

Drainage Research & Education

UNIVERSITY OF MINNESOTA
Extension
SERVICE

Project Partners:
University of Minnesota Experiment Station
Drainage Product Manufacturers
Minnesota Land Improvement Contractors Assoc.
Minnesota Corn Research & Promotion Council
Minnesota Department of Agriculture
Minnesota Pollution Control Agency

Priority Issues

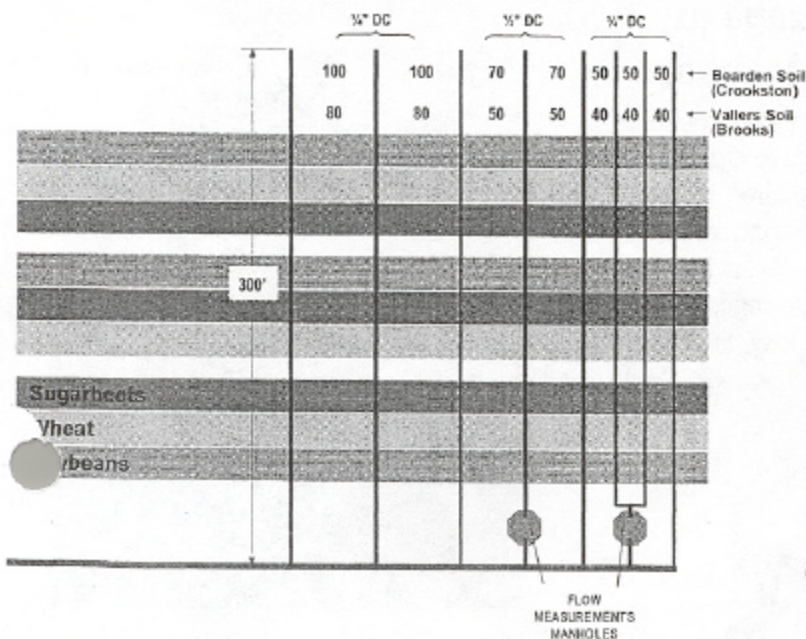
Drainage and water management is an integral part of Minnesota's agricultural economy and rural community infrastructure. Drainage has spawned many important public issues because of both real and perceived economic and environmental impacts. Research and education projects are underway to address these issues, several of which are highlighted in this handout. These and other projects include:

- impacts of drain spacing/depth and controlled drainage on flow, water quality, and crop response.
- performance of blind surface inlets.
- economic impacts of drainage.
- potential for edge-of-field management practices to remove nutrients, such as wetlands, buffer strips and in-ditch removal.

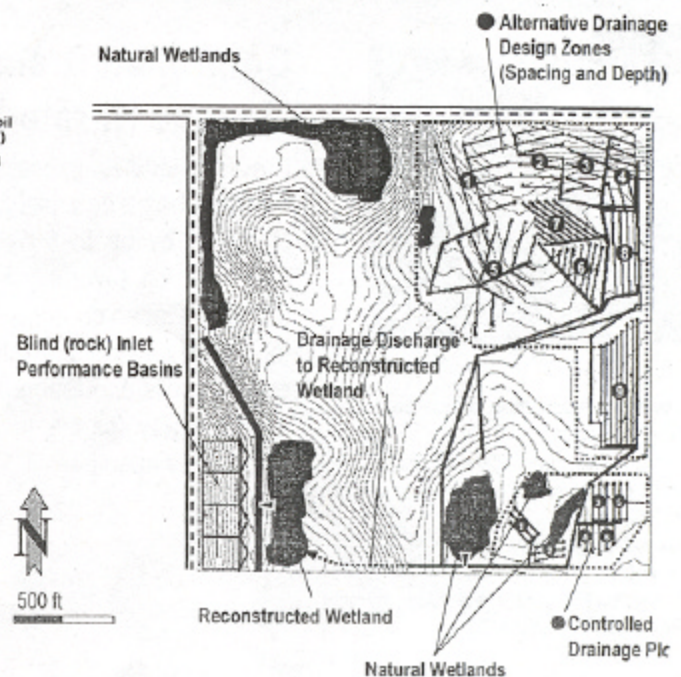
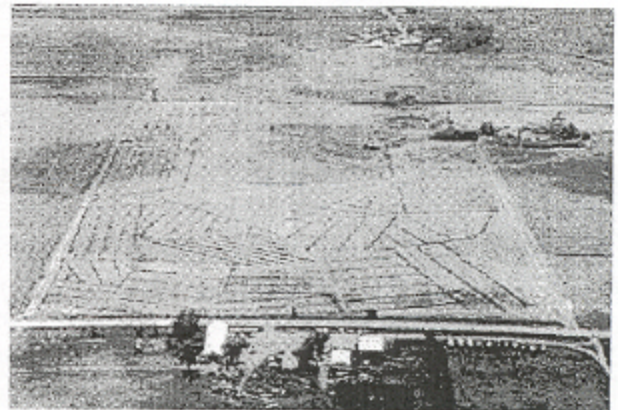
- potential for edge-of-field management practices to remove nutrients, such as wetlands, buffer strips and in-ditch removal.
- role of wetlands in storing and improving the quality of water.
- wetland protection, restoration, construction, and mitigation.
- Drainage design workshops and public forums.

Feasibility of Subsurface Drainage in Northwest Minnesota

Research projects on cooperating farms was launched in 2000 to investigate the impact of subsurface drainage on crop response, trafficability, soil and water status, hydrology and water quality for a wheat-sugarbeet-soybean rotation.

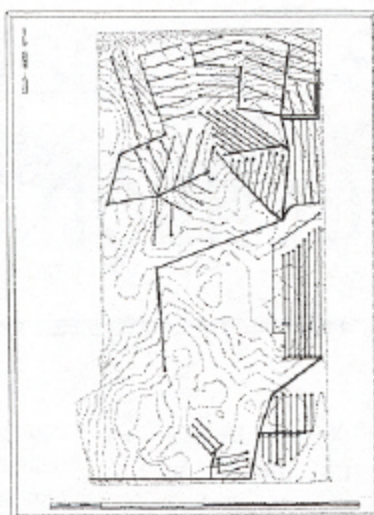
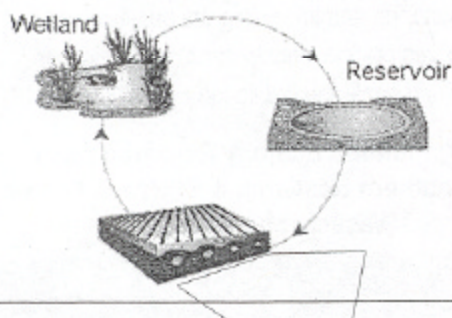


The Agricultural Ecology Research Farm U of M Southern Research & Outreach Center Waseca, Minnesota



Impact on Wetlands and Role of Wetlands in Hydrology and Water Quality

Wetlands are an important feature in the landscapes in Minnesota and may offer valuable benefits with regard to hydrology and water quality. Research will be conducted on the AERF to help quantify these roles of wetlands and assess drainage's impact on them.



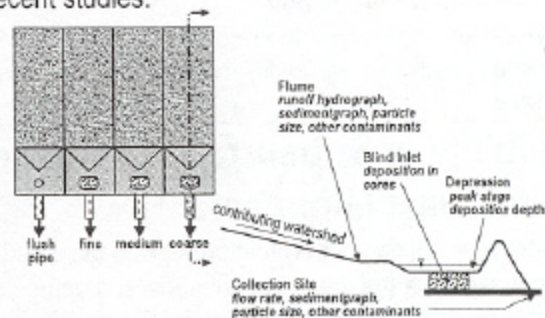
Impacts of Improved Drainage Design

Research is underway to investigate the influence of drain spacing and depth on crop response, flow, and water quality. Research from other states shows that drains placed shallower and narrower can have positive impacts on both nitrate losses and crop response.



Performance of Alternative Surface Inlet Designs

Field and Laboratory research is currently being conducted by the BAE department on understanding the hydraulics and performance of both traditional and alternative surface tile inlets. New field research is underway to augment these recent studies.



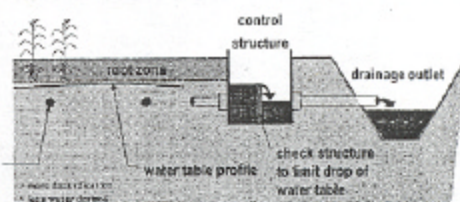
Workshops and Public Forums

Annual workshops, seminars and public meetings addressing agricultural drainage issues continue to be held. Drainage design workshops upgrade skills of contractors and installers. Annual research forums solicit public input on research priorities.



Controlled Drainage to Manage Nitrate-N Losses

Previous studies indicate that controlled drainage has a potential to reduce Nitrate-N losses by up to 60%. Crop response may also be favorably impacted by this practice. Research is necessary however, to quantify these impacts for Minnesota climate, soils and topography, to estimate the feasibility for the technique in South Central Minnesota.



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