

# CONSTRUCTED WETLANDS

## WHAT ARE THEY?

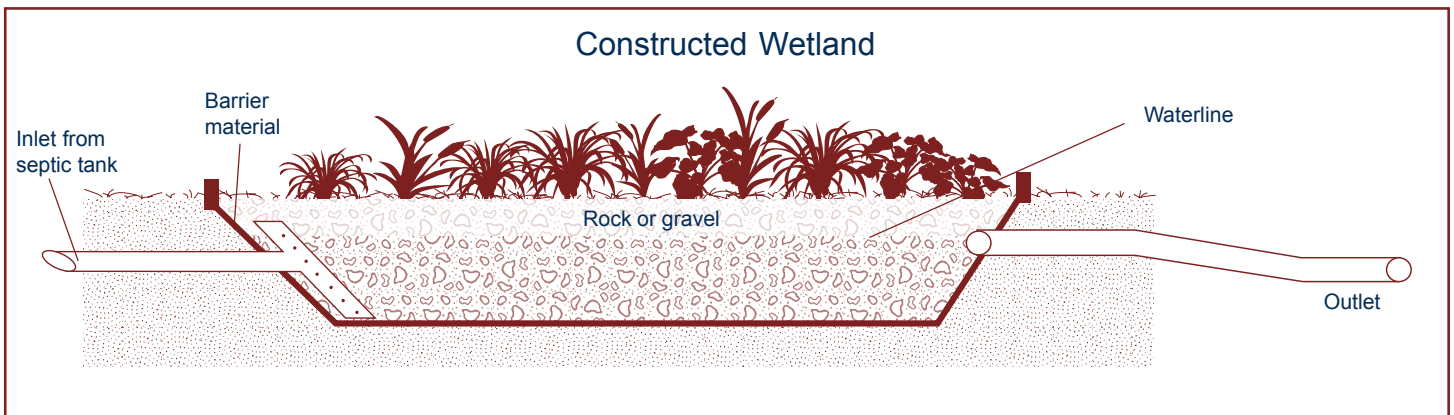
A constructed wetland is a gravel filled bed that treats and reduces the volume of effluent from a septic tank. Constructed wetlands are an effective and relatively low maintenance method of providing on-site wastewater treatment.

A constructed wetland consists of a shallow (18" deep) pit lined with 30 mil plastic, filled with clean

gravel or small rock and planted with evenly spaced wetland plants. The wetland should be surrounded by a border that holds the liner in place and keeps the surface water out of the wetland. It also has at least one hundred feet of subsurface absorption field that is used in the event that treated wastewater is discharged from the wetland.

Constructed wetlands are generally used in areas where soil conditions are not favorable for subsurface disposal; however, this method may also be used in soils that exhibit good percolation rates or in soils that are saturated due to high groundwater. Wetlands are adaptable to almost any lot since they can be constructed in any configuration from a long, narrow trench to a short, wide bed.

## HOW DO THEY WORK?



The effluent from the septic tank flows slowly through a network of perforated pipe into the filter material where the wetland plants take over the effluent's treatment. Most of the treatment is accomplished in the root system of the plants where pathogens (disease-causing bacteria) and nutrients from the household wastewater are degraded and removed. The volume of water is reduced by the uptake of water by the plants in the bed.

Constructed wetlands typically operate with no discharge, but occasionally the plants may not be able to use all of the wastewater generated. Since Oklahoma law does not allow wastewater to be discharged on the surface of the

ground, a small subsurface absorption field must be added. Surface application, which requires the effluent to be disinfected, may also be used in lieu of the subsurface absorption field.

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## PLANTING SUGGESTIONS

**M**any species of water-loving/wetland plants can be used in a constructed wetland. The most common species of plants used are elephant ears, all types of iris, canna lily and calla lily. It is important to plant a combination of plants to accommodate the winter months as well as summer months. The goal is to have a healthy stand of plants growing throughout the bed so that the wastewater is properly treated.

## MAINTENANCE

**U**nlike the typical flower garden, constructed wetlands do not require manual watering or fertilizing. The septic tank effluent provides both of these. However, because of the nutrient rich wastewater, the main problem is overgrowth. The development of thick root mats will reduce the storage volume of the wetland, block the flow of wastewater and cause pooling in the wetland. Thus, it is important

to periodically weed and thin the wetland area. Do not, however, remove too many plants or disturb large portions of the wetland at any given time.

Plants are easily removed by hand, however, protection such as rubber gloves should be used while working with the system and you should always wash your hands when finished. Do not use herbicides in the wetland area as this could

damage the wetland plants and pollute the water in the bed.

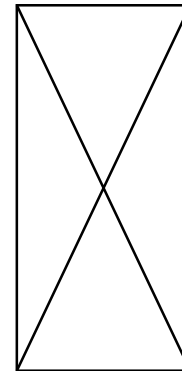
As with any on-site sewage disposal system, it is imperative to practice good water conservation to insure the proper operation of a constructed wetland. When constructed wetlands are properly maintained, they will provide high quality wastewater treatment and lasting landscape beauty.

## ADVANTAGES

- Low cost.
- Easy to maintain.
- Can be used to replace/repair failing subsurface absorption fields. In many instances, the existing septic tank and subsurface absorption field can be utilized in conjunction with a new wetland.
- They are attractive and can complement a home with lush attractive vegetation and/or colorful flowers.
- Produce a high quality effluent.

## DISADVANTAGES

- Take up space on the surface of the ground.
- Materials may not be readily available.



## PLANTING TIPS

- Prior to planting, always rinse the roots of plants to remove any soil. If soil is left on the roots it can accumulate in pores between the gravel and block the flow of water.
- Experiment with different varieties and colors of plants as you might in a flower garden. Plants to be used in the wetland should be carefully selected not only for their function as part of the treatment process, but also for their beauty.
- Share your excess plants. Contact your local DEQ office prior to thinning plants. There may be others installing constructed wetlands and in need of plants.
- **NEVER use limestone gravel in the wetland.** The use of limestone gravel will inhibit plant growth.