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"Bettering Iowa since 1970"

April 30, 2026

RE: Amendment No. 1 to Engineer's Report
Drainage District No. 5 Lateral 1
Palo Alto County, Iowa
JWA PROJECT NO: E18104

Dear Board Members and Landowners:

We previously filed an engineer's report regarding possible repairs or improvements to the Lateral 1 Tile of Drainage District No. 5 (DD5) dated February 25, 2026. Informational meetings were held on March 17 and April 14, 2026. Based on Iowa Code, our originally filed report may be amended at any time prior to final approval. We hereby submit this Amendment No. 1 to our originally filed report. Our recommendations from the originally filed report remain the same unless otherwise modified per this report amendment.

A. Option #5 – Shallow Tile with Lift Station Pump

An idea was brought up during the April 14, 2026 informational meeting regarding replacing the existing tile with a shallow line combined with new lift station that would be owned, operated, and maintained by the drainage district. We have investigated this idea; the results of our investigation are shown below.

1. Tile Discussion:

   If this option were to be pursued, the tile would need to be shallow enough that it could be plowed in (no open trench). It is our understanding that the largest available size of flexible dual-wall pipe (15" diameter) can be plowed to depths of 7 feet plus or minus. Based on elevations along the tile alignment, we have completed a preliminary design to attempt to maximize the drainage coefficient on a 15" diameter line. We have found we can maintain a minimum drainage coefficient of 0.27 inches per day (as compared to the existing minimum drainage coefficient of 0.11 inches per day). This is not nearly what we would recommend for adequate drainage, but is over double the coefficient of the existing system. We would recommend the tile have knife-cut perforations and a sock. This option would be a lower upfront cost alternative to Option #3 as presented in the original engineer's report. The improvement would be from the ditch outlet to near the Aldous property line, then continue to the currently inactive lift station as a repair (12").

   Advantages of this option include lower upfront cost, active drainage ability of the tile installed, and easier access for future private tile connections, and maintenance.

2. Pump / Lift Station Discussion:
   For Option #6, we would recommend a pump and lift station be placed in the same general location as the existing inactive lift station. The pump would be sized to drain the equivalent of the originally installed 12" diameter tile on a 0.10% grade, to not cause a conversion of the lands determined by the Natural Resources Conservation Service (NRCS) to be "Farmed Wetland".

   Up-front costs include purchase and installation of a pump and electric motor, paying to have Iowa Lakes Electric Cooperative bring power to the site (est. nearly $17,000), electrical connections, a sump/pit, etc.

   On-going costs include an electrical bill (estimated around $3,000 per year), inspection and maintenance costs, and future pump and motor replacement costs. There is also the question of who would be responsible for checking on the pump, and their compensation from the drainage district.

B. Cost Estimates

Our project cost estimate for Option #5 is shown in the table below. Additionally, for the Options presented in the original engineer's report, we wish to update the estimated project cost based on additional foundation and bedding rock we anticipate would be required as compared to our original estimates. We had figured on 4" of rock underneath the pipe, and roughly 3-5" of rock up the sides of the pipe (under the haunches). We have increased the rock quantities for 8" of bedding rock up to the middle (spring line) of the pipe for the entire length of the tile proposed to be installed. See the updated project cost estimates in the table below. The project costs for Options #1 – 4 are increased by approximately 6 – 10% as compared to the original estimates. We are hopeful that the rock required will be lower than our estimate, but at this stage we are erring on the high side so landowners are prepared for what the cost could be.

Option #	Description	Drainage Coefficient (in/day)	Tile Diameter (inches)	Estimated Project Cost	Avg. Cost Per Acre
1	Repair from Outlet to Lift Station	0.11 – 0.22	12"	$340,000	$1,073
2	Full Repair	0.11 – 0.22	12"	$413,000	$1,303
3*	Improvement from Outlet to near Aldous property line, then Repair to Inactive Lift Station	0.5	18"	$399,000	$1,259
		1.0	24"	$447,000	$1,410
4**	Full Improvement	0.5	18"	$589,000	$1,858
		1.0	24"	$668,000	$2,107
5***	Improvement from Outlet to Aldous line, then Repair to Lift Station. Plow in shallow w/sock and knife slits, including pump & lift station	0.27 – 0.35	15"	$261,000	$823

*: Assumes wetland mitigation will not be necessary.

**: Includes estimated 8 acres of wetland mitigation cost @ $7,500/ac = $60,000

***: Assumes wetland mitigation will not be necessary. Does not include operation & maintenance costs of pump. For electricity, maintenance, and future pump replacement costs the annual cost are estimated be approximately $5,000 - $7,000 per year.

Comparing Option #5 with the options presented in the original engineer's report is difficult. It is obvious that the upfront cost of Option #5 is significantly less than other options; however, ongoing operation and maintenance (O&M) costs of the pump system offset the upfront savings over time. We would expect the upfront cost savings as compared with the ½ inch per day drainage coefficient Option #3 to be offset in about 20 – 30 years, and provide a little over half as much drainage capacity. The life expectancy of a tile system is 100 years plus, so the O&M costs for a pump over the lifetime of the tile could be well over a half a million dollars.

We certainly can understand the desire to keep the cost of this project low, but it also seems unwise to invest in an inadequately sized tile and pump system that will result in ongoing payments that eventually will offset and exceed the cost of an adequately sized gravity flow tile. It is also important to point out that there are options for landowners to pay assessments over time (rather than up front and all at once). Parcels with assessments over $500 have the option to pay in installment payments over up to 10 – 20 years (maximum number of years set by the Board).

C. Recommendation

We continue to recommend that Option #3 be pursued. Although the lower upfront cost of the pump alternative (Option #5) is tempting, we do not believe it is in the best long-term interest of the district.

Sincerely,

JACOBSON-WESTERGARD & ASSOCIATES INC.

Collin Klingbeil

Collin J. Klingbeil, P.E.

Encl. Option #5 Detailed Cost Estimate

ENGINEER'S ESTIMATE OF PROBABLE COST
D.D. 5 LAT 1 TILE IMPROVEMENTS
PALO ALTO COUNTY, IOWA
OPTION #5 ESTIMATE - PLOW IN 15" w/ PUMP

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ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
LATERAL 1 TILE					
1	18" DIA. CMP TILE OUTLET	20	LF	$60.00	$1,200.00
2	15" DIA. FLEXIBLE DUAL-WALL HDPE, KNIFE-CUT, WITH SOCK, PLOWED IN	3,603	LF	$23.00	$82,869.00
3	12" DIA. FLEXIBLE DUAL-WALL HDPE, KNIFE-CUT, WITH SOCK, PLOWED IN	753	LF	$20.00	$15,060.00
4	TOPSOIL STRIPPING UNDER 2 FT FOR PLOWING DEPTHS > 7 FT	1,000	LF	$3.00	$3,000.00
5	TEE, 15" ON 15" DIA.	1	EA	$600.00	$600.00
6	TEE, 12" ON 15" DIA.	1	EA	$500.00	$500.00
7	REDUCER, 15" TO 12" DIA.	1	EA	$500.00	$500.00
8	TILE CONNECTIONS	15	EA	$400.00	$6,000.00
9	EXPLORATORY EXCAVATION	15	HR	$250.00	$3,750.00
10	PUMP, PURCHASE AND INSTALLATION	1	LS	$20,000.00	$20,000.00
11	SUMP, 96" DIA. CMP, ALUMINIZED	14	LF	$350.00	$4,900.00
12	SUMP FOUNDATION/BASE	1	LS	$3,000.00	$3,000.00
13	RUNNING ELECTRICAL TO SITE	1	LS	$16,647.00	$16,647.00
14	ELECTRICAL WORK	1	LS	$3,500.00	$3,500.00
15	TRENCH STABILIZATION AND BEDDING STONE	50	TON	$40.00	$2,000.00
16	MOBILIZATION	1	LS	$7,000.00	$7,000.00
	ESTIMATED SUBTOTAL CONSTRUCTION COST				**$171,000.00**
	CONSTRUCTION CONTINGENCIES				**$12,000.00**
	ESTIMATED TOTAL ASSESSABLE CONSTRUCTION COST				**$183,000.00**

NON-CONSTRUCTION COSTS

ENGINEERING - (REPORT, HEARINGS, PLANS & SPECS, BID LETTING, CONSTRUCTION, COMPLETION)	**$50,000.00**
LEGAL, PUBLICATIONS, MAILINGS, ETC.	**$2,000.00**
WETLAND MITIGATION	**$0.00**
ANNEXATION	**$0.00**
RE-CLASSIFICATION	**$3,000.00**
TEMPORARY EASEMENT (10 Acres @ $1000)	**$10,000.00**
OTHER DAMAGES	**$1,000.00**
INTEREST	**$12,000.00**
ESTIMATED TOTAL DISTRICT COST	**$261,000.00**

AVG COST PER ACRE FOR NEW MAIN IMPROVEMENT AREA (BASED ON 317 ACRES):	$823
AVERAGE COST PER ACRE PER YEAR AT 6% INTEREST FOR 10 YEARS:	$107
AVERAGE COST PER ACRE PER YEAR AT 6% INTEREST FOR 20 YEARS:	$66