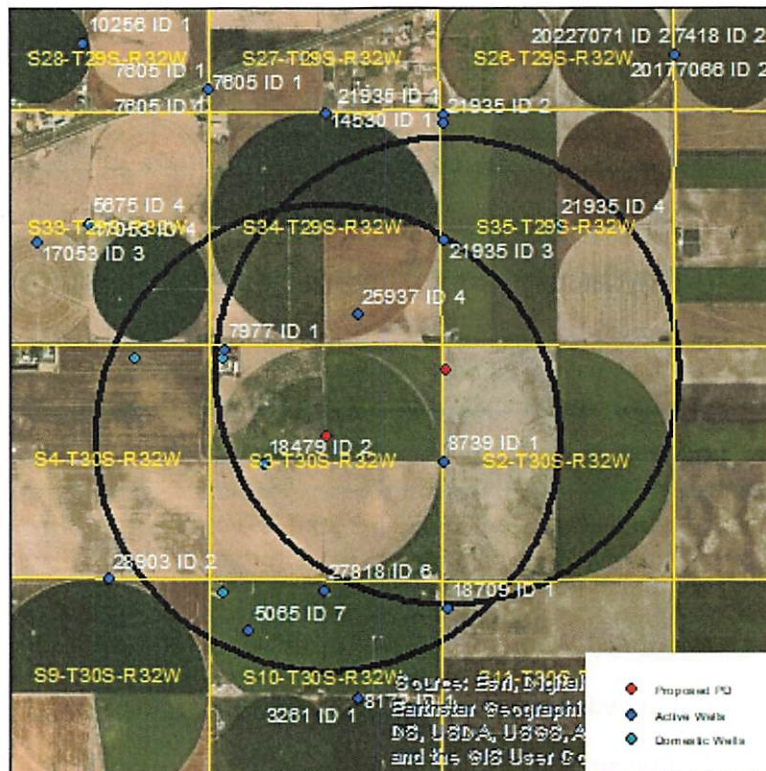**Evaluation of proposed move for Water Right Nos. 8739 & 18479**

Proposed: Move water right no. 8739 to a new well location, 2,070 ft to the north. Move water right no. 18479 to a new well location, 1,554 ft to the northeast.

Wells within 1 mile: 25937, 21935 ID3, 21935 ID4, 7977, 5065, 27818, 18709, a domestic well in section 4-30-32, a domestic well in section 3-30-32, and a domestic well in section 10-30-32.

The saturated thickness at the proposed well location is estimated to be 195 ft, based upon the GMD3 model. For saturated thickness between150 ft and 200 ft, the drawdown allowance is 3.5 ft.

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

$S = 0.2337$, $T = 14,844$ ft^2/day,

8739: $tp_{current} = 120$ days, $Q_{current} = 239$ gpm, $tp_{proposed} = 151$ days, $Q_{proposed} = 1920$ gpm

18479: $tp_{current} = 43$ days, $Q_{current} = 500$ gpm, $tp_{proposed} = 117$ days, $Q_{proposed} = 1240$ gpm

Theis drawdowns were calculated as follows:

25937:	Net drawdown from 8739 = 5.85 ft
	Net drawdown from 18479 = 2.63 ft
	Combined net drawdown = **8.5 ft**
21935 ID3:	Net drawdown from 8739 = 5.24 ft
	Net drawdown from 18479 = 1.77 ft
	Combined net drawdown = **7.0 ft**
21935 ID4:	Net drawdown from 8739 = 4.24 ft
	Net drawdown from 18479 = 1.45 ft
	Combined net drawdown = **5.7 ft**
7977:	Net drawdown from 8739 = 3.69 ft
	Net drawdown from 18479 = 2.36 ft
	Combined net drawdown = **6.0 ft**
5065:	Net drawdown from 8739 = 2.88 ft
	Net drawdown from 18479 = 1.76 ft
	Combined net drawdown = **4.6 ft**
27818:	Net drawdown from 8739 = 3.33 ft
	Net drawdown from 18479 = 2.17 ft
	Combined net drawdown = **5.5 ft**
18709:	Net drawdown from 8739 = 3.40 ft
	Net drawdown from 18479 = 1.84 ft
	Combined net drawdown = **5.2 ft**
Domestic 4-30-32:	Net drawdown from 8739 = 3.03 ft
	Net drawdown from 18479 = 1.77 ft
	Combined net drawdown = **4.8 ft**
Domestic 3-30-32:	Net drawdown from 8739 = 3.67 ft
	Net drawdown from 18479 = 2.38 ft
	Combined net drawdown = **6.0 ft**

Domestic 10-30-32:   Net drawdown from 8739 = 2.95 ft

Net drawdown from 18479 = 1.85 ft

Net drawdown = **4.8ft**

Net drawdown from the move of water right no. 18479 does not exceed the drawdown allowance of any neighboring well. Net drawdown from the move of water right no. 8739 exceeds the drawdown allowance of 3.5 ft for most of the wells within 1 mile of the proposed location. Combined drawdown effects of the two moves exceed the drawdown allowance of 3.5 ft for all wells within 1 mile. Critical well analysis was performed for all wells.

Critical Well Evaluation:

25937:

Water Column = 191 ft

DP = 8.5 ft (Net drawdown from the proposal indicated above)

DE = 64.8 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DD = 20.9 ft (S = 0.2238, T = 10,417 ft^2/day, Q = 603 gpm, tp = 135 days, efficiency = 70%)

DT = 94.2 ft

Economic Drawdown Constraint (EDC) = 0.4 * 191 ft = 76.4 ft

Physical Drawdown Constraint (PDC) = 191 ft – 60 ft = 131 ft

Total drawdown of 94.2 ft is greater than the EDC, so this well **is critical.**

21935 ID3:

Water Column = 217 ft

DP = 7.0 ft (Net drawdown from the proposal indicated above)

DE = 56.8 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DD = 9.4 ft (S = 0.2615, T = 15,701 ft^2/day, Q = 399 gpm, tp = 176 days, efficiency = 70%)

DT = 73.2 ft

Economic Drawdown Constraint (EDC) = 0.4 * 217 ft = 86.8 ft

Physical Drawdown Constraint (PDC) = 217 ft – 60 ft = 157 ft

Total drawdown of 73.2 ft is less than the EDC and PDC, so this well **is not critical.**

21935 ID4:

Water Column = 217 ft

DP = 5.7 ft (Net drawdown from the proposal indicated above)

DE = 56.8 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DD = 7.1 ft (S = 0.2615, T = 15,701 ft^2/day, Q = 307 gpm, tp = 152 days, efficiency = 70%)

DT = 69.6 ft

Economic Drawdown Constraint (EDC) = 0.4 * 217 ft = 86.8 ft

Physical Drawdown Constraint (PDC) = 217 ft – 60 ft = 157 ft

Total drawdown of 69.6 ft is less than the EDC and PDC, so this well **is not critical.**

7977:

Water Column = 180 ft

DP = 6.0 ft (Net drawdown from the proposal indicated above)

DE = 68.7 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DD = 2.0 ft (S = 0.2397, T = 12,959 ft^2/day, Q = 73 gpm, tp = 120 days, efficiency = 70%)

DT = 76.7 ft

Economic Drawdown Constraint (EDC) = 0.4 * 180 ft = 72.0 ft

Physical Drawdown Constraint (PDC) = 180 ft – 60 ft = 120 ft

Total drawdown of 76.7 ft is greater than the EDC, so this well **is critical.**

5065:

Water Column = 156 ft

DP = 4.6 ft (Net drawdown from the proposal indicated above)

DE = 66.5 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DD = 14.4 ft (S = 0.1726, T = 14,038 ft^2/day, Q = 547 gpm, tp = 120 days, efficiency = 70%)

DT = 85.5 ft

Economic Drawdown Constraint (EDC) = 0.4 * 156 ft = 62.4 ft

Physical Drawdown Constraint (PDC) = 156 ft – 60 ft = 96 ft

Total drawdown of 85.5 ft is greater than the EDC, so this well **is critical.**

27818:

Water Column = 156 ft

DP = 5.5 ft (Net drawdown from the proposal indicated above)

DE = 66.5 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DD = 6.7 ft (S = 0.1726, T = 14,038 ft^2/day, Q = 250 gpm, tp = 178 days, efficiency = 70%)

DT = 78.7 ft

Economic Drawdown Constraint (EDC) = 0.4 * 156 ft = 62.4 ft

Physical Drawdown Constraint (PDC) = 156 ft – 60 ft = 96 ft

Total drawdown of 78.7 ft is greater than the EDC, so this well **is critical.**

18709:

Water Column = 166 ft

DP = 5.2 ft (Net drawdown from the proposal indicated above)

DE = 60.9 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DD = 0 ft (Well has not been used in more than 10 years)

DT = 66.1 ft

Economic Drawdown Constraint (EDC) = 0.4 * 166 ft = 66.4 ft

Physical Drawdown Constraint (PDC) = 166 ft – 60 ft = 106 ft

Total drawdown of 66.1 ft is less than the EDC and PDC, so this well **is not critical.**

Domestic 4-30-32:

Water Column = 165 ft

DP = 4.8 ft (Net drawdown from the proposal indicated above)

DE = 44.9 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DT = 49.7 ft

Economic Drawdown Constraint (EDC) = 0.4 * 165 ft = 66 ft

Physical Drawdown Constraint (PDC) = 165 ft – 20 ft = 145 ft

Total drawdown of 49.7 ft is less than the EDC and PDC, so this well **is not critical.**

Domestic 3-30-32:

Water Column = 180 ft

DP = 6.0 ft (Net drawdown from the proposal indicated above)

DE = 68.7 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DT = 74.7 ft

Economic Drawdown Constraint (EDC) = 0.4 * 180 ft = 72.0 ft

Physical Drawdown Constraint (PDC) = 180 ft – 20 ft = 120 ft

Total drawdown of 74.7 ft is greater than the EDC, so this well **is critical.**

Domestic 10-30-32:

Water Column = 156 ft

DP = 4.8 ft (Net drawdown from the proposal indicated above)

DE = 66.5 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DT = 71.3 ft

Economic Drawdown Constraint (EDC) = 0.4 * 156 ft = 62.4 ft

Physical Drawdown Constraint (PDC) = 156 ft – 20 ft – 136 ft

Total drawdown of 71.3 ft is greater than the EDC, so this well **is critical.**

Conclusion:

The proposed move is in an area with less than 200 ft saturated thickness and projected aquifer declines exceeding 2 ft per year. If the proposed wells were to pump their full combined rate of 3,160 gpm and quantity of 1,920 AF, there would likely be a noticeable drawdown effect on all neighboring wells. Critical well analysis shows that many of these neighboring wells are critical because the aquifer's current rate of decline exceeds 40% in 25 years, after accounting for well drawdown effects. This is expected to greatly reduce well productivity within that time frame. Concerned neighbors should contact GMD3 at (620) 275-7147 or the Division of Water Resources at (620) 276-2901.

8739 Current

Corrected Displacement (ft)

Time (day)
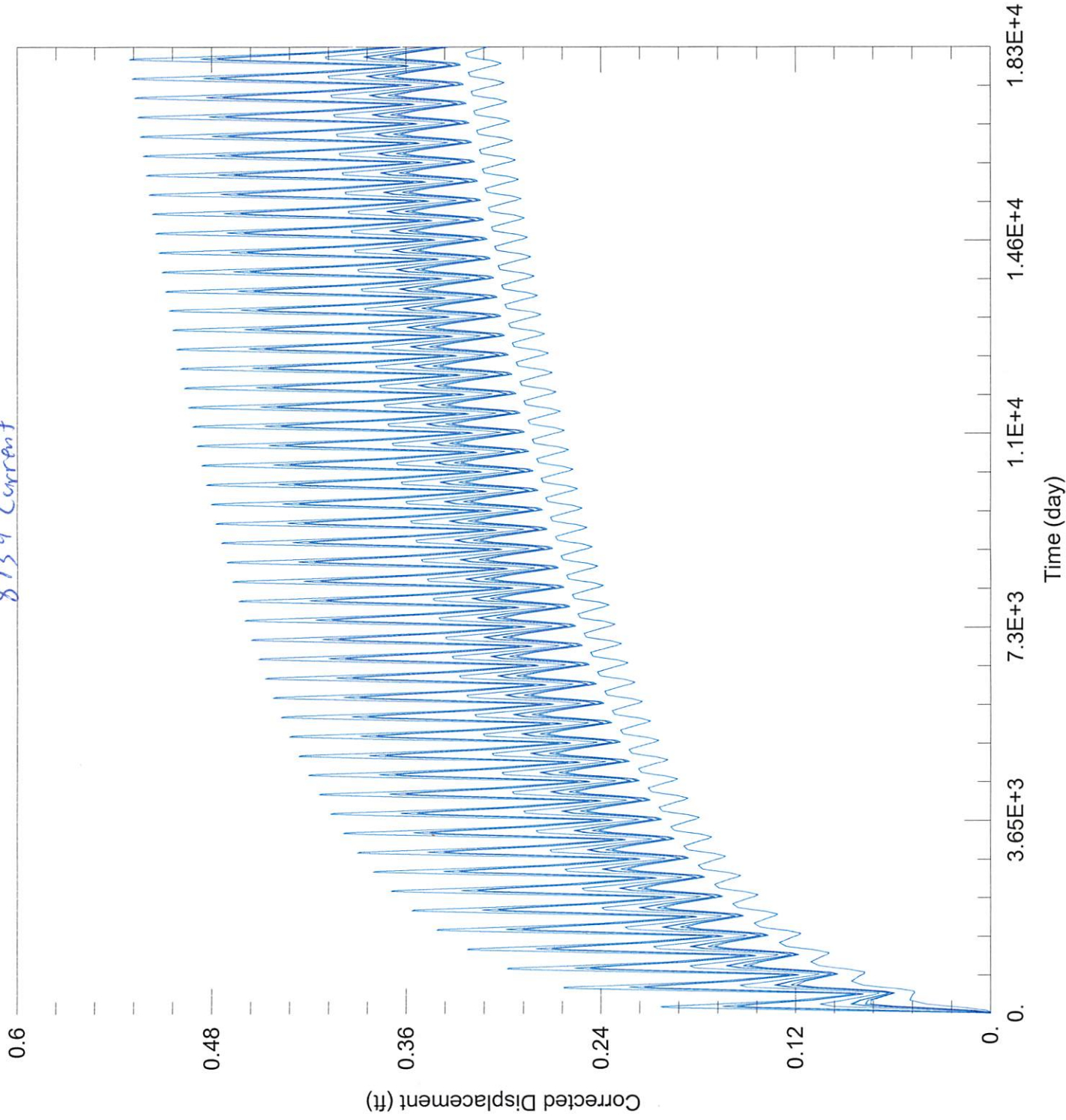
WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2022_moves\8739_18479\8739 Curent.aqt
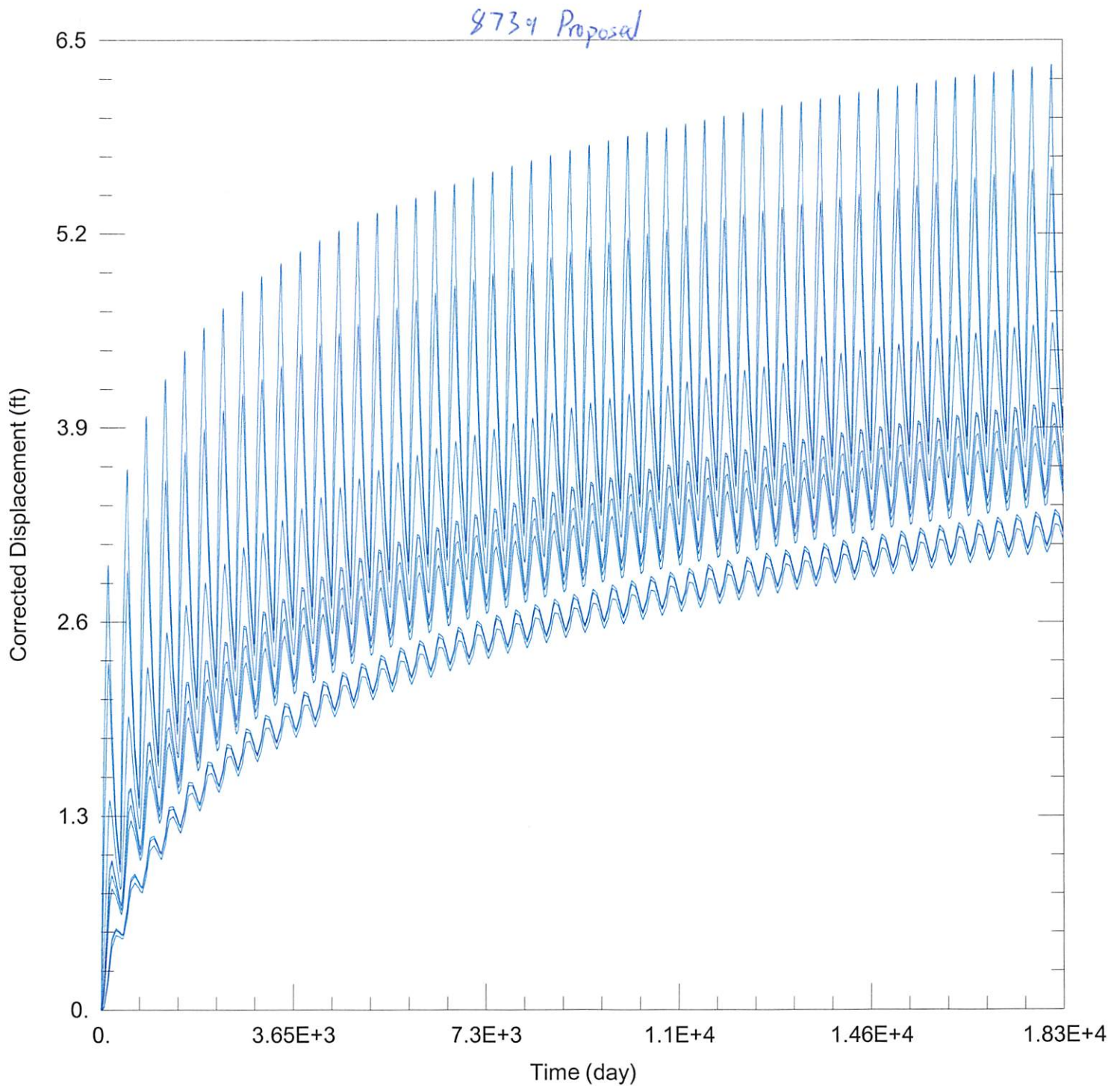Date: 11/22/22   Time: 10:53:32

PROJECT INFORMATION

Company: GMD 3
Project: 8739 & 18479
Location: Haskell County

WELL DATA

	Pumping Wells	
Well Name	X (ft)	Y (ft)
8739	419	215760

	Observation Wells	
Well Name	X (ft)	Y (ft)
□	419	215760

8739 Proposed

WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2022_moves\8739_18479\8739 Proposed.aqt
Date: 11/22/22   Time: 10:54:21

PROJECT INFORMATION

Company: GMD 3
Project: 8739 & 18479
Location: Haskell County

WELL DATA

Pumping Wells				Observation Wells		
Well Name	X (ft)	Y (ft)		Well Name	X (ft)	Y (ft)
8739	490	217828		□	490	217828

18479 Current

WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2022_moves\8739_18479\18479 Current.aqt
Date: 11/22/22   Time: 10:53:25

PROJECT INFORMATION

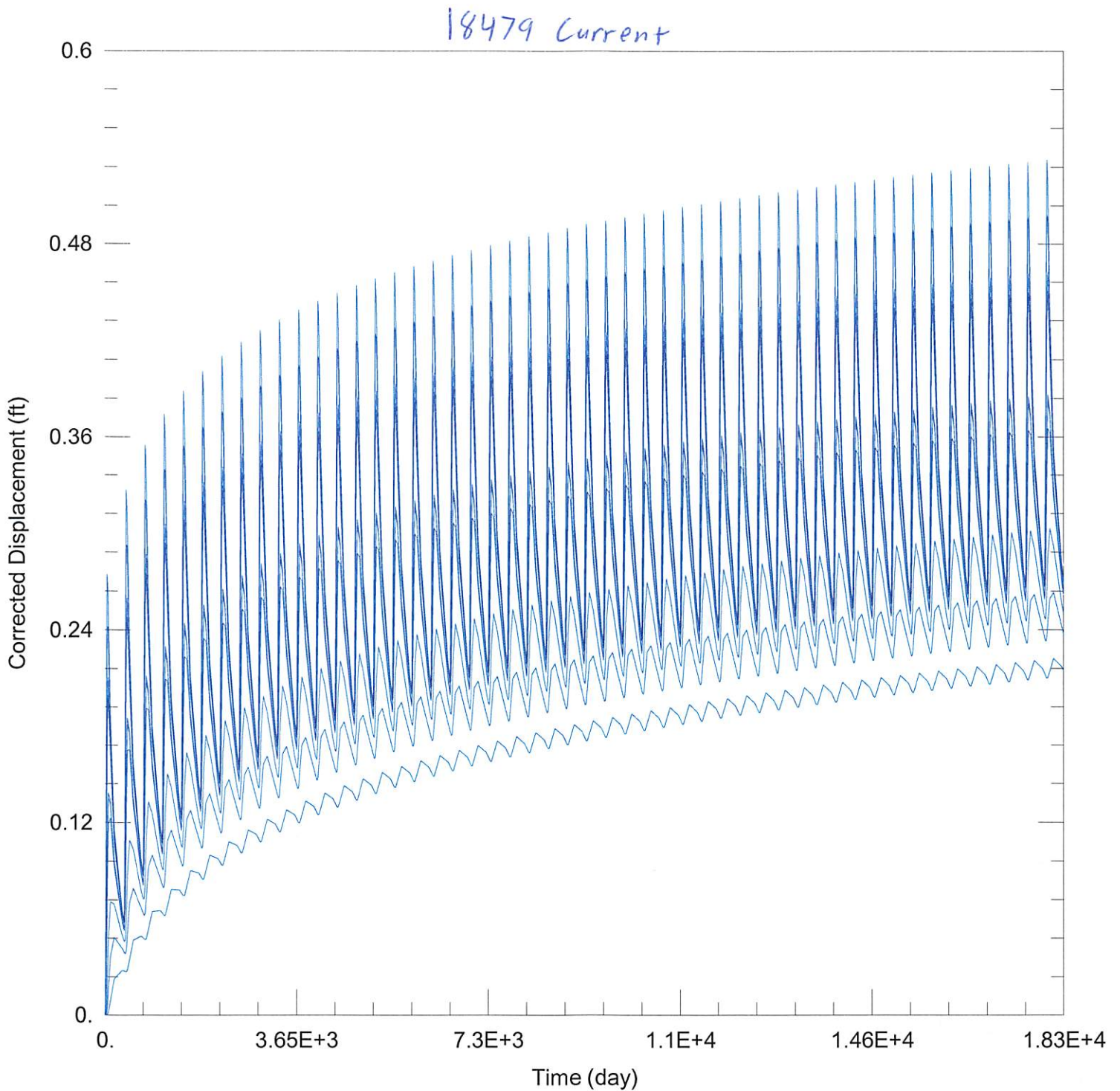Company: GMD 3
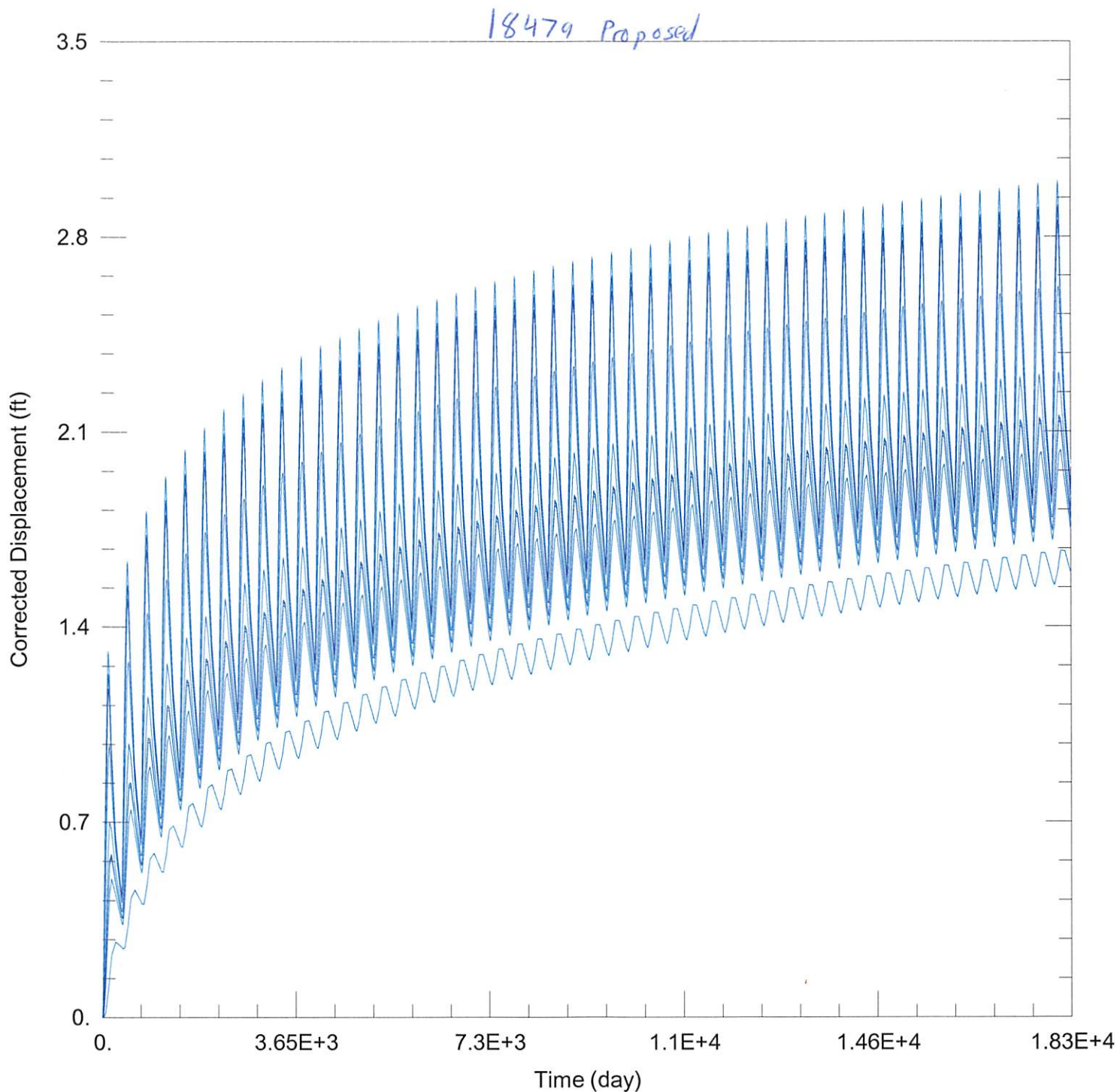Project: 8739 & 18479
Location: Haskell County

WELL DATA

Pumping Wells				Observation Wells		
Well Name	X (ft)	Y (ft)		Well Name	X (ft)	Y (ft)
18479	-3644	215676		□	419	215760

18479 Proposed

WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2022_moves\8739_18479\18479 Proposed.aqt
Date: 11/22/22   Time: 10:55:07

PROJECT INFORMATION

Company: GMD 3
Project: 8739 & 18479
Location: Haskell County

WELL DATA

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
18479	-2228	216317	□	490	217828