

**Final Report—"Using milkhouse waste for an alternative cash crop"  
Project FNE 99-230 231**

## **Goals**

At the start of our project, milkhouse waste water was draining through our pasture area. This threatened herd health and a small stream which borders the pasture. Typical waste water disposal systems which utilize leach fields often run into problems as the high fat content of the milkhouse waste water causes clogs and eventual failure of the systems. We wanted to try using an alternative "wetland cell" treatment system. Cattails are capable of growing in wastewater and have been used to purify water in other projects. We wanted to try growing an ornamental variety which might allow us to market an alternative crop for the floral market.

We have a certified organic herd of 35 milkers and 17 young stock on our 145 acre farm. Pasture forage production is the hub of our operation. We have all the calves born in April and May so that peak milk production coincides with peak grass growth in our pastures. We also have several months during the winter when the whole herd is dry and we are not producing milk. This aspect of the operation was important to the design of our wetland cell as without biologically active plants the treatment cell doesn't function during the winter.

The NRCS field staff were our primary cooperators in this project. Kevin Kaija, provided the design and helped significantly with hands on construction. There were no exact working models of similar systems. Much of the design was derived from much larger systems and theory.

## **The Project**

A 4" sewer pipe was installed to pipe the milkhouse waste water to the wetland cell area. This pipe then drops the water into a well tile which serves as a settling basin. Debris and some of the milk solids tend to accumulate here. This can later be pulled out and added to a compost pile if necessary. The water portion then overflows the well tile and goes into a bed of bark chips which further filter the water and can also be composted in later years should this decompose significantly. Finally the water flows into a bed of cattails (*Typha angustifolia*) which were planted in a bed of sand six inches deep. The cattails have grown quite well in the milk house waste water. Excess water would leave the cattail growing bed via 4" pipe to a designated grass filter area at the lower end of our pasture. This area is fenced off from grazing and established as a wildlife area. The system seems to be sized well for the amount of waste water produced. We have not had any water leave the system through the overflow pipe. We assume that evaporation and utilization by the plants has been adequate. The waste water does accumulate in the winter but subsides in spring as the cattails resume growth. It probably would not be an adequate system for us if we continued full production in the winter time. We have not done water quality tests on the discharge water as there hasn't been water flowing from the discharge pipe. Our pasture area is now well drained and cattle are no longer walking through the milkhouse waste. Our assumption is that the soils and stream have derived similar

benefit from the containment and filtration of the milkhouse waste. The cattails have grown well despite great fluctuation in water levels seasonally. They have not yet born the "cattail" which we may be able to market for floral arrangements. We expect that this year (2001) they will start to produce these seed heads.

We are satisfied with the outcome of this project as the main goal of safely containing our miilkhouse waste has been achieved. There has been much interest in our project from other dairy producers as many face similar situations on their farms. We are involved with a Vermont Grass Farmers discussion group which has been able to watch our project through out all stages. We had an opportunity to demonstrate our project to another group of farmers during August 2000 when we hosted a "pasture walk" at our farm. The event was well attended with farmers coming from as far away as Ontario. Although the wetland cell was not the only focus of the pasture walk it did generate a lot of interest and was reported in a resulting article in Country Folks Magazine.

In addition to dairy farmers we also have talked with several people investigating waste water treatment systems for dairy processing facilities. We were able to offer our experiences and pass along information resources for these individuals.

Respectfully submitted - Brent and Regina Beidler  
June 25, 2001

# MILKHOUSE WASTE TREATMENT SYSTEM

drain tile keeps controls ground water flow into the bed

waste water flows in 4" pipe

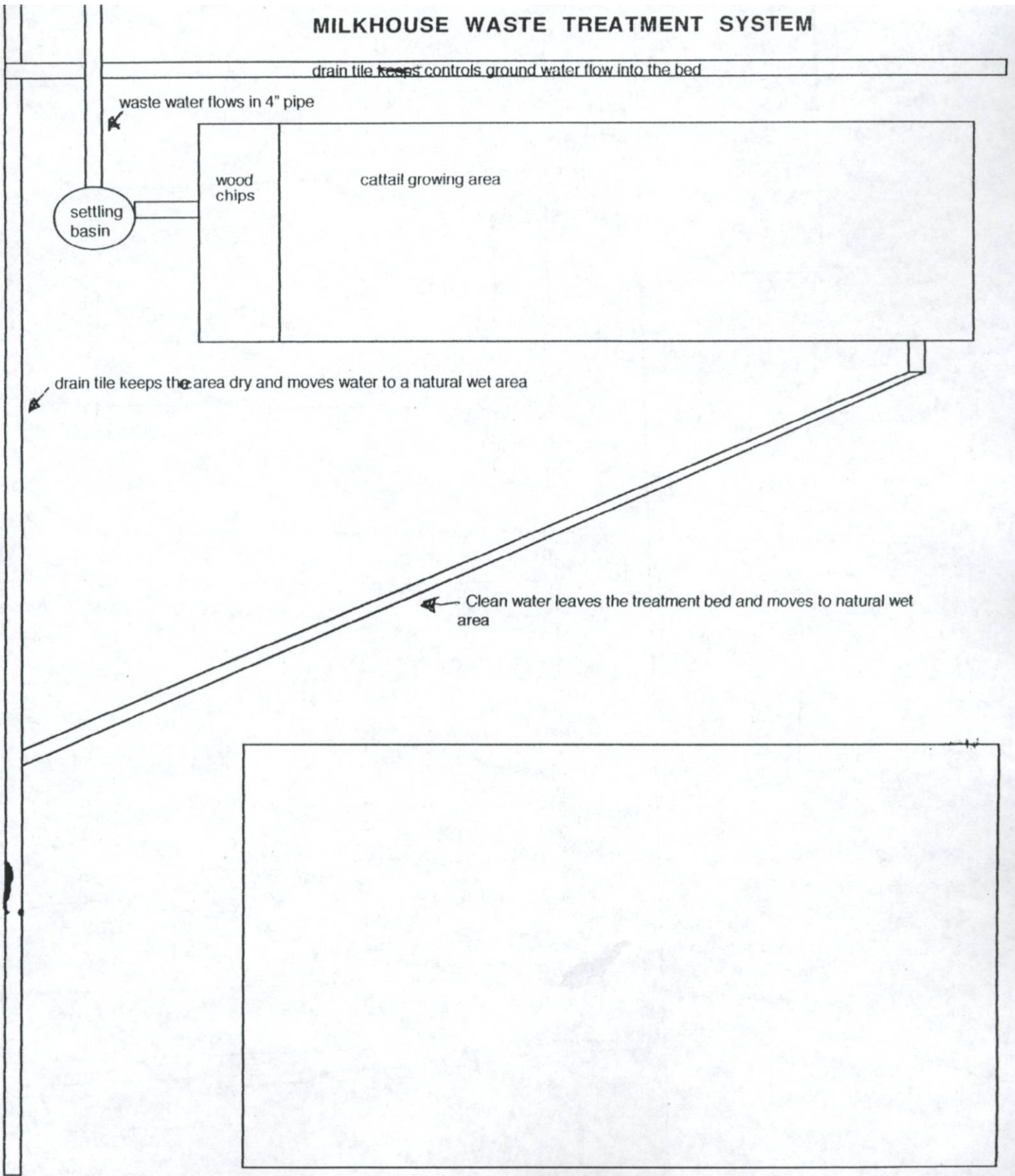
settling  
basin

wood  
chips

cattail growing area

drain tile keeps the area dry and moves water to a natural wet area

Clean water leaves the treatment bed and moves to natural wet area



vegetated filter area

BARN

TBM #1

4" drain

4" Eves Drain

6" drain

4" drain

Top of Berm

fence on outside top of berm

From Milkhouse

4" MHW

6" TILE DRAIN

4" s/d

80.0

stone trench to surface

3' well tile

wood chips

spreader

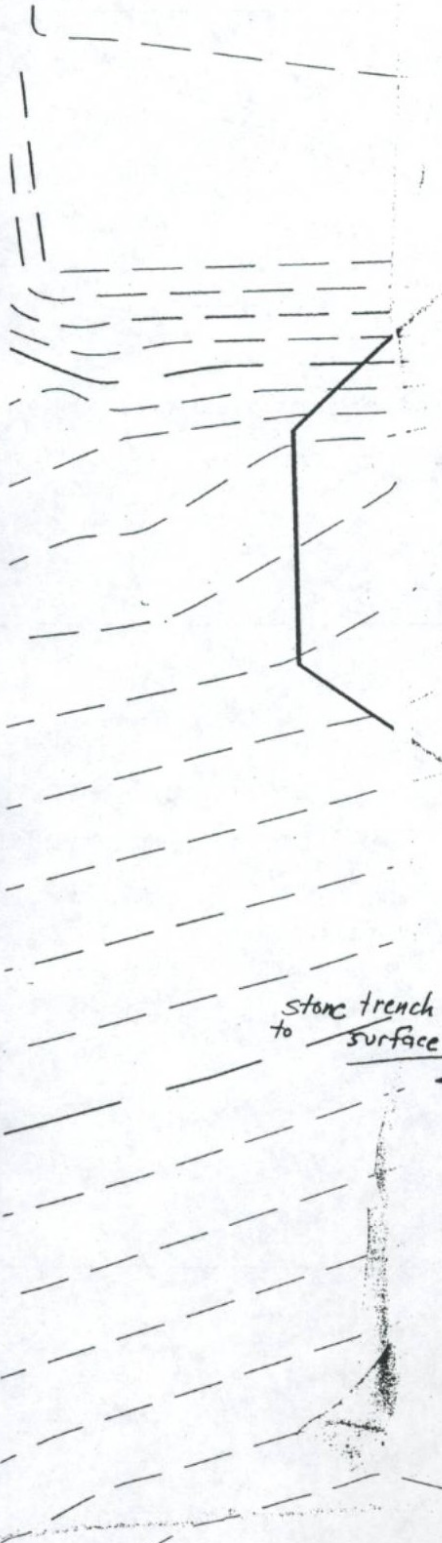
50'

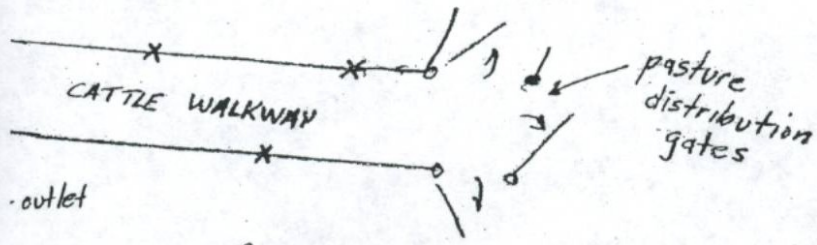
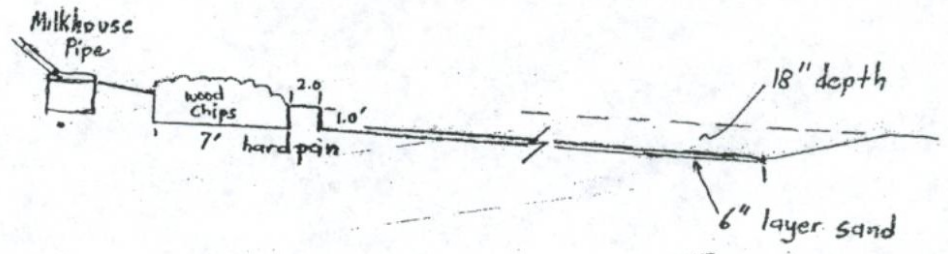
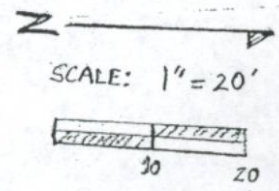
10'

75.0 cleanout

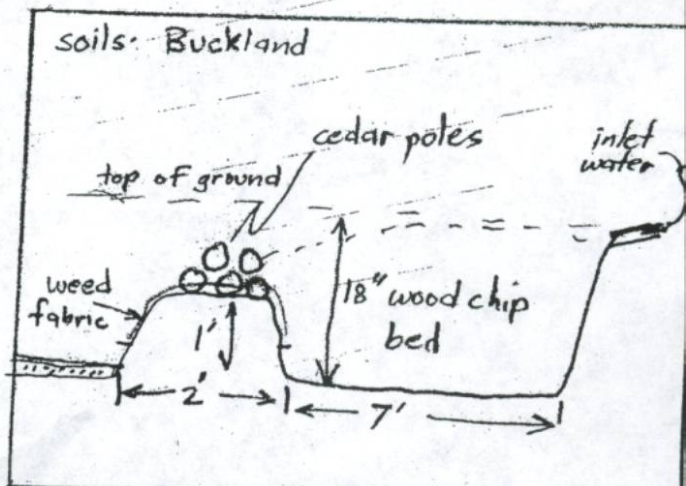
Replacement Area 2nd Cell

3/4" stone filter





outlet  
 88' x 4' not installed  
 1' x 4'



BEIDLER FAMILY FARM  
 RANDOLPH CENTER, VT  
 CONSTRUCTED WETLAND FOR MILKHOUSE  
 "WATER"

U. S. DEPARTMENT OF AGRICULTURE  
 SOIL CONSERVATION SERVICE

|          |     |       |         |             |  |
|----------|-----|-------|---------|-------------|--|
| Designed | KJK | Date  | 7/21/89 | Approved by |  |
| Drawn    | KJK | Title | 7/21/89 |             |  |
| Traced   |     |       |         |             |  |
| Checked  |     | Sheet | No. 1   | Drawing No. |  |
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