

# **EBMUD/SCHOOLS CREEK RESTORATION PROJECT**

## **WHY WE RESTORE CREEKS**

Cattle have overgrazed many creeks on EBMUD Watershed Lands for almost two centuries. Most of the trees have been stripped away by logging, age, cattle and erosion. We will be restoring these creeks by replanting native trees like those that used to live here.

Creeks can often recover on their own if cattle are removed for 4-5 years. When cattle are fenced out, rushes and creeping wild rye grass usually grow in first. They are often followed by rushes, tules and cattails. Seeds for all these second wave of plants are either washed down from existing plants upstream or wash off the feet of birds that come to eat and drink here.

## **WHY WILLOWS?**

Since birds and gravity will be taking care of rushes, cattails and tules, we begin our restorations by planting willows. These trees are usually the first ones to grow back on a damaged creek. They like to be planted right in the creek water. In fact, if they are planted even a few feet above the creek, they will die during the hot, dry summer. Planting them right in the water also helps protect them from nibbling rodents like mice and gophers.

Once the willows mature, they shade the water and creek banks. This slows evaporation of the creek and keeps the water cooler. More insects can then live in the creek. These insects provide food for bird's, raccoons, fish, and other animals. The willows also provide cover and roosting places for these larger animals while the creek provides more water and food.

## **WHY OAKS AND BUCKEYES?**

In the shade of 3-4 year old willows, we can plant oaks, buckeyes, and other native trees. This third wave of plants does better growing in the shade of willows. We often use planting tubes to simulate willow shade if we want these trees to get a head start. The oaks and buckeyes are planted right next to the creek but not in the water. This gives their roots a chance to grow deep enough to follow the water table as it drops during the summer drought months.

Tree seedlings have a hard time surviving in nature because so many animals like to eat them, especially when the trees are the last green plants remaining at the end of the summer. Deer, gophers, mice, voles and cattle all love tender young plants: Seedlings must also survive our hot, dry summers. This is really hard for them to do. It is also the reason we return to the same creek for 2-3 years to replant new trees each year. After this amount of effort, creeks are well on the road toward becoming healthy again.

## **WHY STUDENTS?**

Rangers tried to restore all our creeks by ourselves for 2 years. It was really hard because there was so much to do. We decided that we needed help and asked teachers and students if they could help us. Now, over 30 classes visit each year to plant, mulch and water the trees. This is fortunate since we can't water the trees like you would at home. So the planting tubes around your trees hip

provide shade and conserve water. The mulch, meanwhile, helps keep the soil around the trees cooler and helps hold the moisture in longer.

Thank you for helping us restore the earth. Every plant that grows, every tree that is planted, helps produce oxygen for us to breathe, takes pollution out of the air, provides better wildlife habitat, and improves water quality. Thanks for being part of a team that is restoring the earth.

A healthy watershed will normally have clean creeks with cool water, a thriving riparian corridor, and stable, well-vegetated land. These help keep water quality high, provide fish and wildlife habitat, control erosion and maintain dry season creek flows. A healthy riparian habitat (creekside vegetation) is used by more species of wildlife than any other type of habitat.

Dense roots and vegetation stabilize creek banks, help reduce soil loss, filter sediment, and slow flood waters. Trees, shrubs and their canopies cool the water. The leaves, fallen branches and logs that drop into the creek form the base of the food chain.

## **PLANTING SUGGESTIONS**

(Read two days before potting!)

We deliver acorns and buckeye seeds in starter kit bags, which are filled with leaves. Keep them in a refrigerator until two months before your planting field trip. Two days before planting in pots, take the acorns out and soak them in a glass of water overnight. Begin by filling the planting pot over 3/4 full with planting soil (it holds water better than potting soil). Then take two seeds with some leaves out of the starter kit and quickly but gently place them on top of the soil. Quickly cover the seeds with just enough soil to hide them and water gently.

### **SPEED**

It is important to do this planting quickly so any root that is showing doesn't dry out. This can begin to happen after being exposed to the air for just a minute. The acorns or buckeye seeds don't have to point in any particular direction. Gravity and hormones will tell the root to grow down. After the root gets a good start, the stem and first leaves will begin to grow. Buckeye stems/leaves can often be seen within several weeks of planting. Oaks usually take much longer to break the surface, sometimes over 6 weeks! What oaks lack in speed, however, they make up for in longevity (250-350 years).

### **WATERING**

Once in pots, seeds should be watered 2-3 times per week, just enough to re-soak the soil. The soil should be allowed to dry out a bit between waterings, so don't let enthusiastic students keep them too soggy. To allow for easier observations of plant growth, you can keep plants indoors for a while. But it is best to grow the plants outdoors after they are 2-3 inches tall, if you can protect them from raccoons, squirrels, and mischievous kids. This acclimatizes the plants to the weather and makes them stronger at transplanting time.

### **AVOIDING CAR PUDDLES**

On the day you bring the plants to the creek, don't water them: It is best to transplant them with partly dry soil. This makes them lighter to carry and ensures that they drip less in the trunks of parent's cars. Also, bring a change of shoes and socks for yourself, parents and students, and plastic bags to put your muddy ones in. This will also help keep cars cleaner.

### **SURVIVAL**

Remind the class that not all plants live, whether in pots or at creeks. Little rodents are always looking for plants for dinner. Freezes, droughts, floods, and mudslides also make life a challenge for young trees. This is why many classes plant lots of trees each year. We also use planting tubes around the oaks and buckeyes to protect them from sun and grazers.

The rangers will also bring willow cuttings for your class to poke into the creek. When the willows grow tall, they provide protective shade for the oaks and buckeyes. Classes that can't visit until April or May will mulch the oaks and buckeyes. Others will carry water to them. Thanks for taking an active role in restoring our local creeks. You are helping improve the atmosphere, water

quality, wildlife habitat, as well as slowing erosion into our drinking water reservoirs and San Francisco Bay.

### **What the Creeks look like after planting**

The Rangers will bring willow sticks for you to poke into the creek.

The willows sprout leaves that:

- ¥ Provide shade for the other trees
- ¥ Keep the water cooler for the insects, newts and frogs
- ¥ Restore habitat in which wildlife can hide and nest
- ¥ Produce oxygen for us to breathe
- ¥ Slow down the creek flow improving drinking quality.

The blue tubes protect the newly planted oaks and buckeyes. This keeps mice, gophers and deer from nibbling on them. The tubes also provide some shade. We will put mulch around the tubes to keep the soil moist and to prevent weeds from growing. Oaks and buckeyes like to be planted near water, but not in it like willows.

The creeks can be really muddy, so be prepared to get dirty. We try not to walk much in the creeks, because this creates more goo that washes down into the drinking water reservoirs or San Francisco Bay. The creek crossing is on the left side of the photo.