and maintenance are important to keep a dam functioning safely. The owner should inspect a dam and its structures at least annually. This fact sheet is intended to give the owner advice on how to better inspect all dam structures and to better address any problems that may be observed.

Before starting any inspection a detailed checklist of all the spillways and/or outlet works of the dam should be created. A consistent checklist will help establish a picture of how the structures are behaving over time. A rapidly changing situation may indicate a serious problem. See Dam Fact Sheet # 2 for what to bring on an inspection.

The regional DNRC dam safety engineer should be contacted if there are any questions of the seriousness of the observation.

Concrete Structures

What to Look For:

- Cracking
- Rust stains
- Seepage under concrete or through joints and cracks
- Efflorecence
- Function of weep holes and under drains
- Displacement of concrete slabs
- Sedimentation or blockage of conduits and basins

What to Record:

In the inspection of concrete structures the inspector should note all structural cracks. The width of large cracks should be recorded and scheduled for repair. Any seepage from cracks or joints in concrete should be noted along with the cloudiness of water. Cloudy water could indicate erosion of the bedding or fill around and under the concrete spillways or conduits.

Using a hammer to tap the concrete will indicate any voids behind a slab that have occurred. If the soil surrounding a concrete structure is eroding away through seepage or improper drainage then the slabs may shift. Any displacement that this causes should be measured and closely watched to prevent major failure and costly repairs (See Dam Fact Sheet # 11).

Metal Structures

What to Look For:

- Corrosion
- Operation of valves and sluice gates
- Condition of coatings
- Operation of cathodic protection
- Deformation
- Proper alignment
- Structural integrity of joints or seams
- Seepage.

What to Record:

Metal structures such as corrugated metal pipe typically have a service life of 25 years and are sensitive to deterioration due to moisture, acidic conditions, and salt. When inspecting metal structures any rusting or damaged coatings should be noted and photographed. Note any operation of valves or other moving parts in the dam, to establish if it is working properly. Inspect any cathodic protection system to guarantee the active system is still functioning. See Fact Sheet #13 for more descriptions of problems with metal materials.

Proper ventilation and confined space precautions must be considered when entering any spillway conduit system.

Plastic Outlets

What to Look For:

- Proper alignment
- Deformation
- Blockages
- Ultraviolet damage

What to Record:

When inspecting plastic outlets the inspector should be aware of any deformation or displacement of the pipe from its original position and shape. Also inspect the plastic pipe for any cracking or clogging on the inside of the pipe. Verify that all joints are still aligned and waterproof. Leaking joints will undermine the bedding of a plastic pipe. This may severely damage the pipe since structural integrity of the pipe is highly dependent on even bedding. Also record any seepage around the pipe.

For more questions, comments, additional fact sheets, and area specific information you can contact DNRC or Montana Watercourse at the addresses below or on the web.

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