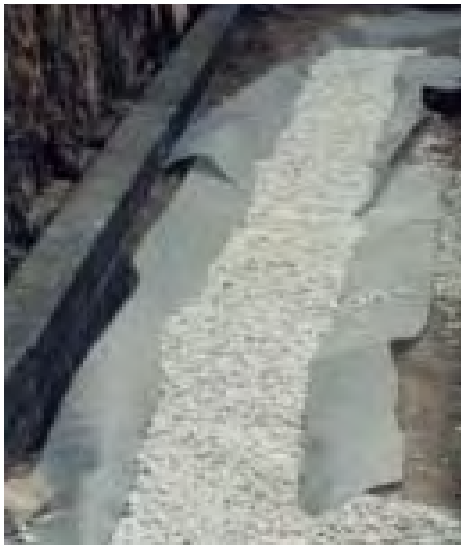
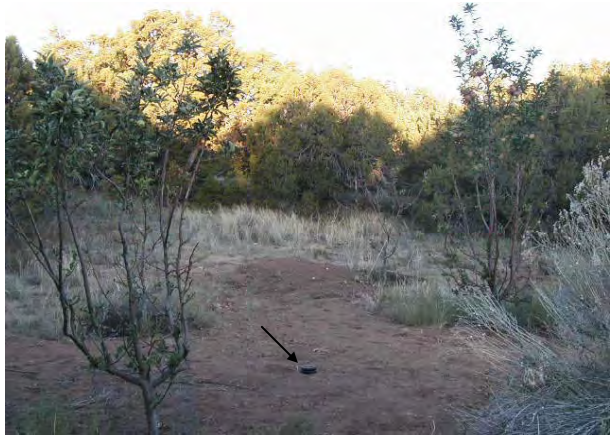
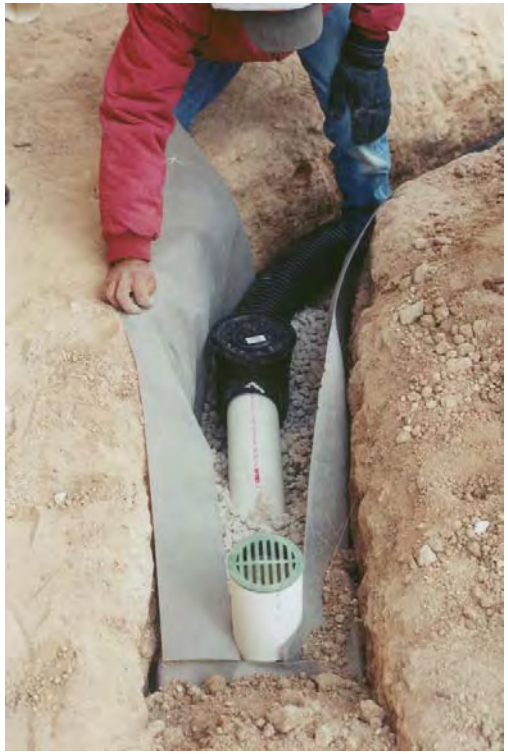


Subsurface water collection and distribution systems known as “Pumice Wicks” were invented by a local designer, Tom Watson. The pumice wick captures effluent or stormwater water from a channel or pipe, and holds it for 2-6 weeks. Measured capacity is 4.5 gallons of water per cubic foot of wick. (608 liters/ cubic meter). As the ground dries out, the pumice wick releases its water and makes it available to nearby plants. Tom’s systems have also been used for untreated sewage.

Illustrations Counterclockwise From Upper Left

1. Pumice Wick before closing and burying. The wick will be supplied by harvested water from hard-scape runoff.
2. Pumice Wicks in an orchard. Note fill pipe at the arrow. This allows for dosing with other water sources.
3. Cross section of a Pumice Wick showing the perforated pipe at center, the surrounding pumice, and the filter fabric that maintains the shape of the wick and prevents clogging. The dark band around the outside is the soil. Cross section is 1 foot x 1 foot . (.3 meter x .3 meter)
4. Installation of a pumice wick and roof canale catchment system at a residence near Santa Fe.





Pumice Wicks

EARTHWRIGHTS DESIGNS

Technology and Nature

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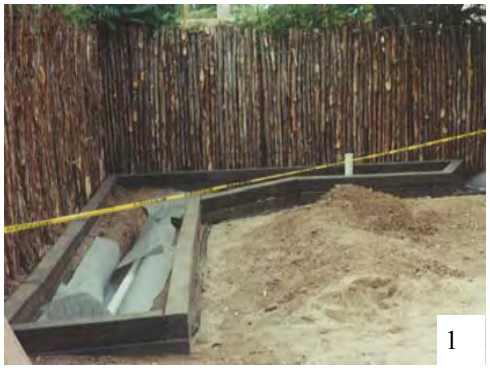
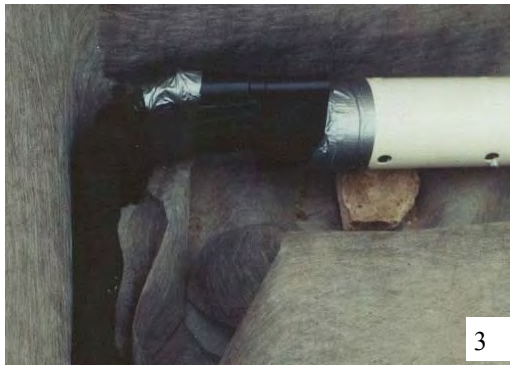


Water Harvesting from Hardscape

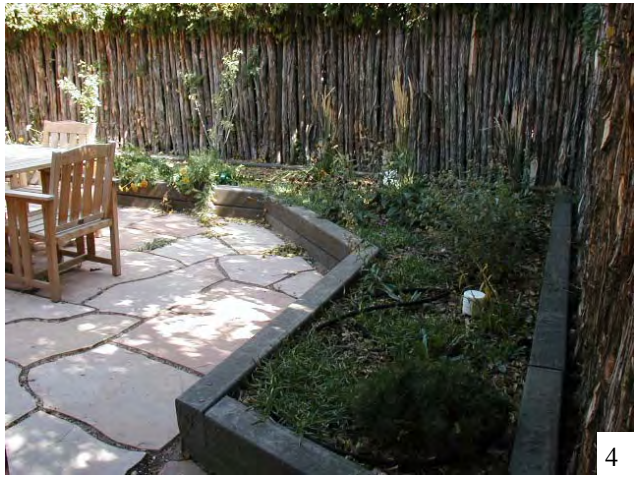
Private Residence
Santa Fe, New Mexico

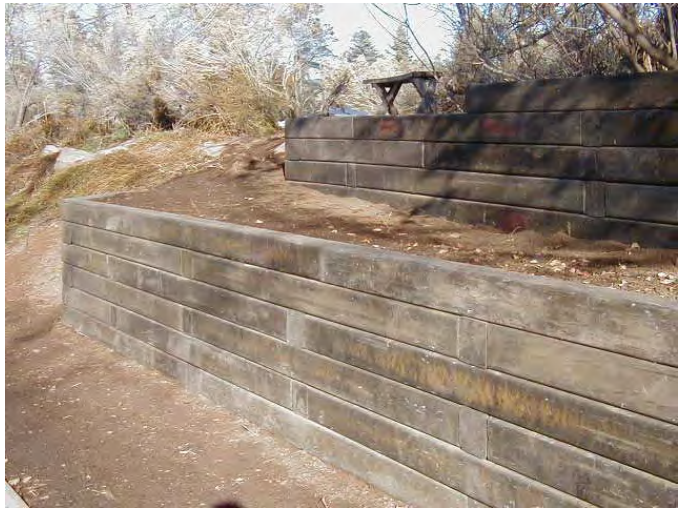


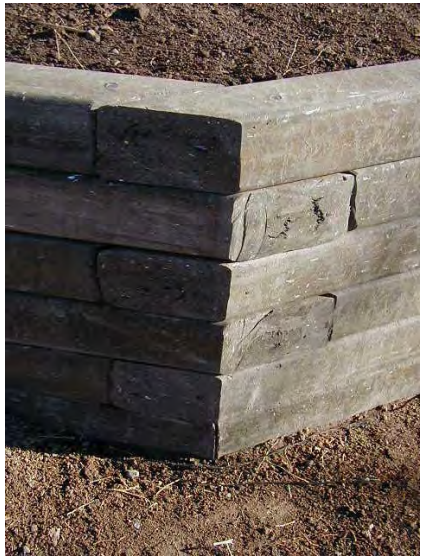
This installation shows how a site can be modified to harvest water. The original grade was pitched to drain to the foundation of the building. This was changed to a 2% outward slope. A planter box was built with landscape ties that are made from 100% recycled nontoxic materials. These ties provide structure and they are immune to insects and rot. The flagstone patio was constructed on a compacted base that allows most storm water to sheet off. Between the edge of the patio and the planter box is a trench with draincore that collects and directs the storm water into the pumice wick at the center of the planter box. This way the storm water is harvested and stored in an underground “sponge” that releases it to the plants as the soil dries out. In addition, “watering the garden” requires only that the pumice wick be filled with a hose, so no costly irrigation system was required. A mix of native and drought tolerant plants included perrennials, bunch grasses and evergreens for low maintenance,seasonal color, habitat, and beauty.

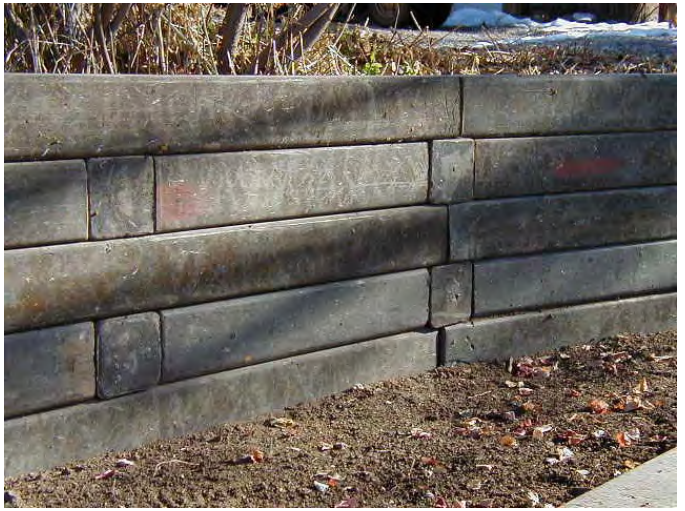
Illustrations:

1. Site Panorama during construction which shows open pumice wick
2. Connection detail of drain core to drain pipe in the pumice wick. This is the point connecting collection to distribution.
3. Completed Planter Box and Flagstone patio
4. Site after one year. Note vertical fill pipe to pumice wick on right









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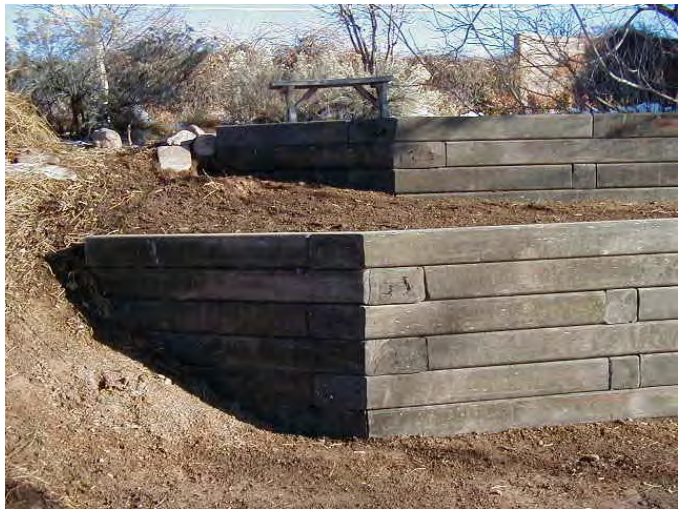
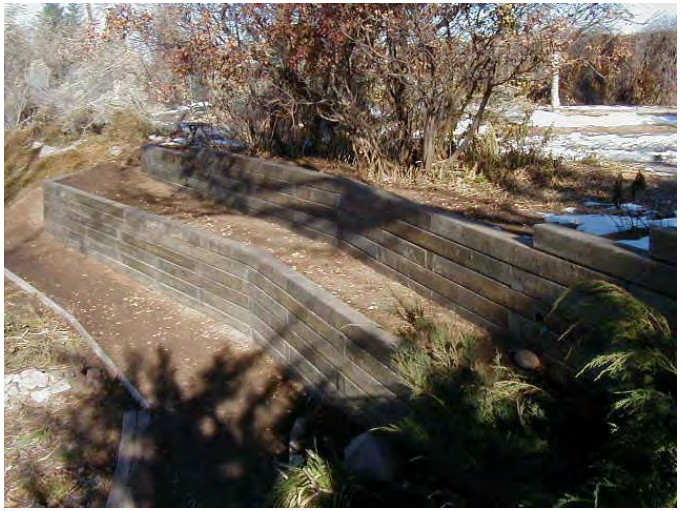


Terraced Retaining Walls

Nambe, New Mexico

Retaining walls stop runoff, prevent erosion, and provide areas for storm water to infiltrate. This installation is just above the Nambe River and along side a driveway. Structural strength was needed to support the drive and terraces. A non-toxic material was required to protect surface and ground water. The Product selected was the “Impact Post” It is made of 100% recycled materials and carries a 75 year manufacture's warranty.



Revegetation of Slope with no Irrigation

This installation shows a revegetation project on a three-to-one slope in the foothills of the Sangre de Cristo Mountains. The area was seeded in May with a buffalo and blue grama grass mixture, as well as wildflower seed. The seed was covered with a soil amendment combining composted manure and composted tree bark. On top of that went barley straw mulch, and the entire hillside was stabilized with a geo-jute net, which acts as a retainer for both soil and water. The net will eventually decompose into compost. Tests at a soil erosion laboratory have shown this system to be one of the most effective. The photo at the right was taken three months after the project was begun. Photos below show the coverage in the second growing season.

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STRAWDAMS FOR EROSION CONTROL : Various Sites, New Mexico

EARTHWRIGHTS DESIGNS

Technology and Nature

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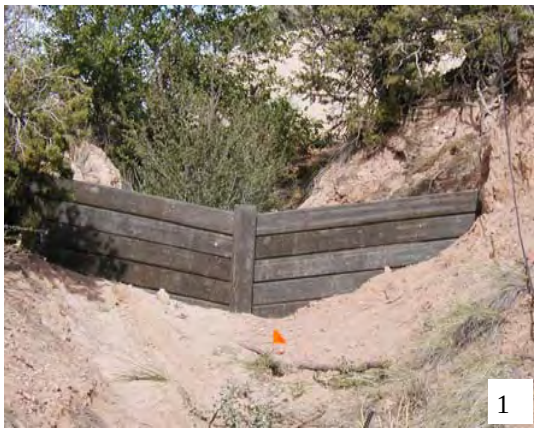
Straw dams are an inexpensive tool for erosion control where flows are not intense. The bales also absorb water and release it after the flow has passed. Eventually, the bales will rot. Tee posts are used to anchor the bales instead of rebar. In some locations the rebar would be left sticking up, possibly becoming safety and liability issues. T-Posts offer safety and potential reuse. The T-Posts will also allow a second course of bales to be added when the original course silts up.

The dams at upper left show the amount of sediment collected after just four months. This site is ready for native plants, which will use the runoff water and stabilize the soil. The upper right shows an installation to protect a satellite dish. The installers are digging a shallow trench to key in the bales. All disturbed soil is put upslope pf the dams. The lower left shows an installation in a newly formed gully. Note center spillway common to all check dams. The lower right is a newly installed dam system.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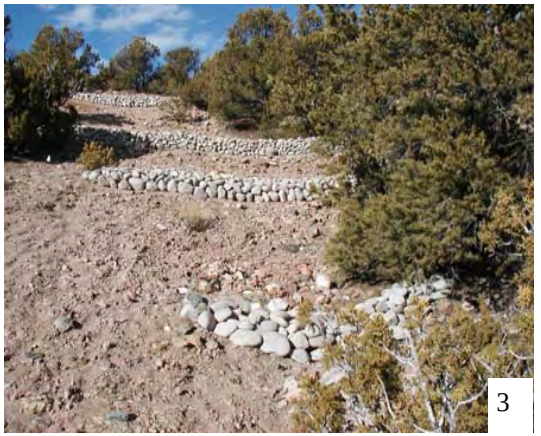
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CHECKDAMS FOR EROSION CONTROL

Various Sites, New Mexico

EARTHWRIGHTS DESIGNS

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Erosion control is most often the management of the energy in moving water. Check dams are an effective tool for that management. They can be constructed of many types of materials including :

1. Impact posts and other recycled plastic construction materials
2. Non-toxic construction leftovers and rubble
3. Cobble and other materials imported to a site. These dams actually were built with rubble and dressed with the more expensive cobble for aesthetics

The basic concepts of check dams are shown below

1. Spacing for sediment fill
2. Size and material appropriate to flow
3. Keyed into banks and channel
4. Spillway at center away from the banks
5. Apron below the dam with hard surface appropriate to the level of flow