

FINAL REPORT - TECHNICAL

DESCRIPTION OF THE PROJECT

Fourteen water distribution systems were installed with at least one system in each of seven counties (seven systems in each RC&D Area). Susquehanna County received four systems, Columbia has three, Wayne and Northumberland each has two, and Bradford, Tioga, and Wyoming Counties each have one system. Farmers in all sixteen counties of the two RC&D Areas were invited to participate but interest could not be generated in nine of the counties. Initially, each participant was required to submit a one to two page narrative describing their livestock operation and how this project would improve water quality, improve manure distribution, and promote planned grazing systems (Exhibits Section 2). Thirteen participants were initially selected with the available funds being equally divided between the two RC&D Areas. Nine of the original participants carried their projects through to completion. Five replacements were later identified and selected to complete the project.

From the onset it was decided that no more than \$7,500 of the project funds would be paid to a single participant. This level of funding was left to the discretion of the USDA Natural Resources Conservation Service (NRCS) District Conservationists when they developed the project plans and contracts with the landowners. All but two contracts were less than the maximum cost share, therefore we were able to install the additional four systems. The local NRCS personnel designed, inspected, and certified completion of each installation in their assigned counties. NRCS, Conservation District, and Cooperative Extension assisted with the pasture walks and field days.

As proposed, the project included a wide variety of water delivery systems. Solar energy systems were installed in Bradford, Columbia, and Susquehanna Counties. The solar pump systems ranged from the very inexpensive Surflo pump used in Columbia (T. Carr) to the much more costly, higher output deep well system installed at the T.Repine farm in Susquehanna County. One installation (G. Hayes) in Susquehanna County utilized a modern design windmill to pump the water for livestock. Several of the systems utilized gravity to deliver water to multiple water tanks throughout the paddock system. With these systems, water is pumped to storage tanks located high on hills and then gravity fed to drinking troughs via plastic pipelines. Where AC electric power was available, conventional pumps were used to pressurize pipeline water delivery systems. Most pipelines were placed on the surface, thus requiring draining prior to winter. The J. Temple system in Northumberland County buried the pipeline below frost and installed frost free hydrants.

The greatest success was in demonstrating the benefits of providing water to livestock in each paddock where they are grazing. The participants reported on the significance of making water readily available and documents their satisfaction with the systems. The elimination of access lanes and the resulting erosion was a significant benefit. The use of multiple watering locations prevented excessive concentrations around the water troughs. Since cattle spent more time grazing and less time traveling to get water, there was better distribution of waste throughout the pasture.

SELECTED QUOTES FROM THE PARTICIPANTS' REPORTS:

*We try to graze as long as we can so the cows can use the solar watering system to the fullest extent. With using the watering system out in the pastures we have been able to keep the animals out on the pasture longer during the hot days in the summer.
The solar pump system has been a very good investment of time and money.*

**IMPROVED LIVESTOCK WASTE DISTRIBUTION ON PASTURE
USING INNOVATIVE WATER DELIVERY SYSTEMS
ME# 350301**

I was very pleased with the water system and its benefits to the herd. The cattle did not create long paths or walkways through the pasture to return to the barn for water. I noticed that the cattle seemed to be more content in the pasture, and did not congregate in one "heavy use" area. My original internal fence plan called for a walk lane, however, having seen how well the system worked, I no longer need this lane. The cattle moved very well from section to section...

*I believe my experience with this system has been a factor in some of my client's decisions regarding similar systems.
Observations: I open front pole barn in this system, for livestock shelter, notes much less manure accumulation during the grazing season.*

At all times you could find cows at the watering trough throughout the time they were in pasture. The livestock were very comfortable in pasture whether they were grazing or resting, utilizing the entire area of each pasture.

We used this system for the drinking water for about 14 replacement heifers followed with about 40 sheep and their lambs. 2002 was a very hot and dry year and we moved the stock a lot due to slow growth on grass, the watering system, however, worked very well.

*Manure distribution was excellent as was useage of grass for greatest production.
Numerous people, travelers, visitors have commented on our pasture operation and we are thrilled to be a partner with the(Pocono) Northeast RC&D Council and the PA Growing Greener Program.*

Cattle also spent more time grazing since fencing off the brook and woods and installing this system. Cattle spend time eating and resting instead of traveling for water. Another benefit is that cows are kept out of muddy water holes along the brook.

This system allows us to get water to the herd at any of the 40 paddocks at any time. We were able to change paddock design to place the tanks in more strategic locations for better grazing consistency and grass utilization. The system has been attention free other than moving the tanks. We feel it has improved herd comfort grazing habits, and production. This has resulted in a more efficient grazing program.