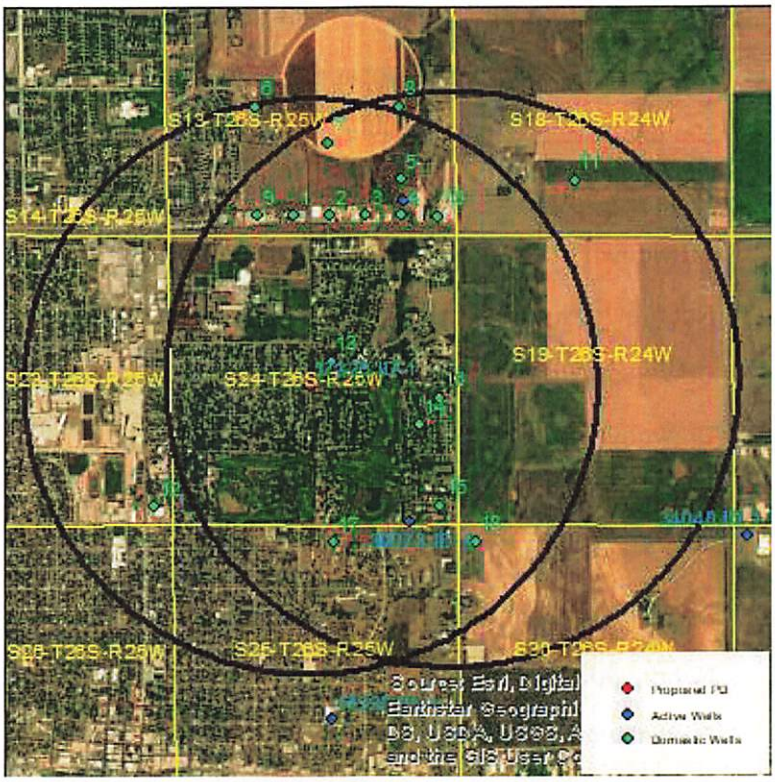
Evaluation of proposed move for Water Right No. 17329

Proposed: Split water right no. 17329 ID9 and move authority to two existing well locations, currently authorized under right no. 17329 ID1 in section 24-26-25 and right no. 34536. Both of these moves exceed ½ mile, so a waiver of rules will be needed for approval.



Wells within 1 mile: 4743 & 19874, 18217 & 30073, and 18 domestic wells, numbered on the above map.

The saturated thickness at the proposed well locations is estimated to be 49 ft, based upon the GMD3 model. For saturated thickness less than 50 ft, the drawdown allowance is 1.0 ft.

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

S = 0.1741, T = 8322 ft^2/day,

17329 ID1: $tp_{current}$ = 120 days, $Q_{current}$ = 514 gpm, $tp_{proposed}$ = 295 days, $Q_{proposed}$ = 514 gpm

34536: $tp_{current}$ = 120 days, $Q_{current}$ = 593 gpm, $tp_{proposed}$ = 209 days, $Q_{proposed}$ = 593 gpm

Theis drawdowns were calculated as follows:

4743 & 19874: Drawdown from current location = 3.87ft

Drawdown from proposed location = 7.14 ft

Net drawdown = **3.3 ft**

18217 & 30073:	Drawdown from current location = 4.38 ft
	Drawdown from proposed location = 7.73ft
	Net drawdown = **3.3 ft**
Domestic 1:	Drawdown from current location = 3.81 ft
	Drawdown from proposed location = 7.26 ft
	Net drawdown = **3.5 ft**
Domestic 2:	Drawdown from current location = 3.95 ft
	Drawdown from proposed location = 7.37 ft
	Net drawdown = **3.4 ft**
Domestic 3:	Drawdown from current location = 4.03 ft
	Drawdown from proposed location = 7.39 ft
	Net drawdown = **3.4 ft**
Domestic 4:	Drawdown from current location = 4.05 ft
	Drawdown from proposed location = 7.32 ft
	Net drawdown = **3.3 ft**
Domestic 5:	Drawdown from current location = 3.62 ft
	Drawdown from proposed location = 6.87 ft
	Net drawdown = **3.3 ft**
Domestic 6:	Drawdown from current location = 2.88 ft
	Drawdown from proposed location = 5.86 ft
	Net drawdown = **3.0 ft**
Domestic 7:	Drawdown from current location = 3.25 ft
	Drawdown from proposed location = 6.44 ft
	Net drawdown = **3.2 ft**
Domestic 8:	Drawdown from current location = 3.04 ft
	Drawdown from proposed location = 6.07 ft
	Net drawdown = **3.0 ft**

Domestic 9:	Drawdown from current location = 3.62 ft
	Drawdown from proposed location = 7.05 ft
	Net drawdown = **3.4 ft**
Domestic 10:	Drawdown from current location = 3.99 ft
	Drawdown from proposed location = 7.21 ft
	Net drawdown = **3.2 ft**
Domestic 11:	Drawdown from current location = 3.10 ft
	Drawdown from proposed location = 6.06 ft
	Net drawdown = **3.0 ft**
Domestic 12:	Drawdown from current location = 3.23 ft
	Drawdown from proposed location = 6.53 ft
	Net drawdown = **3.3 ft**
Domestic 13:	Drawdown from current location = 7.50 ft
	Drawdown from proposed location = 11.14 ft
	Net drawdown = **3.6 ft**
Domestic 14:	Drawdown from current location = 6.72 ft
	Drawdown from proposed location = 10.32 ft
	Net drawdown = **3.6 ft**
Domestic 15:	Drawdown from current location = 4.57 ft
	Drawdown from proposed location = 7.93 ft
	Net drawdown = **3.4 ft**
Domestic 16:	Drawdown from current location = 8.47 ft
	Drawdown from proposed location = 12.06 ft
	Net drawdown = **3.6 ft**
Domestic 17:	Drawdown from current location = 4.03 ft
	Drawdown from proposed location = 7.50 ft
	Net drawdown = **3.5 ft**

Domestic 18: Drawdown from current location = 3.89 ft

Drawdown from proposed location = 7.06 ft

Net drawdown = **3.2 ft**

Net drawdown exceeds the drawdown allowance for all wells within 1 mile of the proposed locations. Critical well analysis is necessary on those wells.

Critical Well Evaluation:

4743 & 19874:

Water Column = 52 ft

Remaining saturated thickness on an irrigation well is less than 60 ft, so this well **is critical.**

18217 & 30073:

Water Column = 49 ft

Remaining saturated thickness on an irrigation well is less than 50 ft, so this well **is critical.**

Domestic 1:

Water Column = 52 ft

DP = 3.5 ft (Net drawdown from the proposal indicated above)

DE = 17.6 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 21.1 ft

Economic Drawdown Constraint (EDC) = 0.4 * 52 ft = 20.8 ft

Physical Drawdown Constraint (PDC) = 52 ft – 20 ft = 32.0 ft

Total drawdown of 21.1 ft is greater than the EDC, so this well **is critical.**

Domestic 2:

Water Column = 52 ft

DP = 3.4 ft (Net drawdown from the proposal indicated above)

DE = 17.6 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 21.0 ft

Economic Drawdown Constraint (EDC) = 0.4 * 52 ft = 20.8 ft

Physical Drawdown Constraint (PDC) = 52 ft – 20 ft = 32.0 ft

Total drawdown of 21.0 ft is greater than the EDC, so this well **is critical.**

Domestic 3:

Water Column = 52 ft

DP = 3.4 ft (Net drawdown from the proposal indicated above)

DE = 17.6 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 21.0 ft

Economic Drawdown Constraint (EDC) = 0.4 * 52 ft = 20.8 ft

Physical Drawdown Constraint (PDC) = 52 ft – 20 ft = 32.0 ft

Total drawdown of 21.0 ft is greater than the EDC, so this well **is critical.**

Domestic 4:

Water Column = 52 ft

DP = 3.3 ft (Net drawdown from the proposal indicated above)

DE = 17.6 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 20.9 ft

Economic Drawdown Constraint (EDC) = 0.4 * 52 ft = 20.8 ft

Physical Drawdown Constraint (PDC) = 52 ft – 20 ft = 32.0 ft

Total drawdown of 20.9 ft is greater than the EDC, so this well **is critical.**

Domestic 5:

Water Column = 52 ft

DP = 3.3 ft (Net drawdown from the proposal indicated above)

DE = 17.6 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DT = 20.9 ft

Economic Drawdown Constraint (EDC) = 0.4 * 52 ft = 20.8 ft

Physical Drawdown Constraint (PDC) = 52 ft – 20 ft = 32.0 ft

Total drawdown of 20.9 ft is greater than the EDC and PDC, so this well **is critical.**

Domestic 6:

Water Column = 52 ft

DP = 3.0 ft (Net drawdown from the proposal indicated above)

DE = 17.6 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 20.6 ft

Economic Drawdown Constraint (EDC) = 0.4 * 52 ft = 20.8 ft

Physical Drawdown Constraint (PDC) = 52 ft – 20 ft = 32.0 ft

Total drawdown of 20.6 ft is less than the EDC and PDC, so this well **is not critical.**

Domestic 7:

Water Column = 52 ft

DP = 3.2 ft (Net drawdown from the proposal indicated above)

DE = 17.6 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 20.8 ft

Economic Drawdown Constraint (EDC) = 0.4 * 52 ft = 20.8 ft

Physical Drawdown Constraint (PDC) = 52 ft – 20 ft = 32.0 ft

Total drawdown of 20.8 ft is less than or equal to the EDC and PDC, so this well **is not critical.**

Domestic 8:

Water Column = 52 ft

DP = 3.0 ft (Net drawdown from the proposal indicated above)

DE = 17.6 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 20.6 ft

Economic Drawdown Constraint (EDC) = 0.4 * 52 ft = 20.8 ft

Physical Drawdown Constraint (PDC) = 52 ft – 20 ft = 32.0 ft

Total drawdown of 20.6 ft is less than the EDC and PDC, so this well **is not critical.**

Domestic 9:

Water Column = 52 ft

DP = 3.4 ft (Net drawdown from the proposal indicated above)

DE = 17.6 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 21.0 ft

Economic Drawdown Constraint (EDC) = 0.4 * 52 ft = 20.8 ft

Physical Drawdown Constraint (PDC) = 52 ft – 20 ft = 32.0 ft

Total drawdown of 21.0 ft is greater than the EDC, so this well **is critical.**

Domestic 10:

Water Column = 52 ft

DP = 3.2 ft (Net drawdown from the proposal indicated above)

DE = 17.6 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 20.8 ft

Economic Drawdown Constraint (EDC) = 0.4 * 52 ft = 20.8 ft

Physical Drawdown Constraint (PDC) = 52 ft – 20 ft = 32.0 ft

Total drawdown of 20.8 ft is less than or equal to the EDC and PDC, so this well **is not critical.**

Domestic 11:

Water Column = 42 ft

DP = 3.0 ft (Net drawdown from the proposal indicated above)

DE = 18.0 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 21.2 ft

Economic Drawdown Constraint (EDC) = 0.4 * 42 ft = 16.8 ft

Physical Drawdown Constraint (PDC) = 42 ft – 20 ft = 22.0 ft

Total drawdown of 21.2 ft is greater than the EDC and PDC, so this well **is critical.**

Domestic 12:

Water Column = 70 ft

DP = 3.3 ft (Net drawdown from the proposal indicated above)

DE = 17.9 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 21.2 ft

Economic Drawdown Constraint (EDC) = 0.4 * 70 ft = 28.0 ft

Physical Drawdown Constraint (PDC) = 70 ft – 20 ft = 50.0 ft

Total drawdown of 21.2 ft is less than the EDC and PDC, so this well **is not critical.**

Domestic 13:

Water Column = 49 ft

DP = 3.6 ft (Net drawdown from the proposal indicated above)

DE = 19.0 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 22.6 ft

Economic Drawdown Constraint (EDC) = 0.4 * 49 ft = 19.6 ft

Physical Drawdown Constraint = 49 ft – 20 ft = 29.0 ft

Total drawdown of 22.6 ft is greater than the EDC, so this well **is critical.**

Domestic 14:

Water Column = 49 ft

DP = 3.6 ft (Net drawdown from the proposal indicated above)

DE = 19.0 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 22.6 ft

Economic Drawdown Constraint (EDC) = 0.4 * 49 ft = 19.6 ft

Physical Drawdown Constraint (PDC) = 49 ft – 20 ft = 29.0 ft

Total drawdown of 22.6 ft is greater than the EDC, so this well **is critical.**

Domestic 15:

Water Column = 49 ft

DP = 3.4 ft (Net drawdown from the proposal indicated above)

DE = 19.0 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 22.4 ft

Economic Drawdown Constraint (EDC) = 0.4 * 49 ft = 19.6 ft

Physical Drawdown Constraint (PDC) = 49 ft – 20 ft = 29.0 ft

Total drawdown of 22.4 ft is greater than the EDC, so this well **is critical.**

Domestic 16:

Water Column = 49 ft

DP = 3.6 ft (Net drawdown from the proposal indicated above)

DE = 19.0 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 22.6 ft

Economic Drawdown Constraint (EDC) = 0.4 * 49 ft = 19.6 ft

Physical Drawdown Constraint (PDC) = 49 ft – 20 ft = 29.0 ft

Total drawdown of 22.6 ft is greater than the EDC, so this well **is critical.**

Domestic 17:

Water Column = 49 ft

DP = 3.5 ft (Net drawdown from the proposal indicated above)

DE = 17.6 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 21.1 ft

Economic Drawdown Constraint (EDC) = 0.4 * 49 ft = 19.6 ft

Physical Drawdown Constraint (PDC) = 49 ft – 20 ft = 29.0 ft

Total drawdown of 21.1 ft is greater than the EDC, so this well **is critical.**

Domestic 18:

Water Column = 40 ft

DP = 3.2 ft (Net drawdown from the proposal indicated above)

DE = 18.3 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 21.5 ft

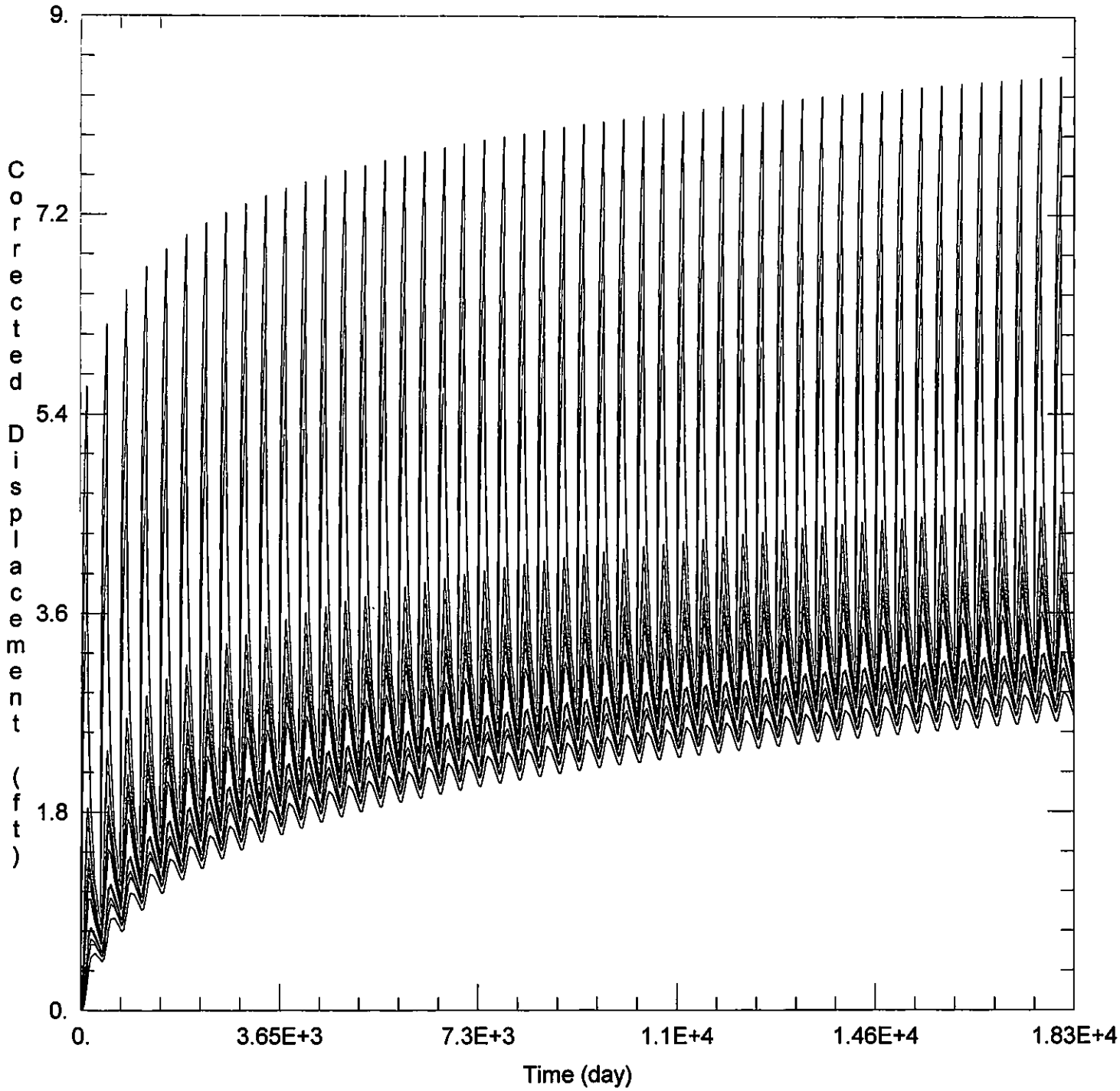
Economic Drawdown Constraint (EDC) = 0.4 * 40 ft = 16.0 ft

Physical Drawdown Constraint (PDC) = 40 ft – 20 ft = 20.0 ft

Total drawdown of 21.5 ft is greater than the EDC and PDC, so this well is **critical.**

Conclusion:

The proposed move is in a depleted aquifer area with about 50 ft of remaining saturated thickness. The analysis shows that net well-to-well effects are likely to be noticeable, due to the limited amount of remaining aquifer. It should be noted that the proposal is moving authority further than 2 miles, when rules allow for up to ½ mile. 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\17329\17329 Current.aqt
Date: 09/28/23 Time: 13:43:42

PROJECT INFORMATION

Company: GMD 3
Project: 17329
Location: Ford County

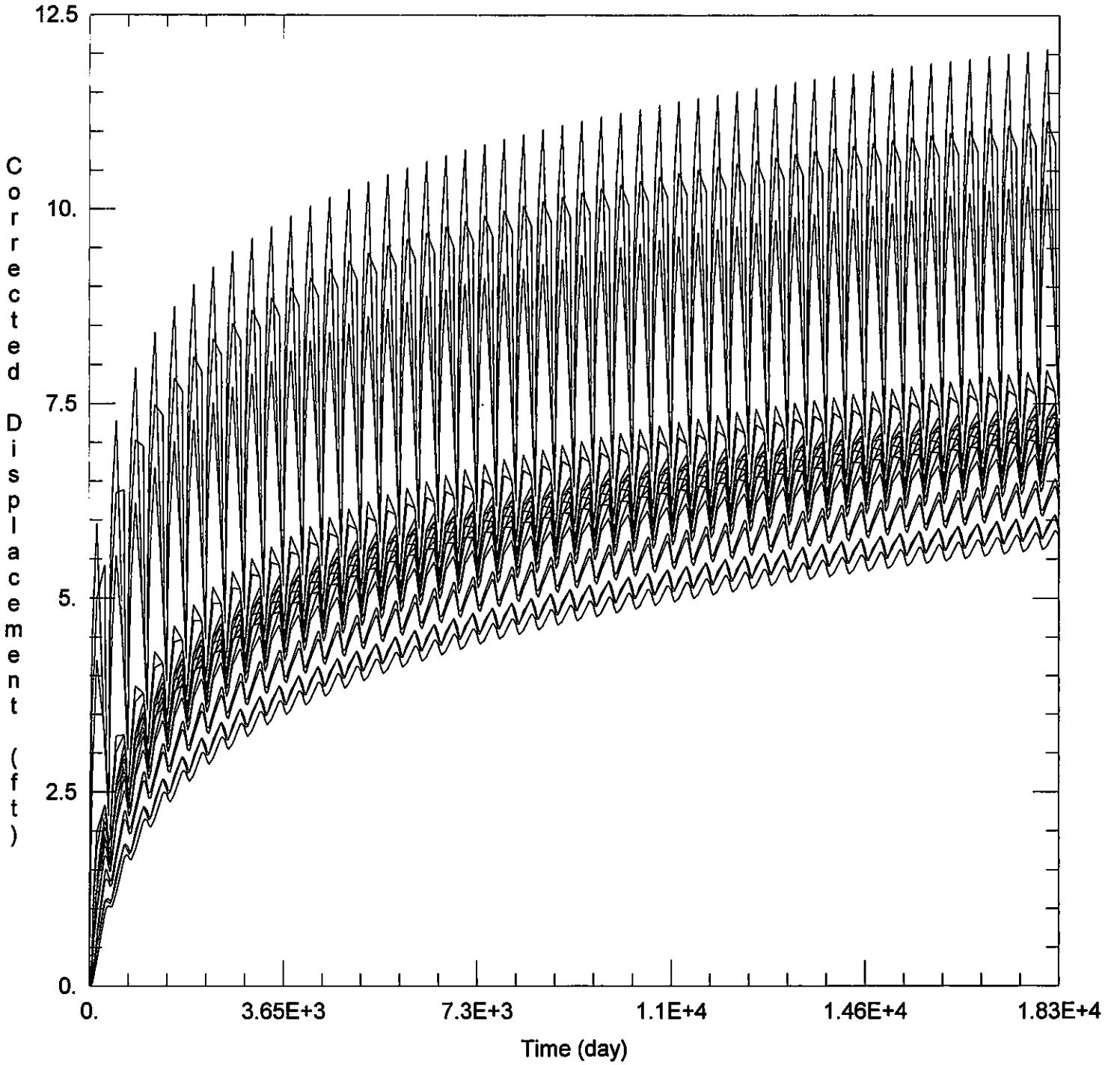
WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
17329	229370	327709
34536	231979	327841

Observation Wells

Well Name	X (ft)	Y (ft)
▫	229370	327709
▫	231979	327841



WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2023_moves\17329\17329 Proposed.aqt
Date: 09/28/23 Time: 13:43:35

PROJECT INFORMATION

Company: GMD 3
Project: 17329
Location: Ford County

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
17329	229370	327709
34536	231979	327841

Observation Wells

Well Name	X (ft)	Y (ft)
▫	229370	327709
▫	231979	327841