UNIVERSITY OF MINNESOTA EXTENSION

AGRICULTURAL DRAINAGE

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Ten Points to Consider When Planning an Agricultural Drainage System

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1) WETLAND COMPLIANCE

Be sure to file a Form 1026 with the Farm Service Agency (FSA). Compliance with federal "Swampbuster" rules is the responsibility of the operator, so be sure that you have a certified determination of wetlands from the Natural Resources Conservation Service (NRCS) before you begin.

Also remember that compliance with FSA rules does not ensure compliance with either US Army Corps of Engineers' rules or the Minnesota Wetlands Conservation Act. Pay a quick visit to your county SWCD to ensure that you will not be in violation of these rules.

2) ARE YOU PART OF THE PUBLIC DRAINAGE SYSTEM?

Only property that is assigned benefits for a county or joint ditch or tile may use them for an outlet. If you intend to connect to a public ditch or tile system you should pay a quick visit to your county ditch inspector to ensure that you are permitted to do so.

3) OUTLET CAPACITY

Check to see that your outlet has the capacity to handle the amount of water you might be discharging into it at peak flow. An overloaded outlet will prevent your drainage system from functioning at its full design capacity.

4) IMPACTS ON NEIGHBORS

It is a good idea to discuss your project with your neighbors if they are potentially impacted, or if you share a tile main or drainage ditch. Drainage disputes can be a major cause of strife between neighbors. Be sure that you are not flooding your neighbors by sending your water on them, or overloading tile mains.

5) RETURN ON INVESTMENT

Investing in agricultural drainage is a business decision. You should use good business practices by determining your costs and projected returns while you are still in the design phase of the project. Sound business practices dictate that you should maximize your return on investment. This will ensure that you do not "over design" the system, which could result in diminished profitability as well as negative environmental consequences.

6) IS IT WORTH MORE TO SOMEONE ELSE THAN IT IS TO YOU?

If it seems likely that a project will have marginal effectiveness, or incur exceptionally high costs (frequently associated with the outlet), it may be a candidate for a conservation program, or even outright sale of the property. You should familiarize yourself with wetland restoration programs which may offer high rental rates, and range all the way to receiving the equivalent of the

full value of the property in exchange for land retirement. In some cases wetland mitigation credits can be sold for more than the property is worth. Pursuing these options can free up capital to purchase better farm land. Furthermore, you will streamline your farming operation by removing acres that are more challenging to farm. You can consult with your county SWCD to see what programs or opportunities may be available.

7) USE THE OPPORTUNITY TO FIX OTHER PROBLEMS

While you are installing a drainage system, it may be a good time to assess and correct other problems. You may consider installing rock drains or coil drains to eliminate open intakes. In addition you should have a professional evaluate open ditches to determine the need for side inlet structures.

8) USE SCIENCE AND EXPERIENCE FOR DESIGN

There is a difference between what works and what works best. Think about whether you are choosing the correct tile layout, size, depth, spacing, and grade. Take the time to educate yourself on design methodology. Consider attending a drainage workshop where the science of drainage design is taught. You should obtain a copy of the Minnesota Drainage Guide to use as a reference. Finally, you should consult with professionals who have design expertise, or even neighbors who may have a lot of experience installing drainage, regarding your design.

9) DESIGN FOR THE FUTURE

Many farmers install drainage in "phases." Make sure to install tile mains that have sufficient capacity for any future drainage.

"Conservation Drainage" technologies and practices are readily available. These include woodchip bioreactors, saturated buffer drains, controlled drainage, alternative surface intakes, and potentially other technologies. The performance of these systems with respect to reducing flow and nitrates in discharge water is well documented. Installation of a conservation drainage technology is not a requirement at this time, but you may determine that you need to install something in the future. Most of these technologies are currently a cost-sharable practice through the NRCS, and some through the Board of Water and Soil Resources (BWSR). Consider installing a drainage conservation practice that makes sense for your system/farm.

At a minimum, it is advisable to at least consider conservation drainage practices at the time of design so that one of these technologies can be feasibly retrofitted in the future as necessary. Consult with Extension or the NRCS staff to determine what design characteristics are necessary in order to accommodate the installation of a conservation drainage technology in the future.

10) WHO WILL DO THE INSTALLATION?

Will you or a contractor be doing the installation of the drainage system? Tractor-mounted/pulled drainage plows are becoming more popular, but there is more to drainage installation than meets the eye. Discuss installation with a local contractor before you make the decision to install your own system. Do you have the time, labor, and know-how to do your own installation?

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