

## *Frequently asked questions:*

1. Do AquaDams® meet current laws and regulations as they apply to water retention systems?
2. Are AquaDams® available for rental?
3. How long can AquaDams® remain in place as a water retention system?
4. Are there limitations related to the flow volume?
5. What is the maximum depth of containment for dewatered work sites?
6. How does flow velocity affect the stability of a AquaDam®?
7. Are there any limitations on the bed width of the containment?
8. Are there any limitations related to the slope of the stream bank or stream bed gradient?
9. How does erosion around the AquaDam® affect its usefulness?
10. What is the installation time and effort?
11. Are there limitations to the size of the work area within the AquaDams® retention basin?
12. Is any additional area outside of the work area required for placement of pumps or other equipment?
13. Does use in the middle of a stream as opposed to the edges or sides preclude the use of AquaDams®?
14. Are there any problems in cold weather?
15. Are AquaDams® reusable?

AquaDams® are a simple, effective, and environmentally-friendly water retention system.

### *AquaDams® are ideal for:*

- Cofferdams
- Stream Diversion
- Flood Control
- Bridge and Dam Construction or Removal
- Lake and Pond Cleaning
- Fish Habitat Protection and Restoration
- Boat Ramp Construction
- Pipe Line Crossing
- Aquatic Pollution Containment
- Erosion Control
- Temporary Reservoirs
- Portable Dam or Boat Dock
- Dewatering Work Sites

In selecting a water retention system, several questions and concerns arise because of the many variables that must be considered. The following list contains many of the most common questions and concerns about dewatering work sites with AquaDams®.

#### **1 - Do AquaDams® meet current laws and regulations as they apply to water retention systems?**

AquaDams® are designed to meet EPA guidelines under Section 404 (40 CFR §230.1) as well as the Clean Water Act. The Clean Water Act and Section 404 guidelines prohibit discharges of dredge and fill material when a practicable alternative exists. AquaDams® provide a practicable alternative because they do not use any fill material and have no adverse effects on the aquatic ecosystem.

#### **2 - Are AquaDams® available for rental?**

AquaDams® are available for rental at very reasonable rates. Our team of AquaDam® experts will install AquaDams® and will remove them when the job is done.

### 3 - How long can AquaDams® remain in place as a water retention system?

The outer woven geo-tech plastic tube on all AquaDams® contains UV inhibitors to prevent damage due to sunlight exposure. A properly maintained AquaDam® can remain in place for over a year in direct sunlight. Stored properly, the shelf life of a AquaDam® is indefinite.

### 4 - Limitations related to the flow periods

As long as the maximum water depth during the life of the project is accounted for, the AquaDam® will remain stable for the duration of the project. In the event of unexpected increases in water levels, most AquaDams® can be removed in one day without any damage to the environment and then reinstalled after the water levels return to normal. A second option would be to increase the height of the installed AquaDam® by pumping more water into the structure and temporarily super inflating it. For example, a four-foot AquaDam® could be super inflated to 8 feet in height under the right conditions.

### 5 - Maximum depth of containment for dewatered work sites

*The maximum recommended depths of containment for filled AquaDams® are:*

Standard Size	Inflated Height	Inflated Width	Max. Controlled Water Depth
12"	12"	12"	9.5"
18"	18"	32"	14"
24"	24"	44"	19"
36"	36"	66"	30"
48"	48"	96"	38"
72"	72"	144"	50"
96"	96"	192"	68"
120"	120"	240"	88"

The maximum controlled water depth for any particular AquaDam® can be increased by backing it with a second AquaDam® or gravel, dirt, or sandbags. In most work sites, sandbag excavation of some kind will take place. The excavated material can be placed as backing for the AquaDams®, enabling them to handle greater water depths. The figures for maximum controlled water depth in the table above are based on free-standing AquaDams® with one side dewatered.

### 6 - How does flow velocity affect the stability of a AquaDam®?

Flow velocity is a significant factor during the installation of the AquaDam®. As the flow is pinched off by the AquaDam®, the water velocity around the end will increase, and possibly erode the stream bed or bank. Stream bed erosion causes undercutting in the path of the AquaDam® and the actual retained water depth may be greater than anticipated. Undercutting should be accounted for when selecting a particular AquaDam® size. Stream bank erosion could increase the width of the stream at the installation site and require a longer AquaDam® to span the stream. Since AquaDams® can be deployed quite quickly, any changes in retained water depth or stream width due to erosion are minimized.

Once a AquaDam® is installed in flowing water, the water will begin to pool in front of it and the flow near the AquaDam® will be minimal.

### 7 - Are there any limitations on the bed width of the containment?

AquaDams® come in lengths of 50, 100, and 200 feet. Several standard AquaDams® can be joined with patented coupling collars to achieve virtually any length. Custom AquaDams® of any length can be made with sufficient notice.

### 8 - Are there any limitations related to the slope of the stream bank or stream bed gradient?

If the slope is parallel to the length of the AquaDam®, it does not have an affect on the stability of the structure as long as the depth of the containment does not exceed the recommended values along that length.

The ideal installation site for a AquaDam® would be a smooth flat surface, but it will also provide a stable retention system on mild stream bed gradients. If the stream bed gradient becomes more extreme, backing the AquaDam® with gravel, dirt, or an additional AquaDam® will prevent sliding or rolling. If the only available installation site has a significant bed gradient, the best solution is to use a larger AquaDam® to provide additional head above the contained water.

### 9 - How does erosion around the AquaDam® affect its usefulness?

A AquaDam® is flexible and conforms to the ground and surrounding area to provide an effective seal. Even if the ground is eroded away after installation, the AquaDam® will fill the gaps to maintain the seal.

The AquaDam® itself is not susceptible to erosion and does not use fill materials that can be washed out. By eliminating the use of fill materials, AquaDams® also meet the demands of EPA guidelines and Clean Water Act laws that prohibit fill discharge.

If a AquaDam® is placed on a soft base which allows water to permeate its subsurface and undercut the structure, it will have a tendency to sink as the base is washed out. This problem would present itself with any water retention system. If this problem is a possibility with any given site, it should be considered as a factor in selecting a particular AquaDam® size. A larger AquaDam® provides a larger footprint to resist undercutting and sinking and ensures that the retention depth will stay within recommended values if sinking should occur. Any leakage through the ground or subsurface would be directed to a small pump in order to keep the dewatered areas dry.

### 10 - Installation time and effort

The US Army Corps of Engineers performed an installation time study comparing sandbag dams with AquaDams®. A group of trained people could install a 4' x 100' sandbag dam in a little over four hours: Two Corps personnel could install a 4' x 100' AquaDam® in 30 minutes.

The exact number of laborers and time required to install AquaDams® are related to size of structure, terrain, water depths, and water flows. The following chart illustrates manpower required in a typical installation in flowing water:

AquaDam® Size	Rope-Assisted Installation	Number of Laborers in Water	Number of Laborers on Pumps	Number of Laborers on Ropes
1-3 feet	no	1-3	0-1	0
4 feet	no	3-6	1	0
4 feet	yes	2-4	1	2
6 feet	Yes	2-4	1	3-5
10 feet	Yes	2-4	1	4

### 11 - Are there limitations to the size of the work area within the AquaDams® retention basin?

It is important that adequate clearance between the work area and the AquaDams® be provided when the retention basin is established. Adequate clearance will reduce the potential threat of puncturing a structure if heavy equipment is used in the work area next to the AquaDams®. Do not crowd your work area, if possible.

**12 - Is any additional area outside of the work area required for placement of pumps or other equipment?**

No additional area is required outside of the work area since AquaDams® form a platform-like surface when deployed. Pumps, if needed, can be placed on the AquaDams® themselves. Other than water and pumps, AquaDams® do not require any equipment or fill material for maintenance. As long as the structures remain filled with water they will continue to perform effectively.

**13 - Does use in the middle of a stream as opposed to the edges or sides preclude the use of AquaDams®?**

AquaDams® have been used successfully in the middle of streams and lakes, as well around their edges. When used in the middle of a body of water, the first AquaDam® serves as a stable platform and work area after it is deployed. Any subsequent AquaDams® required by the project can be deployed with pumps and equipment placed on the first AquaDam®, thereby eliminating the need for boats to convey the equipment to and from the shores or banks. The fact that the AquaDams® act as a walkway and work platform becomes especially important when work activities are in mud.

**14 - Cold Weather**

AquaDams® perform in temperatures as low as -20<sup>0</sup>F and will operate at -60<sup>0</sup>F with the cold weather vinyl option. At very low temperatures the water inside the AquaDams® will freeze. If attempts are made to move the AquaDams® under these conditions, the ice inside the AquaDams®, will crack and break, exposing sharp edges or points that may damage or puncture the AquaDams®.

**15 - Are AquaDams® reusable?**

Under most conditions AquaDams® can be reused. Even a punctured AquaDam® can easily be patched. As long as the AquaDam® is not irreparably damaged during the deflation, it can be pulled from the water and stored for another project.