J.P. Gonzales Planting for the Army Corps of Engineers

The Los Lunas Plant Materials Center (LLPMC) has been involved in two plantings on the Rio Chama in Abiquiu, New Mexico. In April 2002, the LLPMC planted 750 coyote willow (*Salix exigua*) on a newly-built diversion dam canal which is adjacent to the J.P. Gonzales lumber yard on NM State Highway 84. In October 2004 at the same site on the inlet, the LLPMC planted 12 New Mexico olive (*Forestiera pubescens*) that were started in one-gallon container tree-pots with tapered bottoms (the tree-pots measured 4"x 4" x 14"). On the outlet (the second planting site located about 300-feet downstream from the inlet), the LLPMC seeded 1/10 acre with Indian ricegrass (*Oryzopsis hymenoides*) and bottlebrush squirreltail (*Elymus elymoides*).

These plantings serve as mitigation for the removal of native vegetation during the construction of this diversion dam. The grass seeding will help to stabilize a 30 percent slope that is the maintenance access to the outlet gate. Furthermore, these plantings provided the LLPMC with an opportunity to test both new plant materials and new planting methods. The project was funded by the Army Corps of Engineers in Albuquerque, New Mexico.

Methods

Using a 10-amp rotary hammer drill outfitted with a 3-inch x 1-inch drill bit, we planted coyote willow hardwood stem cuttings (8-10 feet in length) on the inlet and outlet of the diversion canal to a 3-foot depth. Each willow was planted in a separate hole and placed on 1–2-foot centers. Because the soil contained a large amount of gravel, drilling was very difficult (Figure 1).

The transplants were planted down to about a 30-inch depth using a 12-inch spade style shovel. Once again the soil contained a high percentage of gravel and possibly caliché making digging through it very difficult (Figure 2).

Figure 1: Planting coyote willow using an electric rotary hammer drill at the inlet to the diversion canal, February 2002

Figure 2: Digging the 30-inch planting hole was difficult in the hard, gravelly soil.

The root crowns of the plants were set about 15 inches below the soil surface with the main stem extending at least 2 feet above the soil surface. Before backfilling, a 40-inch long and 1-inch in diameter plastic pipe was placed in each hole. The bottom third of the pipe is perforated. When irrigating though the pipe, the perforations allow the water to reach the lower portion of the root system. Future irrigation for the next two years should require, at a minimum, one application in June and a second in July. Each application will be applied through the pipe and consist of 4–5 gallons.

On the west-facing slope (on approximately a 30 percent grade), a 4-pound pure live seed (PLS) mixture of Indian ricegrass and Bottlebrush squirreltail was hand-broadcast onto the soil (Figure 3).

The seed was then hand raked into the soil to about a ¼ – ½-inch. Due to a recent rain shower, the soil was moist at time of planting.

Figure 3: Raking in the grass seed ¼- to ½-inch depth.

Results

By the fall of 2004, the coyote willow that was planted on the bank of the outlet displayed the best survival rate (above 80 percent) (Figure 4).

Figure 4: After three growing seasons, established coyote willow cuttings on the river bank next to the outlet canal (October 2004).

The coyote willow planted on the inlet displayed a survival rate of about 50 percent. Only the willows on the upper bank survived (Figure 5). We hypothesize that the willows on the mid- and lower-banks probably drowned during high spring water flows. These water flows probably lasted longer than 4 weeks, the amount of time it takes to typically drown the willows. However, the existing stand seems to be established with several plants spreading vegetatively on the slope.

The transplants and grass seeding will be evaluated spring of 2005 for emergence and rate of survival.

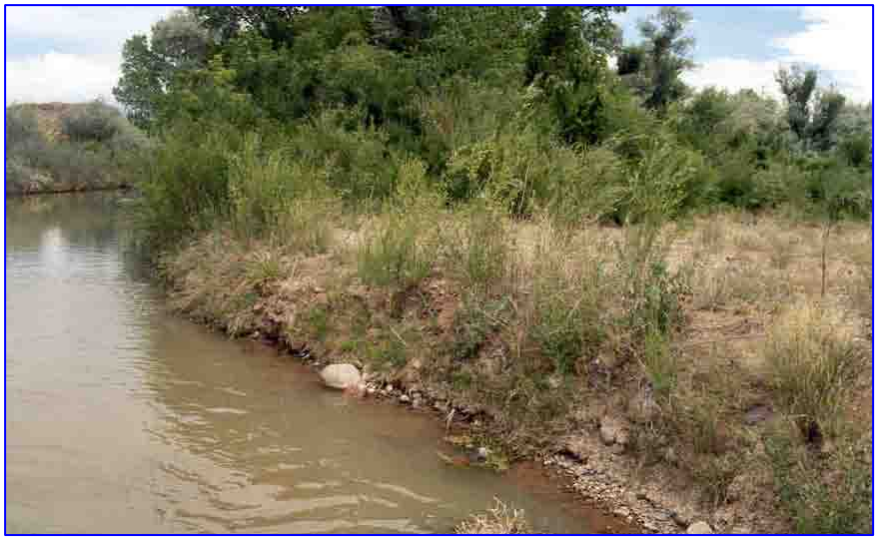

Figure 5: Established coyote willow cuttings on the ditch bank of the inlet canal (October 2004)