

## **Introduction**

In addition to proper design, routine inspections, and management to reduce nutrient loss from tiled fields, there are several regulations and best management practices (BMPs) to be aware of. Refer to the Required Agricultural Practices (RAP) for a complete list of tile drainage management state laws:

https://agriculture.vermont.gov/rap.

# Field Management BMPs

- Avoid working the land before the tile drainage system has had an opportunity to drain the excess water; do not work wet land.
- Perform periodic soil tests to keep track of soil nutrient levels and monitor for build-up.
- ✓ Follow the nutrient management plan.
- ✓ There must be a 25' perennial vegetated buffer around surface inlets (RAP 6.07(c)). Manure cannot be applied in this area (Image 1).
- After applying nutrients, periodically observe tile outlets for nutrient discharge, which can appear as discoloration or foam, after rain events (Image 2).
- Plant cover crops to absorb excess nutrients that have the potential to leach or otherwise reach tile.
- ✓ Don't allow surface flow over a drain outlet; it can erode to the pipe and damage the outlet.
- ✓ Reduce outflow velocity and potential ditch erosion by placing rocks at the end of the tile (Image 3). Over time, the tile inlets and outlets may be hidden by grass or brush. Mark the location of all outlets so that they are easily located in the future.



**TILE DRAINAGE IN VERMONT:** 

Factsheet No. 4

**BEST MANAGEMENT PRACTICES** 

Image 1. Surface inlet with 25-foot buffer. (Photo courtesy of VAAFM)



Image 2. End of tile outlet with foam and grey manure discharge. (Photo courtesy of Rick Wilson, Ohio EPA)



Image 3. Rocks are placed at the end of the outlet to prevent erosion. (Photo courtesy of UVM Extension)



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### **Maintenance BMPs**

- ✓ Keep records of any maintenance performed on the tiles.
- The map of the tile drainage system plan is very valuable in instances of clogging, tile failure, or adding more tile to an existing system (Image 4). Preserve it and protect the plan!
- ✓ If possible, periodically obtain an aerial photograph of your farm to get an overview of the drainage system and to identify potential problems (Image 5). Drainage functionality can sometimes by determined through use of a precision yield monitor or harvest equipment
- ✓ Don't burn grass around the outlet pipe; it can damage the outlet pipe.
- Periodically check the area around tile outlet and remove sediment as needed to avoid potential flow blockage.

### **Other BMPs**

- ✓ Avoid building roads or travel lanes over top of tile lines, unless properly protected to prevent crushing.
- ✓ Do not place feed bales or otherwise create a concentrated feeding area over subsurface tile drainage (RAP 12.1(a)).
- ✓ Drain surface runoff using ditches, swales or grassed waterways in order to make the tile drainage system work more effectively.
- ✓ Do not install tile near trees or plant trees near tile drains; roots can enter the tile and block drainage.
- ✓ If installing new buildings or utilities, ensure that the existing tile system is not disturbed.
- ✓ Rodent guards are required on new or modified tile drains (RAP 12.1(d)).



Image 4. Map of tile drain plan. (Photo courtesy of Redline Drainage)



Image 5. Aerial picture of field revealing where tile drains are located.

### Resources:

Vermont Agency of Food & Markets; (802) 828-2430; https://agriculture.vermont.gov/rap

#### References:

Ruark, Matt. E. Cooley, J. Panuska. J. Pagel, & A. Pape. Tile Drainage in Wisconsin. Discovery Farms Wisconsin. University of Wisconsin-Extension. Sep. 2017.

Veen, Sid Vander. Operating and Maintaining a Tile Drainage System. Ontario Ministry of Agricultural Food and Rural Affairs. 2015.

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