

DEMONSTRATING WATER QUALITY

It started with the need for a drain clean-out but the work on Murray and Wilma Scott's farm ended up being a model for how to reduce erosion and keep water clean too.

Story by Bonnie Gropp

Photos by Goeff King

It began with a fairly typical agricultural problem and ended with a groundbreaking demonstration project.

The East Wawanosh farm owned by Murray and Wilma Scott was by their description both a blessing and a curse. Hundreds of acres of rolling landscape and an abundance of springs and wetland areas, it was also prone to soil erosion. "The lay of the land slopes in such a way that there was nothing in heavy rain to stop it. You'd see muddy water coming across to the drain. I've always been interested in stopping that," said Murray.

It was trouble with a municipal drain that ultimately put the wheels in motion to solve that problem with an ambitious, often innovative project that spanned three years.

The drain in question was established 50 years ago as a watershed covering several hundred acres. It has open and closed portions which during times of high runoff or heavy melt were plagued by soil erosion.

As with any municipal drain clean out, maintenance involves various groups. The Scotts first contacted the municipality. But it was after getting in touch with the conservation authority that the work took on new dimensions.

Scott said, "I had probably talked to Geoff (King, Maitland Valley Conservation Authority stewardship services co-ordinator/ parks supervisor) before. He thought we had a unique situation here because of some of the problems we had."

"Murray's property is very unique as it has a wide variety of soils and contains many springs and wetlands. Murray farms much of the land surrounding the drain and is able to produce good quality crops."

The drain also outlets into a spring-



The Scott farm has become a demonstration project that attracts many visitors. Above, Murray Scott (rear of photo, right) explains some of the reasons for the work.

fed coldwater stream with trout that has high quality water and eventually outlets to the Belgrave creek, "one of the best trout and salmon watercourses in the Maitland Valley watershed," said King.

It was in talking to King that the possibility of creating a

demonstration project to address some of the concerns came up.

"I have worked with Murray on conservation projects, but this time the work was initially just a clean out of a municipal drain. It expanded from there to not being just an issue of sediment in the drain, but of how



Wood chips (top left) take nitrates out of the water. Top right, soil is dumped on a berm constructed to divert runoff.

to keep it out. This was the initiative of the conservation authority," said King. "But the key is the Scotts. They have to be recognized."

Essentially, the result is a project demonstrating different techniques of soil and water conservation, King adds. "It incorporates a wide range of beneficial management practices for riparian management and shelter belt demonstration."

The project would be too expensive for any one farmer to undertake, but the hope is that they can visit the Scott property and take ideas from it that would help their individual situation.

For the Scott project, King investigated funding. A number of partners came on board. Covering the phase one work, with a total cost of \$48,000 was the Ministry of Natural Resources, Wetland Habitat Fund, Township of North Huron and Huron County.

A real feather in the cap, however, was the \$70,000 funding of phase two from Greencover Canada. The Scott project was one of 10 sites chosen in Ontario to help showcase farming practices that offer environmental and economic benefits to farmers. The funding is provided under the Agricultural Policy Framework and is delivered in Ontario by the Ontario Soil and Crop Improvement Association in partnership with Agriculture and Agri-Food Canada and the Ontario Ministry of Agriculture Food and

Rural Affairs.

Scott also made an in-kind contribution to the project, which included his time, use of machinery and equipment, and source material off his property.

With funding in place, the work would be done over three years.

To fight soil erosion, several strategies were put in place. Two grassed waterways were constructed

to carry surface water to a protected outlet. The waterways will move water that now enters the downstream end of the drain back to the headwaters of the drain.

Diversion berms divert the flow of surface water into the wetlands.

Five wetlands were constructed to capture runoff. "This will store and filter the water back to the drain," said King.

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Three water and sediment control berms were constructed to hold surface water off the agricultural land and surface water is released slowly through hickenbottoms into the wetland. Also the existing systematic field tile is picked up and drained into the wetlands.

A unique natural channel design is something King is perhaps most proud of. "To solve the clean out problem we tried a new technique, creating natural channel that meanders by putting live sods back into the drain to keep it narrow and deep. This is a self-maintained system that will also improve fisheries."

"We're thrilled to death with the way it turned out," said Scott. "I think it's worked exactly the way I envisioned it would."

There are two improved stream crossings and an open ditch demonstrates a properly designed rock chute and sediment trap that will also serve as a low flow water refuge pool for fish. "If we ever do maintenance on the drain again it would only be to clean out the traps," said King.

For riparian area management they incorporated a vegetated buffer on both sides of the drain using native trees and shrubs. Shelter belts were planted along the field boundaries to control wind erosion and create corridors for wildlife movement.

The work also brought into play some new technologies, among them dispersion sandwich nitrate treatment. "In general the tile water runs through wood chips taking nitrates out of the water before it reaches the drain. This year we were successful in removing 100 per cent of the nitrates," said King.

As well, the field tile water is being diverted from the 14-inch closed drain into a wetland for treatment. Clean water then re-enters slowly back into the top end of the open drain.

Structures will be placed on the outlet of the wetlands and field tile that will allow the landowner to control the level of the water in the wetlands and field tile. These structure allow Scott to raise the outlet to various depths, keeping the water table depth at a more beneficial level for yield and water quality

while allowing field operations.

Now in its final year, the project should be completed with the tree planting and buffering.

For King the project has been exciting and educational. "We've definitely learned and we hope that this kind of thing is a service the Authority will provide, to look at a landowner's property and put a plan together. But it will be farmer-driven. We're here to provide advice."

Doing a plan does assist farmers with getting funding, he added. "You can contact the conservation authority on this. We're aware of a number of possibilities."

With the Scott project there will be continued monitoring and testing. "Global warming is a big issue right now and if we see that Murray can store more water back and release it when he needs it to his crops, it's going to be very useful information."

For now, they are most interested in getting people to come and see the project. "That is the key," said King, adding that they have already made presentations to a number of groups.

"I get a bang out of showing people this," said Scott. "We are still thinking of things we can do to show people. And very definitely encouraged by the interest thus far."

For their part the Scotts couldn't be more pleased. "Left to our own devices we probably would have come up with a cheap fix," said Scott.

Work for these kinds of changes are important, but not especially in the business sense. "As far as putting money back into your pocket with these practices it doesn't happen," said Scott. "Clean water is the big issue and society maybe needs to step in and support farmers in making these changes."

Scott has nothing but praise for the partnership that came together with this project. "All people dedicated to agriculture tend to be reluctant to get involved with people who like ducks," he smiled. "I think it was neat that the partners who supported this came at it from different angles. I'd like to think it proves that with give and take you can still do things that benefit agriculture, the environment and wildlife."◇

