

Board of Supervisors Drainage Minutes
Of
September 12, 2022

SCANNED

Present at Franklin County: Supervisors Gary McVicker, Mike Nolte, Chris Vanness, Drainage Clerk Colette Bruns, Auditor Katy Flint, Dean Lemke, Craig Johnson, and members of the public.

Annexation of land into DD 48-Dean Lemke

Dean Lemke presented a proposal for a request for Land Annexation into DD 48 by landowners: Harlan Lemke, Francine Lemke, Peggy Lemke, & Dean Lemke.

Annexation for 39 acres in the SE1/4 in Sec 22 Morgan Twp because the parcel is not in any drainage district. Lemke's report states, annexation into DD 6 is not feasible – natural surface water drainage is to the east/southeast into Lateral 1 of Sec 26 DD 6 but the existing outlet only has a range of 25% of needed flow capacity. Proposed timeline of this project would be fall of 2023.

Annexation for 18 acres in the SW1/4 in Sec 22 Morgan Twp. Lemke's report states, annexation into DD 57 would be a risk to local contractors and limit excavating to access existing outlet to Lateral 2A because of crossing five active pipeline corridors. Proposed timeline of this project, construction is scheduled in 2022 once soybeans are harvested.

Lemke is proposing to connect both parcels into DD 48. Lemke did not send any letters to landowners to inform them but spoke with 3 landowners in DD 48 North and said they would support this project. Craig Johnson was in attendance and said he would not support this project and thought many would agree with him and would need time to present their opinions on this before any decisions are made.

The Board discussed the proposal and said the Franklin County Drainage Engineer needs to be informed and will meet with both Lemke and the Drainage Engineer at a later date.

DD 48 Spraying Brush

Joe Harrah was to spray DD 48 but was unable to complete, the Board would like to hire Benji Ufford to finish the spraying as soon as possible as there are many willow trees and brush that need to be taken care of before it gets more out of control. Ufford called with a quote of \$2800. The Board discussed the issue and said to have Ufford spray only & not cut out the trees & brush because that could damage the banks of the ditch.

Motion by Vanness, seconded by Nolte to hire Benji Ufford to spray DD 48 ditch at a cost of \$2800. All ayes, motion carried.



Gary McVicker, Chairman

ATTEST: 

Colette Bruns, Drainage Clerk

SCANNED

FILED

SEP 13 2022

FRANKLIN CO. AUDITOR
HAMPTON, IOWA

12 September 2022

TO: Franklin DD48 Board of Trustees

RE: Request for Land Annexation Into Franklin DD48

Landowners Harlan Lemke, Francine Lemke, Peggy Lemke, Dean Lemke

39 Acres of SE1/4, Section 22, Morgan Township (see map page 4)

Justification

1. NOT in a DD – It is currently NOT in any drainage district.
2. Annexation Into DD6 Is NOT Feasible – natural surface water drainage is to the east/southeast into Lateral 1 of Section 26, DD6 but the existing outlet only has in the range of 25% of needed flow capacity. All landowners we've talked to have declined interest in improving the outlet, remonstrance of an improvement project is likely.
3. Pumping to DD48 Open Ditch is Proposed.
4. "Drainage Water Recycling" Agronomic & Environmental Research Project – the site is proposed as the location for science studies of "drainage water recycling".
 - a. Concept – tile drainage water diverted to a pond/reservoir during high tile flows, stored water used to irrigate the crop during typically dry July-August period.
 - b. Environmental & Drainage District impact – drainage water transports nitrate to downstream waters, re-using 60% of the tile water for the crop reduces nitrate discharge by 60%, for example. Success and potential widespread adoption of this practice can also significantly reduce water flows to undersized and aging DD mains and laterals across 3500 Iowa DDs, 12 million acres of tile-drained lands in Iowa, 100 million acres of tile-drained lands in the U.S. corn belt.
 - c. Study Sites – doesn't fit university research farms, 1 other site in Iowa, s1 in Missouri, small number in the eastern corn belt.
 - d. Science and funding partners
 - i. Iowa State University research science leadership – (see letter page 5)
 - ii. Potential funding support from Iowa Department of Agriculture & Land Stewardship
 - iii. National science and funding organizations – negotiations are underway
 - iv. Others?

e. Timeline

- i. System design – September-October 2022
- ii. Science studies & monitoring design – September-October 2022
- iii. Funding of science studies – seeking funding September-November 2022
- iv. Construction – Phase 2 Fall 2023

f. Annexation to DD48 Required For Research/Demonstration Project To Occur

18 Acres of SW1/4, Section 22, Morgan Township (see map page 4)

Justification

- 5. Avoid Safety Risks to Local Contractors and Limitations of Excavating Across 5 Active Pipeline Corridor Required to Access Existing Outlet to Lateral 2A, DD57 – four active Williams/Koch/Magellan high pressure pipelines, Verizon and Century Link fiber optic cables in pipeline, potentially 2 other old pipelines.
 - a. Unacceptable safety risk to local contractors and us of required hand spading/digging for 50+ feet across the 5-7 pipelines at high cost.
 - b. Likely that NO workable depth for a gravity outlet can be achieved across the 5-7 pipes installed since 1932 at differing diameters and depths.
 - c. Future pipeline/cable construction in the multiple line perpetual easement will likely again damage drainage tile crossings
- 6. Tiling of Field is Phase 1 of research project – consolidating entire field to single outlet to DD48 ditch will facilitate science monitoring of tile drainage flow rates and nitrate levels.
- 7. Timeline –this is Phase 1 of research project, construction is scheduled in 2022 once soybeans are harvested.

Drainage Flow Impact in DD48 Ditch & Downstream Dogwood Avenue Bridge

- 8. Not Significant, Engineering Flow Analysis (see page 6) – for the most extreme case of full discharge to the ditch of the 57 acres, the **flow depth in the ditch and downstream road bridge will be increased by only 0.6-0.7 inch during the 4.1 foot design flows which occur in 50% of the years.** if the research & demonstration project can proceed, much of the tile drainage water will be re-used and not even discharged to the ditch.

Needed Timeline of Annexation Action

Needs to be resolved in September 2022 given the critical deadlines for the research project to occur. There are not legal issues to annexation, and at 0.7 inch flow depth increase in the ditch there are not outlet flow concerns.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. Lemke', written in a cursive style.

Dean W. Lemke, P.E.

Lemke Engineering & Environmental Services, LLC, President

Lemke Family Farms, LLC, President

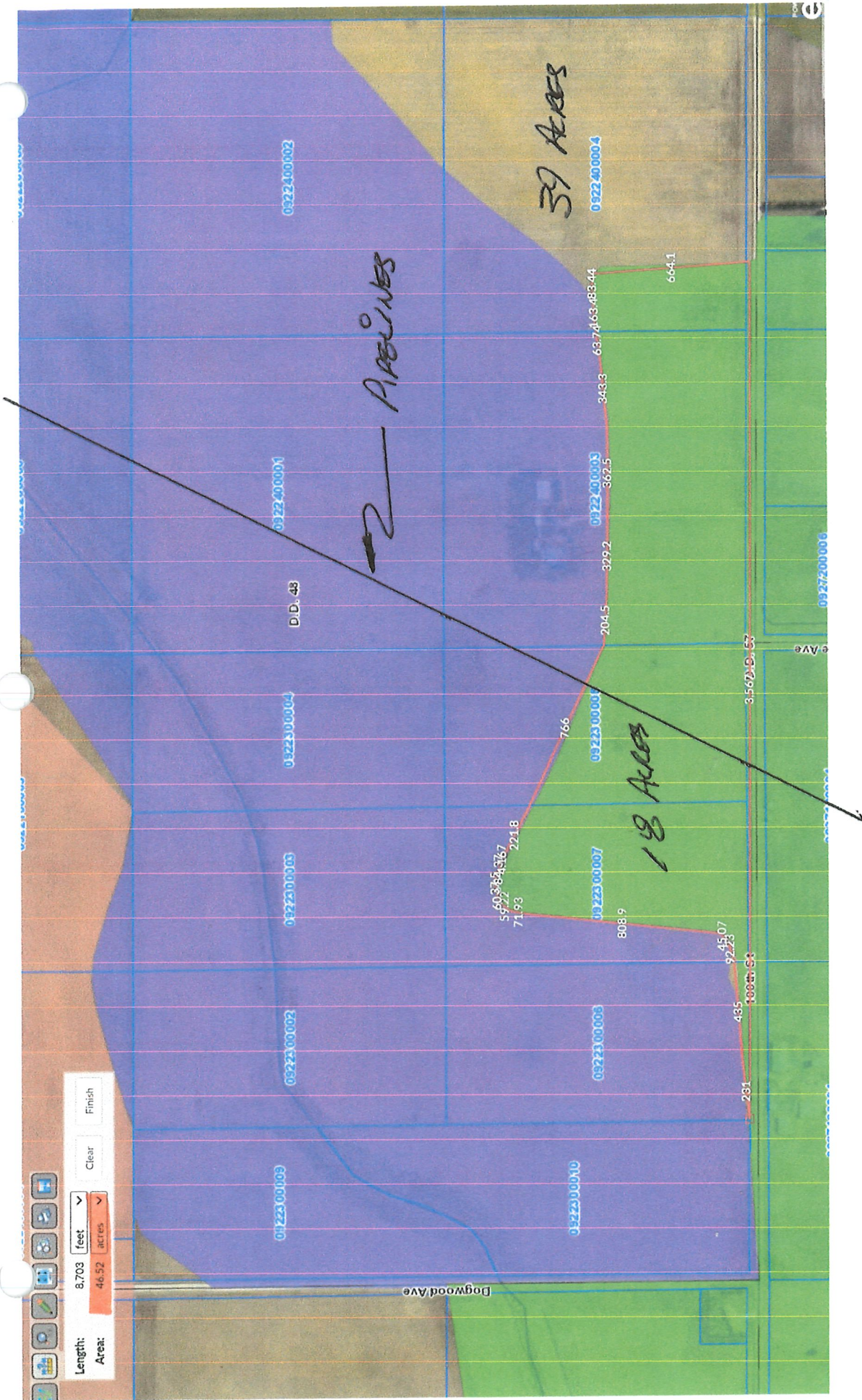
PO Box 50, Dows, IA 50071

515 778-5873

lemke.ees@gmail.com

c.c.: Jay Waddingham, P.E., Franklin County Engineer

Robert Goodwin, Goodwin Law Firm



IOWA STATE UNIVERSITY
Extension and Outreach

Dr. Kapil Arora
Field Agricultural Engineer
Iowa State University Extension and Outreach
1421 South Bell Avenue, Suite # 107
Ames, Iowa 50010
Phone: (515) 291-0174
E-mail: pbtiger@iastate.edu

September 12 , 2022

Gary McVicker, Chairman
Franklin County Board of Supervisors
Franklin County Courthouse
12 - 1st Ave. NW
PO Box 26
Hampton, Iowa 50441

RE: Drainage Water Recycling Research on property owned by Dean & Harlan Lemke in Franklin County, IA

Respected Mr. McVicker,

Drainage Water Recycling (DWR) is a new concept in Iowa to help improve sub-surface tile water quality leaving our agricultural fields, particularly to reduce nitrate discharges that affect downstream drinking water supplies. This practice involves capture of tile water into a reservoir during periods of soil water excess followed by irrigation of stored water during periods of soil water deficit. This practice has only been researched at one location in Iowa and need exists to study it further on different soil types. Optimization of reservoir water usage with irrigation strategies to match growth requirements of the corn and soybeans needs to be further researched at field scale to identify opportunities for crop yield improvements coupled with water quality benefits.

Opportunities for research institutions to conduct field scale research are limited as such institutions do not own large land parcels. As such, willingness of landowners to collaborate is essential for successful outcomes benefiting water quality. Iowa State University Extension and Outreach and the Lemkes have both agreed to pursue the development of a project for the purposes to further study and research drainage water recycling. If this project moves forward, the Lemkes will provide access to farmland located in Franklin County, east of Dows, IA. The Lemkes will conduct farm operations as needed to facilitate research objectives. Iowa State University Extension and Outreach will develop a drainage water recycling research project on the property owned by the Lemkes and conduct such research within the bounds of field operations. The research project is being discussed further and formal objectives are currently under development. Partners plan to seek research funds from various sources to conduct such research.

We look forward to successful launch of this project as it is essential to further the knowledge on drainage water recycling in Iowa. Please contact me if you need any additional information or have any questions.

Thank you for your consideration.

Sincerely,

Kapil Arora

Dr. Kapil Arora
Field Agricultural Engineer



Real People. Real Solutions.

300 W McKinley Street
PO Box 68
Jefferson, IA 50129

Ph: (515) 386-4101
Bolton-Menk.com

September 9, 2022

Dean Lemke
976 Finch Avenue
Dows, IA 50071

Re: Engineering Analysis of Diverting Land Drainage by Pump
To D.D. No. 48 Open Ditch, Franklin County, Iowa

Dear Mr. Lemke:

I am the engineer that designed the ditch crossing for the new Lemke/Hackbarth shared ditch crossing. From that work I am familiar with the open ditch and the watershed as was needed for the design.

I understand that you are tentatively planning to construct a drainage pumping station near the southeast corner of the farm through which the open ditch passes. This pumping station will capture and pump tile drainage water from roughly 39 acres to an excavated earth basin at the top of the ridge near and east of the building site on the farm. It is intended that this basin will be used to recycle the collected drainage water into subirrigation of selected land areas on the other side of the described ridge. Some of this recycled drainage water may flow via drain tile to the Main Open Ditch of Drainage District No. 48. This flow to the open ditch will vary over the years but it will be excess water brought into the district that would not naturally flow there. Annexation is then required.

It is our understanding that drainage district law is written to protect the drainage efficiency and capacity available to lands in a drainage district and the board should not approve the annexation of lands that would materially reduce that efficiency and capacity for any land in the district. Bolton & Menk is often asked to provide reports on this topic to boards of supervisors regarding requested voluntary annexation of land to drainage districts. It is our experience that requested voluntary annexations can be approved if the annexed land would be drained to an open ditch. That is the case in your situation. We also understand that you will be constructing a new larger capacity drain across your neighbor's land to the DD#48 Main Open Ditch from the drainage recycling area.

The Iowa Drainage Guide provides guidance for design capacity. For the Lemke/Hackbarth crossing pipe we used a design flow that normally occurs in 50% of the years. The Q2 design flow in the ditch at the crossing was calculated at 113 cubic feet per second (cfs). The normal depth of flow in the open ditch for this flow is 4.09 feet.

The flow that will be delivered from the pumping station will depend upon the capacity of the pump and upon the number of acres of land lying outside the DD#48 watershed that end up being drained to the pump. There is a possibility that as many as 75 acres could eventually be tiled to the pump. Although the additional 36 acres may not ever be drained to the pumping station it is prudent to consider the pumping station flow to be from the larger watershed. It should also be understood that the flow from the earth basin will be limited by the smaller rates needed to maintain water levels in the irrigated area. When needed for irrigation, much of the excess water will not flow to the open ditch.

PAGE 6

If we assume that the pumping station will have the capacity to deliver water equivalent to 120% of the 1-inch drainage coefficient to the ridge top and that water then continues at that rate to the open ditch, without reduction in the irrigated area then the maximum flow rate delivered to the open ditch will be 2.88 cfs or 1,292 gallons per minute (gpm) for the 57 acres requested to be annexed to the district. If the pumping station is designed to drain 75 acres at the 1-inch drainage coefficient the maximum flow rate delivered would be 3.79 cfs or 1,701 gpm. For these two design scenarios, the maximum increase in the design depth of flow for the open ditch is 0.05 feet (0.6 inches) for the smaller flow and 0.06 feet (0.7 inches) for the larger flow.

It is my opinion that the annexation of 57 acres to Drainage District No. 48, where all of the excess water will be pumped into the district to flow to the district's main open ditch, will not materially affect or impair the drainage efficiency and capacity of any land in the district. It is also my opinion that the immediate downstream road culvert can handle the minor additional design flow without consequence.

Sincerely,

Bolton & Menk, Inc.



Jacob L. Hagan, P.E.
Project Engineer