The use of sandbags is a simple, but effective, way to prevent or reduce flood water damage. Properly filled and placed, sandbags can act as a barrier to divert moving water around, instead of through buildings. Sandbag construction does not guarantee a watertight seal but is satisfactory for use in most situations. Sandbags are also used successfully to prevent overtopping of leaved streams; for diverting current flow to specific area, ring boils on levee back slopes or behind levees; to provide weight on back slopes of saturated levees, visquine and straw bales; and to build buttresses on back slopes and/or toe saturated levees.

Untied sandbags are recommended for most situations. Tied sandbags should be used only for special situations or for specific purposes such as filling holes, holding visquine or straw bales in place or to form barriers backed by supportive planks or aluminum sheet piles. Sandbag filling operations can be accomplished at or near the placement site, at centrally located filling sites, i.e., fire stations, dikeing district building or at actual sand borrow pits. If the bags are to be prefilled at a distant location, due consideration must be given to transportation vehicles and placement site access. In many cases, access may be only by boat, tractor or helicopter.

The most commonly used bags are treated burlap sacks, approximate size 24 inches by 14 inches. The treatment prevents rodent deterioration while in storage. Unused empty bags can be stockpiled for emergency use and will be serviceable for years if kept dry and properly stored. Filled bags of earth material will deteriorate quickly. Untreated bags or any kind of bags can be used in emergencies.

A sandy soil is most desirable for filling sandbags but any other available material such as silt, clay, gravels or a mixture of these may be used. Sand is a pervious material and additional weight is obtained when the soil in the sack gets saturated, and sand filled sacks shape really well. Clay materials are difficult to fill bags with and are difficult to shape. Gravels are too pervious and are very difficult to shape. In emergencies, when vehicle access is cut off, use the back side of the levee or adjacent dry field to obtain the sandbag material. Sandbag berms can easily be constructed by two people, as most individuals have the physical capability to carry a sandbag weighing approximately 40 pounds.

Untied bags should be filled approximately 2/3 full. Tied bags can be filled more, but leave enough neck so that it can be tied properly.
How to Fill a Sandbag

Normally, filling sandbags is a two- or three-person operation. One member of the team should place the bottom of the empty bag on the ground slightly in front of wide spread feet with arms extended. The throat of the bag is folded outward about 1-1/2 inches to form a collar and held with the hands in a position that will enable the second team member to empty a rounded No. 2 shovel full of material into the open end. The shoveler should carefully release the shovel full of material into the throat of the bag. Haste in this can result in undue spillage and added work. The third team member stockpiles and/or stacks full of material into the open end of the bag facing downstream. Initially fill the low spots before placing bags the full length of the area to be raised. Always keep the slope of the top of the sandbags the same as the adjacent water surface slope. Start at the downstream end of the sandbag operation, and about one foot landward from the river’s edge at the levee top, placing bags the full length of the area to be covered. Place succeeding bags lengthwise and parallel to the direction of flow, with the united open end of the bag facing downstream. Remove any debris from the area where bags are to be placed. Place the 2/3 filled bags lengthwise and parallel to the direction of flow, with the united open end of the bag facing downstream. Initially fill the low spots before placing bags the full length of the area to be raised. Always keep the slope of the top of the sandbags the same as the adjacent water surface slope. Start at the downstream end of the sandbag operation, and about one foot landward from the river’s edge at the levee top, continuing upstream. Place succeeding bags with the bottom of the bag tightly and partially on the open end of the previous bag. Offset adjacent rows or layers by one-half bag length to eliminate continuous joints. To eliminate voids and form a tight seal, compact and shape each bag by walking on it and continue to walk on it as succeeding layers are placed.

Pyramid Placement Method

Pyramid placement is used to increase the height of sandbag protection.

Place the sandbags to form a pyramid by laying equal numbers of rows on the bottom as there are vertical course.

It is very important to compact each bag in place by walking on it, butting the ends of the sacks together, maintaining a staggered joint placement and folding under all loose ends.

Ringing Sand Boils

1. Do not sack boil which does not put out material.
2. Height of ring dike should be only sufficient enough to create enough head to reduce flow through boil so that no more material is displaced and boil runs clear.
3. Never attempt to completely stop flow from boil.
4. Build an overflow section, so water over top of ring dike in a controlled manner. Dislodge overflow water away from track ring dike over mires or by other methods to reduce erosion on levee slope.

U.S. Army Corps of Engineers Sandbag Policy

It is the responsibility of local governments and flood control districts to maintain a supply of sandbags adequate to cover anticipated emergencies. The St. Paul District maintains a limited stockpile of sandbags and other flood fighting materials intended to augment the stocks of local jurisdictions during actual flood emergency situations. At the discretion of the District Engineer, a portion of the St. Paul District’s stockpile may be loaned to meet a specific local flood emergency situation. Unused supplies must be returned to the St. Paul District as soon as the emergency conditions are over. Consumed supplies must be replaced in kind or be paid for by local interests, unless the District Engineer has declared a flood emergency in that locality, in which case the bags can be considered expendable without reimbursement.