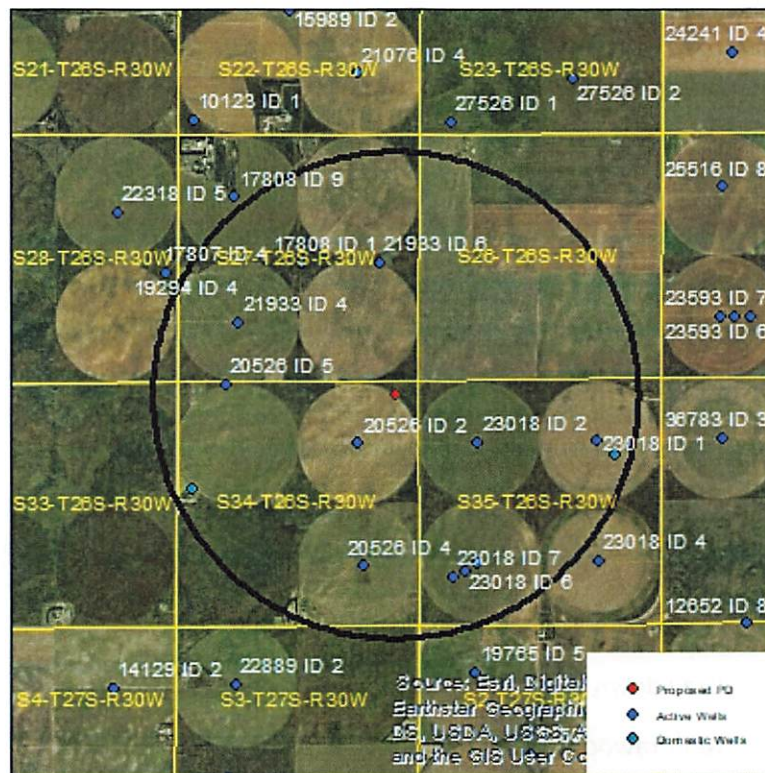


Evaluation of proposed move for Water Right No. 20526 D5

Proposed: Move water right no. 20526 D5 ID2 to a new well location, 1,326 ft to the northeast.



Wells within 1 mile: 20526 ID4, 20526 ID5, 21933 ID4, 21933 ID6, 17808, 23018 ID1, 23018 ID2, 23018 ID6, a domestic well in section 34-26-30, and a domestic well in section 35-26-30.

The saturated thickness at the proposed well location is estimated to be 99 ft, based upon the GMD3 model. For saturated thickness between than 75 ft and 100 ft, the drawdown allowance is 2.0 ft.

50 year Theis Analysis: The following values were used to run the analysis:

$S = 0.2125$, $T = 4272 \text{ ft}^2/\text{day}$, $t_{p\text{current}} = 75 \text{ days}$, $Q_{\text{current}} = 300 \text{ gpm}$, $t_{p\text{proposed}} = 64 \text{ days}$, $Q_{\text{proposed}} = 965 \text{ gpm}$

Theis drawdowns were calculated as follows:

20526 ID4: Drawdown from current location = 1.17 ft
Drawdown from proposed location = 2.58 ft
Net drawdown = **1.4 ft**

20526 ID5: Drawdown from current location = 1.06 ft
Drawdown from proposed location = 2.61 ft
Net drawdown = **1.6 ft**

21933 ID4:	Drawdown from current location = 0.95 ft Drawdown from proposed location = 2.59 ft Net drawdown = 1.6 ft
21933 ID6:	Drawdown from current location = 0.91 ft Drawdown from proposed location = 3.07 ft Net drawdown = 2.2 ft
17808:	Drawdown from current location = 0.89 ft Drawdown from proposed location = 2.70 ft Net drawdown = 1.8 ft
23018 ID1:	Drawdown from current location = 0.77 ft Drawdown from proposed location = 2.32 ft Net drawdown = 1.5 ft
23018 ID2:	Drawdown from current location = 1.19 ft Drawdown from proposed location = 3.88 ft Net drawdown = 2.7 ft
23018 ID6:	Drawdown from current location = 0.97 ft Drawdown from proposed location = 2.44 ft Net drawdown = 1.5 ft
Domestic 34-26-29:	Drawdown from current location = 0.94 ft Drawdown from proposed location = 2.21 ft Net drawdown = 1.3 ft
Domestic 35-26-30:	Drawdown from current location = 0.74 ft Drawdown from proposed location = 2.19 ft Net drawdown = 1.4 ft

Net drawdown exceeds the drawdown allowance of 2.0 ft for water right nos. 21933 ID6 and 23018 ID2. Critical well analysis is necessary on those wells.

Critical Well Evaluation:**21933 ID6:**

Water Column = 105 ft

DP = 2.2 ft (Net drawdown from the proposal indicated above)

DE = 25.1 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DD = 35.7 ft ($S = 0.1336$, $T = 2840 \text{ ft}^2/\text{day}$, $Q = 289 \text{ gpm}$, $t_p = 192 \text{ days}$, efficiency = 70%)

DT = 63.0 ft

Economic Drawdown Constraint (EDC) = $0.4 * 105 \text{ ft} = 42.0 \text{ ft}$

Physical Drawdown Constraint (PDC) = $105 \text{ ft} - 60 \text{ ft} = 45.0 \text{ ft}$

Total drawdown of 63.0 ft is greater than the EDC and the PDC, so this well is **critical**.

23018 ID2:

Water Column = 86 ft

DP = 2.7 ft (Net drawdown from the proposal indicated above)

DE = 17.2 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DD = 55.4 ft ($S = 0.1645$, $T = 2793 \text{ ft}^2/\text{day}$, $Q = 462 \text{ gpm}$, $t_p = 116 \text{ days}$, efficiency = 70%)

DT = 75.3 ft

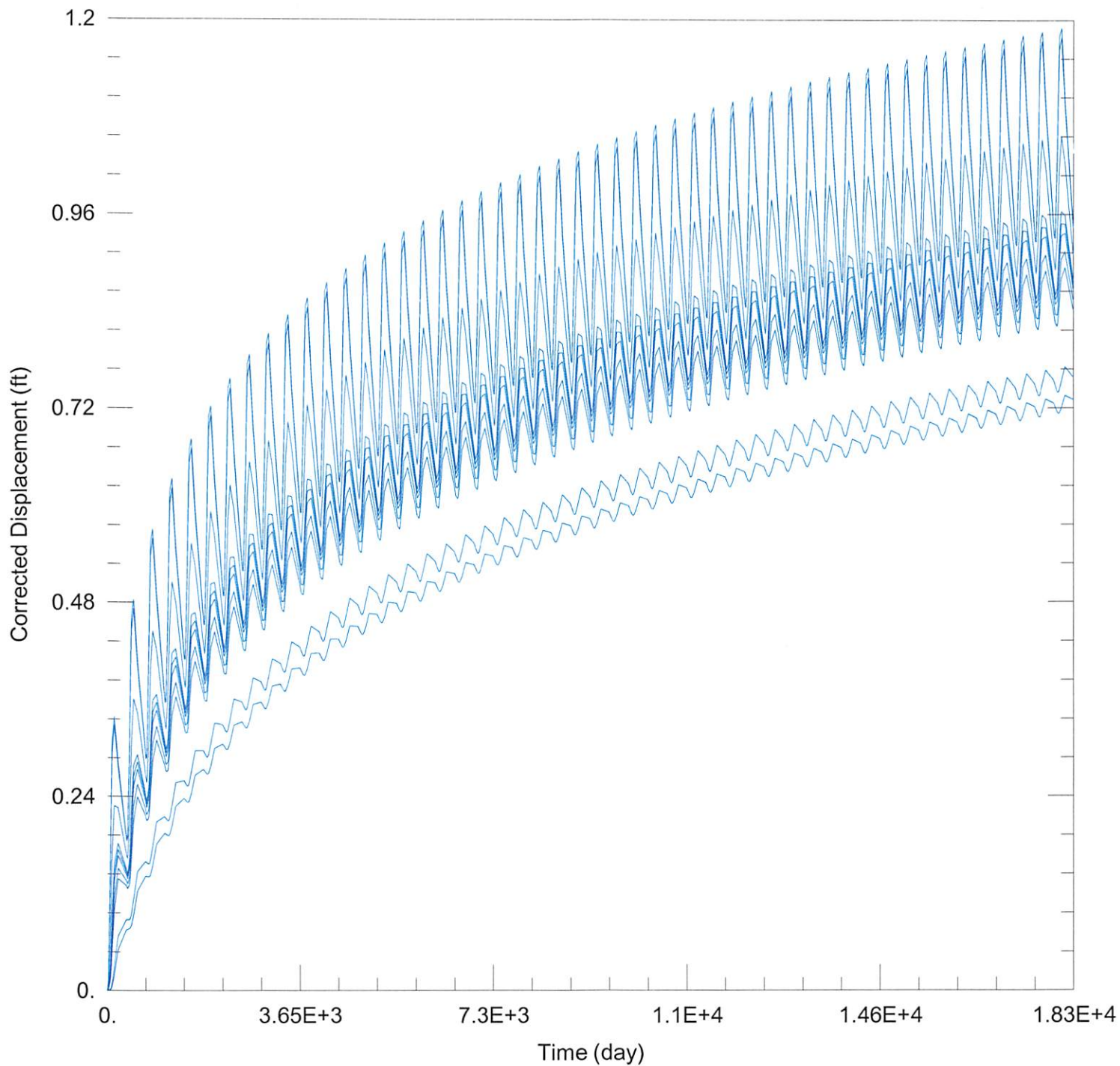
Economic Drawdown Constraint (EDC) = $0.4 * 86 \text{ ft} = 34.4 \text{ ft}$

Physical Drawdown Constraint (PDC) = $86 \text{ ft} - 60 \text{ ft} = 26.0 \text{ ft}$

Total drawdown of 75.3 ft exceeds the EDC and the PDC, so this well is **critical**.

Conclusion:

The proposed move is in a depleted aquifer area with a little less than 100 ft of remaining saturated thickness. The analysis shows that net well-to-well effects are likely to be small but are slightly greater than the 2.0 ft drawdown allowance set to assure that effects are not noticeable. Critical well analysis flagged these two wells as critical because modeled depletions and well drawdown effects exceed 40% over the next 25 years and will leave less than 60 ft of saturated thickness remaining. A recent pump test about 8 miles to the southeast of the proposed location demonstrated aquifer transmissivity greater than predicted by the GMD3 model. This proposal was determined to be too far from that test to use the test result data, but it is somewhat likely that the model is underestimating transmissivity in this area, too, and that actual well-to-well effects will be smaller than this analysis indicates. Concerned neighbors should contact GMD3 at (620) 275-7147 or the Division of Water Resources at (620) 276-2901.



WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2023_moves\20526\20526 Current.aqt

Date: 07/31/23

Time: 11:47:28

PROJECT INFORMATION

Company: GMD 3

Project: 20526

Location: Gray County

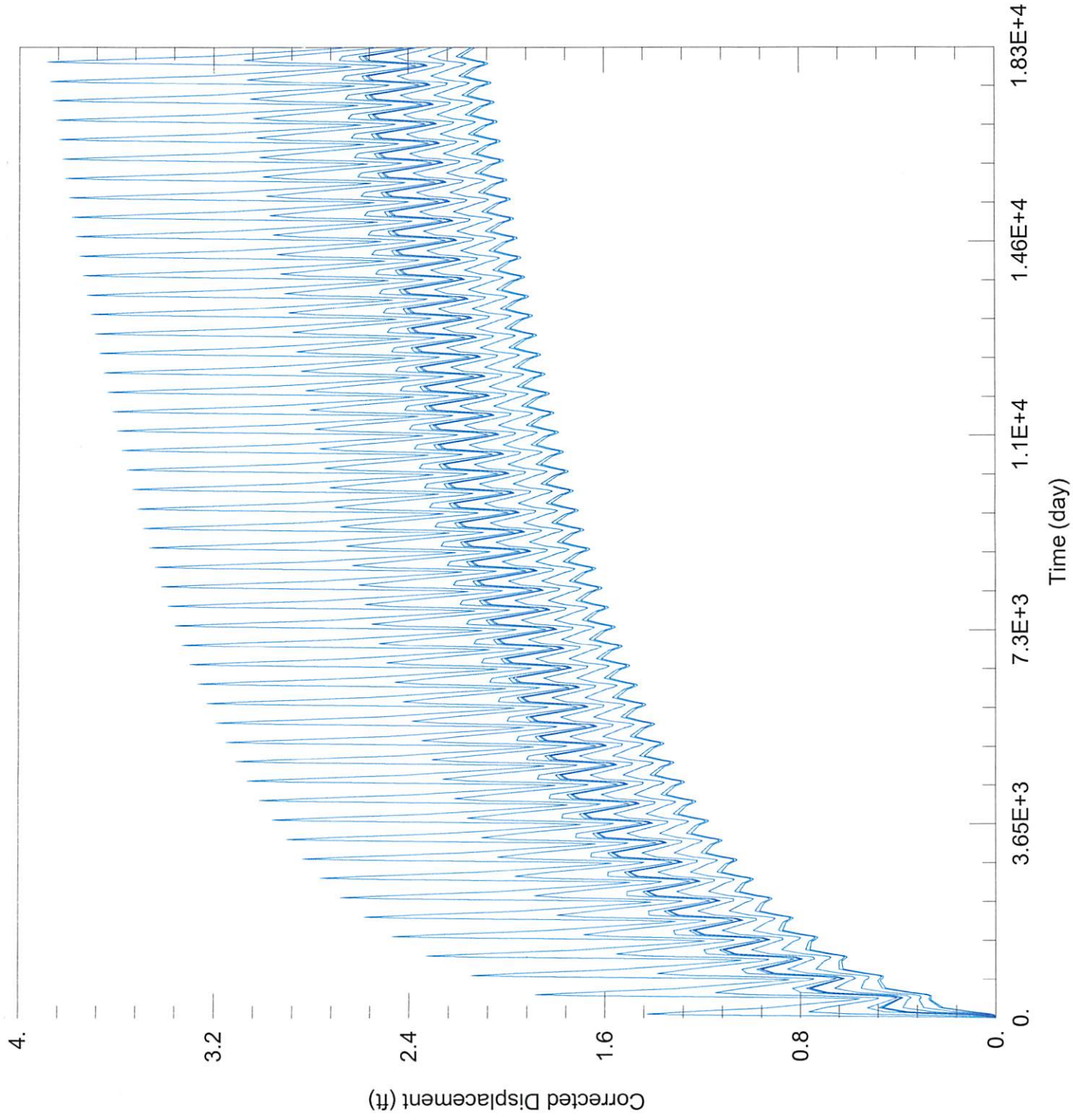
WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
20526.ID2	62347	317784

Observation Wells

Well Name	X (ft)	Y (ft)
□	62347	317784



WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2023_moves\20526\20526 Proposed.aqt

Date: 07/31/23

Time: 11:47:09

PROJECT INFORMATION

Company: GMD 3

Project: 20526

Location: Gray County

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
20526 ID2	63151	318838

Observation Wells

Well Name	X (ft)	Y (ft)
	63151	318838