

**REPORT ON AGRICULTURAL SUBSURFACE TILE DRAINAGE AND NUTRIENT
MANAGEMENT PLANS**

Prepared for the Vermont General Assembly in Accordance with
2017 Act 75, Section 10

Submitted to the
House Committee on Agriculture and Forestry
Senate Committee on Agriculture

Submitted by
Vermont Agency of Agriculture, Food and Markets

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RE: Vermont Agency of Agriculture, Food & Markets report to the Vermont Legislature on tile drain mapping and nutrient management plan confidentiality.

The Vermont Agency of Agriculture, Food & Markets (VAAFM) presents this report to the General Assembly of Vermont regarding recommendations pertaining to (1) the mapping of subsurface tile drainage and, (2) confidentiality surrounding nutrient management plans (NMPs) and nutrient management data, required pursuant to Act 75, passed in the 2017 legislative session.

1. Introduction: Understanding the Separation of Tile Drain Mapping from Nutrient Management Plan Confidentiality

Tile drainage mapping and NMP confidentiality have, over the course of many conversations, come to be considered one singular topic. In an effort to clarify this misconception, VAAFM wants to begin this report by briefly explaining the importance of severing the link between these two topics, and urge that they be treated as related, but detached subjects. Tile drainage mapping is a tool that can be utilized to spatially gather information about tiles, which is separate from the conversations regarding potential confidentiality of NMPs. A NMP manages the amount (rate), source, placement (method of application), and timing of plant nutrients and soil amendments to budget, supply and conserve nutrients for plant production, minimize agricultural nonpoint source pollution of surface and groundwater resources, and to maintain or improve the physical, chemical and biological conditions of the soil.

The potential data that could be analyzed through the statewide mapping of tile drains, that do not compromise confidential business information, and do not require exorbitant personnel and monetary resources, is vital to improve understanding about tile drains and inform decision making. Mapping of tile drain information itself will not contribute to water quality improvements within the State, but it is a crucial step in the process of achieving desired water quality improvements.

NMP confidentiality, while in need of further discussion and input from varying stakeholders, should not inhibit the collection of tile drainage information. Confidentiality, and what falls under the definition of a public document, is a public policy decision and must be treated and addressed as such. It requires the input of all invested parties, including farmers, environmental organizations, non-agricultural community members, as well as the other constituents that are represented by our legislative body.

2. Subsurface Tile Drain Mapping

Background on Tile Drain Research and Reporting to Date: Why should information regarding subsurface tile drains be collected:

Agricultural subsurface tile drainage has been a point of discussion over the past several years in the State of Vermont. Acknowledged as a beneficial tool for farmers to remove excess water from wet fields and maintain or improve crop yields, tile drains are also surrounded by concerns about their unknown nutrient contributions to Vermont's waters. These drainage systems have initiated ample discussion in the 2015 and 2016 legislative sessions and catalyzed research efforts to quantify nutrient loading rates. The Vermont Subsurface Agricultural Tile Drainage Report (VSATD), submitted by VAAFM and the Agency of Natural Resources (ANR) on January 31, 2017 – as required by Act 64 of 2015 – recommended next steps focused on data gathering and research to identify the most appropriate best management practices to decrease phosphorus loading from fields to waters via tile drainage systems.

The VSATD Report was compiled using information from the Lake Champlain Basin Program (LCBP), which entered into a contract with the environmental consulting firm, Stone Environmental, in 2016 to complete a comprehensive literature review quantifying the current state of knowledge regarding tile drains, pertinent to Vermont. Stone Environmental and the LCBP are conducting ongoing monitoring of key water quality parameters at 12 tile drain outlets in the Jewett Brook watershed, a sub-watershed of the St. Albans Bay watershed. Flow-weighted concentrations of total phosphorus, total dissolved phosphorus, and total nitrogen are being collected along with discharge measurements. This data collection is ongoing and is scheduled to end in 2018 unless the research project is extended. Additionally, Stone Environmental is estimating tributary loads, assessing the tile drain nutrient load significance, and compiling a final report to summarize findings. This is scheduled to be completed in late 2018.

The LCBP Technical Advisory Committee (TAC) formed a subcommittee that is focusing on identifying knowledge gaps and areas with the greatest need for research. The Lake Champlain Steering Committee has approved a budget of \$200,000 for research focused on tile drainage starting in calendar year 2018. This project will be chosen from proposals submitted to the Alternative and Innovative Phosphorus Load Reduction Projects for Agricultural Sources in the Lake Champlain Basin Request for Proposals (RFP) to be released by LCBP in November 2017.

To further explore tile drainage in the State of Vermont, the Tile Drain Advisory Group (TDAG) was formed in September of 2016 by VAAF. The purpose of the group is to provide input from a variety of partners and communities, including representation from the LCBP, Stone Environmental, tile drain installers, water scientists, farmers, representatives of VAAF and ANR, as well as environmental organizations. Following the completion of the last TDAG meeting with the LCBP TAC, a general plan was developed that outlined the focus moving forward with tile drain research. The general plan included conducting synoptic sampling, meeting again in December 2018 once increased data is available to discuss modeling, adding at least one subsurface versus surface water comparison in Vermont, and staying up to date on current research exploring hydrology and tile drains.

The TDAG reviews studies, presentations, and data to draw conclusions about the benefits and shortcomings of tile drains. Recommendations made by the TDAG and expressed in VAAF's tile drain report agree that above all, more data is needed before conclusions can be made about the true impact of tile drainage and to identify the appropriate solutions to reduce phosphorus losses from tile drain systems that are already installed.

In addition to work completed by the TDAG, VAAF recently released a RFP for Subsurface Tile Drain Sampling and Analysis Services. The RFP was awarded to three contractors, UVM Extension Northwest Crop and Soils Program, UVM Extension Champlain Valley Crop, Soil and Pasture Team, and Franklin County Natural Resources Conservation District (in partnership with the Vermont Association of Conservation Districts and several other Conservation Districts).

These contractors will conduct outreach and locate farms that will undergo anonymous sample collection from their tile drains for at least one year. The aggregate data will be reported to VAAF, and will be collected from various geographic areas of the State during various times of year and weather events. Through this data collection, VAAF will be presented with valuable information concerning the presence of tile systems throughout the State, existing management practices and soil conditions, and more importantly, the concentration of nutrients present at tile drain outlets.

Agricultural Subsurface Tile Drainage Mapping Options: How would the Secretary require the collection of subsurface tile drain information

There is a lack of available information about the presence of tile drains in farm fields in Vermont; mapping of drainage systems has been proposed as a means to quantify the extent and density of tile

drainage throughout the State. Once the extent has been captured, decisions about management strategies can be made that will work towards improving water quality. For VAAFMM to make informed decisions regarding tile drain mapping, it has been clearly stated that more data and access to information are crucial.

A report commissioned by the Department of Environmental Conservation (DEC), and conducted by Stone Environmental, Subsurface Tile Drain Analysis: Literature Review, explored various mechanisms of tile drainage system mapping. Several options for mapping are Geographic Information System (GIS) spatial analysis, ground penetrating radar dragged across the surface of each crop field suspected of containing tile drainage systems, and field based mapping approaches.

One resulting determination from this report was that a ‘silver bullet’ solution to mapping does not exist. All of the mechanisms have pros and cons, but the most cost effective and feasible method, as determined by the report, was to gather information about tile drains using field-based mapping approaches, including using the P-Index from NMPs. Other mapping options would offset the resources available for important water quality projects due to the high costs of the mapping methodologies. These options could also potentially require additional permits for projects, which would use even more resources and even further extend the timeline for implementation of critical water quality projects. Therefore, VAAFMM believes there are two realistic mechanisms that could be used to collect tile drainage information:

1. VT Phosphorus Index (P – Index) – (Version 6.0) and Farm Field Boundary Shapefiles- these items are components of NMPs that are required to be developed on each permitted or certified farm in Vermont. Electronic submission of this data for all fields along with the annual reports for all operations would provide the Agency with information on the presence or absence by field of tiled acreage on a farm.
2. Conduct a survey of all permitted or certified farm operators to collect all the information necessary (discussed in the subsequent section) for mapping.

The option for mapping tile systems through the submission of information gathered by the P-Index and farm field boundary shapefiles, could be required of farms as part of their annual planning process. A mapping technique focused on presence/absence of tile drainage systems in fields, and includes reporting total tiled acres on farms, would provide VAAFMM with usable data, fill knowledge gaps, and allow for decision making to occur in a more timely manner with a significantly smaller financial burden. This information could be collected by requiring electronic submission of NMP data annually for certified and permitted farms.

The other option would be to create a survey for farmers to complete with the necessary information, and then return to VAAFMM. This method may prove to be problematic regarding survey response rates, as farmers already have to keep track of ample amounts of paperwork and forms, and there is no guarantee VAAFMM would receive enough responses to prove meaningful without increased resources to visit and physically collect this information from all farms.

The necessary information needed from farmers pertaining to their tile drainage systems that would allow VAAFMM to properly and accurately analyze tile presence or absence throughout the State is included in every NMP, which a Large Farm Operation (LFO), Medium Farm Operation (MFO), or Certified Small Farm Operation (CSFO) must develop. The document within these NMPs which provides the required information is the Vermont P-Index, which has recently been released to incorporate subsurface tile particulate and dissolved P loss estimates, and the tract and field numbers that correspond to P-Index values.

Information on tile drains collected through the P-Index, by submission of materials used to develop the farm’s NMP, would require minimal VAAFMM staff time to procure or process. It should be recognized that farmers, technical service providers and partners such as USDA would all be impacted under the

requirement to submit these materials electronically as they traditionally maintain the data. This year will be the first year that tile drainage information will be collected in NMPs due to this recent update to the methodology used to calculate the P-Index, which is used to determine the potential loss of phosphorus from agricultural fields and thus prescribe the activities and nutrient application rates taking place on those fields in an environmentally acceptable manner. The revised P-Index tool, whose revision was led by the University of Vermont Extension, has been updated to predict phosphorus losses from system pattern tile drained fields, and the revised tool is required to be completed by all LFO, MFO and CSFO farms beginning for crop season 2018.

What information would be required to be submitted to the Secretary:

As mentioned above, there are two core pieces of information that would be required by VAAFM to map the presence or absence of tile drains in farm fields throughout the State of Vermont. These pieces of information are relatively easily accessible to VAAFM, without creating a larger burden on VAAFM staff or State funding pools. The core pieces of information are listed below and are included in a farm's NMP, required as part of their permitting or certification program with VAAFM.

1. The following information from the Vermont P-Index (v 6.0) for all farm fields:
 - a. Row 4: USDA Tract#
 - b. Row 5: Field ID
 - c. Row 6: Field Name
 - d. Row 14: Soil test P, ppm (Mod. Morgan's)
 - e. Row 40: Presence of Pattern Tile Drainage (Yes/No)
2. The field-boundary shapefiles for all fields represented on spatial map(s) as required by the VT NRCS 590 Standard

The collection of information from a farm's NMP, as packaged above, would represent what VAAFM has termed the Tile Drain Mapping Components (TDMC), necessary to map the presence and absence of tile drainage throughout Vermont.

VAAFM regulatory framework - Who must submit information, when is it required, and what is the level of review.

Since NMPs represent a cornerstone for farm stewardship and planning, VAAFM has developed a robust regulatory framework to ensure 590 NMPs for LFOs, MFOs, and new CSFOs are developed to the 590 standard, updated as required, and implemented appropriately. It is important to note that as part of the NMP process LFOs, MFOs and CSFOs had not previously been required to indicate the acreage of land they manage which is tile drained, until the most recent P-Index revision as discussed above.

All LFOs are required to submit 590 NMPs along with an annual report to VAAFM by February 15th each year for a thorough review and to ensure that all planning from the previous season was 'reconciled' to reflect how the plan was actually implemented on the ground for the previous crop year. VAAFM maintains all LFO NMPs for the current crop year on file. These NMPs are mostly in paper format - some are digital photo copies - and are regularly over 250 pages of information for just the updated portions. VAAFM does not always receive complete digital copies of these documents. These documents are available for review by the public through the Public Records Act in Vermont Statutes.

Medium Farm Operations are not required to submit a 590 NMP annually to the Agency, however they are required to maintain these plans and keep them on the farm. MFOs are required to submit an annual

report each year by April 30th that summarizes whether their NMP is up to date and how many acres, types of crop, and animals are included under the NMP. Certified Small Farm Operations (CSFO's) are similar to MFOs in that they need to keep the NMP up to date on the farm and must annually report by January 31st each year to the Agency. Farmers must have their NMP available for VAAFMM review upon inspection of the facility, which occurs at least once every three years for MFOs and at least once every seven years for CSFOs.

VAAFMM does not currently provide financial assistance directly to farmers to pay for the development of a NMP which meets either the RAP Standards or the USDA NRCS 590 Standard. VAAFMM did provide financial assistance direct to farmers to pay for the development of a NMP through the Nutrient Management Planning Incentive Grant Program (NMPIG). The NMPIG Program was phased out in 2014 and all financial assistance provided directly to farmers since this time has come from Federal funding - through the USDA NRCS and either their EQIP or RCPP programs.

For farms accessing USDA NRCS financial assistance programming to develop a NMP, the field specific information included in a NMP is protected from public release under 7 U.S.C. § 8791 and VAAFMM cannot access this information without consent from a participant farm. USDA NRCS will disclose payment information associated with the development of the plan as well as individual field information if it has been transformed into a statistical or aggregate form without naming any individual owner, operator, producer or specific data gathering site.

How tile drain information would be utilized by the Secretary:

Tile drain information will not only be utilized, but is imperative for the Secretary to make recommendations, research, as well as policy and rulemaking decisions. The information will allow VAAFMM to identify areas of concern and priority areas most appropriate for best management practice research, prototype development, and funding for implementation.

3. Public Disclosure of Nutrient Management Plans under the Vermont Public Records Act (1 V.S.A. § 317)

NMPs, which are required of farmers falling within the definitions of a CSFO, a MFO, or a LFO, have become an area of discussion for the public, the farming community, the Vermont Legislature, as well as VAAFMM. As previously described, VAAFMM currently has possession of LFO NMPs and MFO's that have applied for a LFO permit, predominantly in paper format. At this point in time VAAFMM does not have possession of all MFO or CSFO NMPs; many CSFOs have only begun the process to develop these complex documents, as they were only required to begin developing the documents on July 1, 2017 under the new RAPs. Any copy of a NMP which VAAFMM currently has on file is a public document and subject to Vermont public record's law under 1 V.S.A. §317. One important aspect of the Vermont Public Records Act is that Confidential Business Information is not subject to public records requests, however this has not been clearly defined in the context of a NMP.

Opinions vary on the topic of NMP confidentiality and how it should be handled. One opinion captures the feelings by some Vermonters, that as a document prepared for a state governmental entity and to maintain transparency, that these documents are considered public, and should be housed formally at VAAFMM offices, and be subject to the Vermont Public Records Act (1 V.S.A. § 317). Another opinion favors continued confidentiality as apprehensions exist about public oversight on documents that may contain private information, in addition to complicated business information that many farm operators feel is essential and proprietary for the efficient and profitable operation of their farm.

Furthermore, in the wake of tension existing between the farming community and other citizen groups, there is a fear that some sectors of the public may lack adequate agricultural knowledge, and will encounter difficulty truly understanding the contents of a NMP and what purpose they serve to the farmer and to the State. In addition to this concern, VAAFM is worried about the administrative burden a decision to make NMPs public would carry; if there were many requests for access to NMPs that lead to uninformed complaints requiring investigation, it will limit VAAFM's ability to carry out other necessary and critical tasks aimed at improving water quality.

VAAFM understands the concern regarding the desire for the public to have access to documents in instances where acts have commenced on a farm that resulted in degradation of waters of the State, however once an enforcement action has been initiated from VAAFM for a farm that is not in compliance with the RAPs and their NMP, confidentiality ceases to cover the farm and their NMP.

As mentioned, a NMP can be compared to a living document, similar to any farm. They are always changing and adapting to the weather, unique and unforeseen circumstances, and especially unexpected hardships. A NMP is a plan, and straying from the recommendations in a NMP is not unheard of, nor always considered a violation, until submittal of the annual report, at which time farmers reconcile the areas in which they were unable to comply with their NMP in its entirety. Opening NMPs for inspection and copying by the public has the potential to create a situation of immense vulnerability for the agricultural community, with very little benefit to be gained by the public and water quality at this point in time without a more comprehensive understanding of the foundation and components of a NMP.

Other states have struggled with similar issues, particularly in Maryland (Waterkeeper All., Inc. v. Maryland Dep't of Agric., 439 Md. 262, 96 A.3d 105 (2014)), where a seven-year lawsuit was eventually dismissed without any clarity on NMP confidentiality. In an effort to avoid a similar, expensive and resource intensive outcome, VAAFM employees have spent substantial amounts of time considering options that would be the most appropriate pathway to a solution that serves all the residents of Vermont, including continued confidentiality of NMPs and removal of confidentiality of NMPs. Further, privacy protections for personal identifiable information exist on federal level for farms under 7 U.S.C. § 8791. Farmers are accustomed to this level of information sharing, that is not field specific and is reported as an aggregate. This privacy protection encourages accurate information sharing and enables the USDA to ensure compliance with agricultural requirements, while providing the public with aggregated data and promoting transparency for governmental organizations.

One option acknowledged by VAAFM is providing confidentiality for three years, beginning in July 2018 and ending in June 2021, allowing for public disclosure of appropriate components of NMPs under Vermont's Public Records Act (1 V.S.A. § 317) after June 2021. With the continued confidentiality of NMPs up until the confidentiality sunset, VAAFM would produce an annual report to the Vermont Legislature displaying an aggregate of tile drain information that was collected over the past year. These annual reports could begin in January 2019 if the Legislature directs farms to electronically submit TDMC, and continue through the end of the three-year sunset period. This option would allow farmers the required time to update, reconcile, and prepare their NMPs, while also ensuring availability of documents for public review.

4. Conclusion: Secretary's Recommendations

Tile Drain Mapping

Collecting information on tile drains is imperative for VAAFM to make informed public policy decisions about the most appropriate regulatory framework for tile drainage systems. The Agency has provided two options for collecting data that would support mapping of tile drainage. The first option (TMDC electronic reporting) would require legislative action to provide the appropriate authority to VAAFM to

request the collection of such electronic records from all permitted and certified farms. The second option (Survey Data Collection) the Agency can perform independent of the Legislature which would provide the public aggregated data on the presence or absence of tile drains on a watershed and/or county level. If the Legislature directs the Agency to perform the first option for collecting tile drain data discussed earlier in the report, this should coincide with a conversation about what data from NMPs is confidential and protected from the Vermont's Public Records Act. Understanding what is confidential is important to ensure clarity in communications with the agricultural community when requesting information and to ensure the Agency upholds the Public Records Act appropriately.

NMP Confidentiality

VAAFM supports finding clarity concerning the question of what falls under the definition of a public record surrounding confidential business information within a NMP. VAAFM is not certain which components of NMPs meet this definition and anticipate ongoing discussions that promote transparency for VAAFM, while capturing the crucial information needed to make decisions regarding tile drains, and also protecting private business information. VAAFM is prepared to provide guidance and listen to insight from the Legislature and the many other constituents of the State of Vermont. This will aid in determining what is the best arrangement for confidentiality surrounding NMPs and what might be the most effective method to capture the extent of tile within the State, meanwhile quantifying the true impact on water quality and thoughtfully informing future decision making.