Groins/ Groin Fields

Groins are shore-perpendicular structures that are connected to land and extend into the lake. The function of a groin is to interrupt or slow the movement of sediment along the shore. They are especially well suited for areas where the sediment in the nearshore is sand as they will likely create beaches. Due to their shore orientation, groins function best in areas with stronger alongshore currents (parallel to shore) than cross-shore currents (perpendicular to shore).

Groins are commonly straight, linear structures, but they can have various shapes including a "T" or "L" shape. Newer groins are typically constructed with armor stone, concrete blocks or concrete modules. Older groins used timber and steel sheet-pile. A series of groins may be preferred at a broader location, creating a groin field. Some groin fields may exhibit a saw-tooth appearance where there is sand on the updrift side of each groin and an absence of sand on the downdrift side.

When a groin is used in conjunction with other structures or is the last groin in a groin field, it is referred to as a terminal groin. In the case of a groin used with other shore structures (i.e. detached breakwaters), the intention is to provide added protection to the beach formed by the additional structures.

The most significant impact of groins is the capturing of sand. Sand builds up on the updrift side of a groin, coupled with a loss of sediment on the downdrift side. In most cases, the longer the groin, or the greater the number of groins in a groin field, the greater the loss of sand downdrift. To counter these effects, nourishment, or placement, of sand in the amount that is estimated to be trapped by the structure under average water levels is required during the construction of all groin projects.

To maintain a groin or groin field, periodic monitoring of the structure(s) is necessary. Re-positioning or replacement of the armor units may be necessary to ensure the structure functions properly. If excess sand builds up on the updrift side of the groin(s), sand bypassing may be necessary. The design and construction of groins requires the services of a professional engineer and a contractor.

At first glance, breakwaters, jetties and groins appear to be similar structures, but they are each unique in their location and function. In comparison to a breakwater, jetties are considerably smaller and are not primarily used to reduce wave action. Jetties are designed primarily for sediment management and are typically located at the mouth of a river. Breakwaters are typically found surrounding a harbor facility as they are primarily designed for limiting wave action. Groins are shore-perpendicular structures, often smaller than jetties, and are intended to trap sediment as a means of erosion control, and are therefore not found at harbors or river mouths.

Groin Field: Ottawa County

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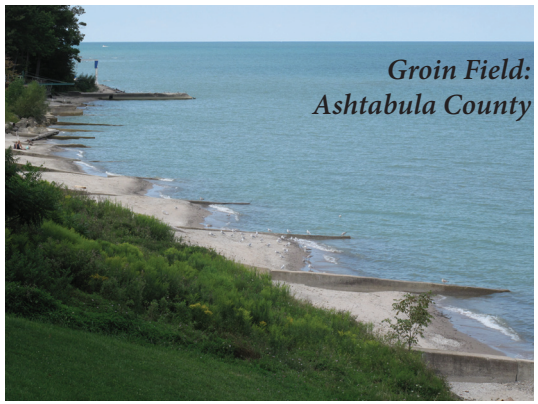
Groin Field: Bay Village



Groin Field: Ashtabula County