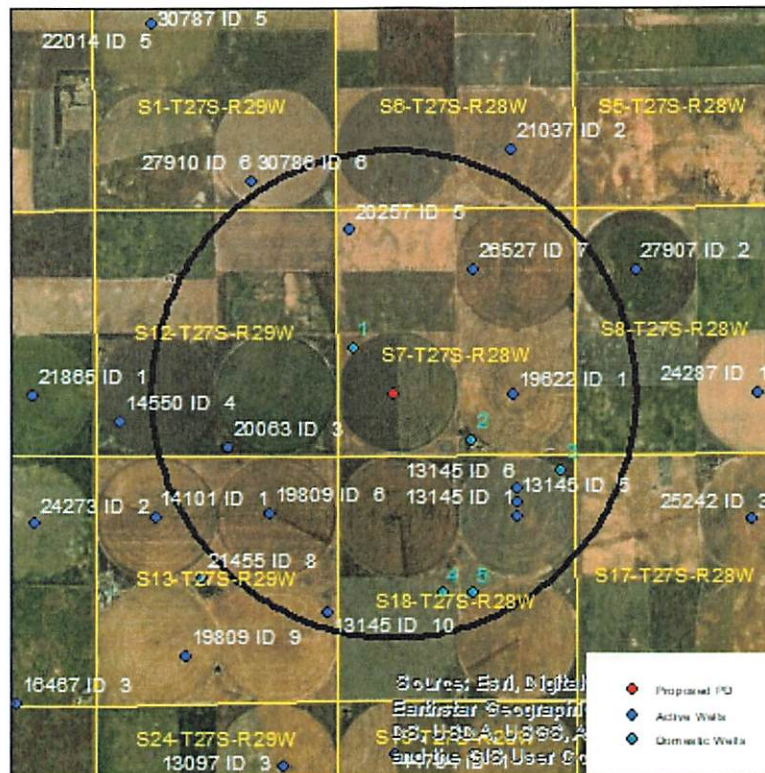


Evaluation of proposed move for Water Right No. 19622

Proposed: Move water right no. 19622 to a new well location, 2604 ft to the west.



Wells within 1 mile: 20063, 20257, 26527, 19809, 13145 ID10, 13145 ID5, and five domestic wells, numbered on the above map.

The saturated thickness at the proposed well location is estimated to be 89 ft, based upon the GMD3 model. For saturated thickness between 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:

$S = 0.001403$, $T = 20,300 \text{ ft}^2/\text{day}$, $tp_{\text{current}} = 92 \text{ days}$, $Q_{\text{current}} = 100 \text{ gpm}$, $tp_{\text{proposed}} = 70 \text{ days}$, $Q_{\text{proposed}} = 840 \text{ gpm}$

Theis drawdowns were calculated as follows:

20063:	Drawdown from current location = 0.41 ft
	Drawdown from proposed location = 3.75 ft
	Net drawdown = 3.3 ft
20257:	Drawdown from current location = 0.44 ft
	Drawdown from proposed location = 3.79 ft
	Net drawdown = 3.3 ft

26527: Drawdown from current location = 0.53 ft
Drawdown from proposed location = 3.95 ft
Net drawdown = **3.4 ft**

19809: Drawdown from current location = 0.42 ft
Drawdown from proposed location = 3.76 ft
Net drawdown = **3.3 ft**

13145 ID10: Drawdown from current location = 0.41 ft
Drawdown from proposed location = 3.40 ft
Net drawdown = **3.0 ft**

13145 ID5: Drawdown from current location = 0.56 ft
Drawdown from proposed location = 3.82 ft
Net drawdown = **3.3 ft**

Domestic 1: Drawdown from current location = 0.49 ft
Drawdown from proposed location = 5.06 ft
Net drawdown = **4.6 ft**

Domestic 2: Drawdown from current location = 0.64 ft
Drawdown from proposed location = 4.56 ft
Net drawdown = **3.9 ft**

Domestic 3: Drawdown from current location = 0.58 ft
Drawdown from proposed location = 3.67 ft
Net drawdown = **3.1 ft**

Domestic 4: Drawdown from current location = 0.46 ft
Drawdown from proposed location = 3.53 ft
Net drawdown = **3.1 ft**

Domestic 5: Drawdown from current location = 0.46 ft
Drawdown from proposed location = 3.48 ft
Net drawdown = **3.0 ft**

Net drawdown exceeds the drawdown allowance of 2.0 ft for all wells within 1 mile of the proposed location. Critical well analysis is necessary on those wells.

Critical Well Evaluation:

20063:

Water Column = 93 ft

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

DE = 29.9 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DD = 3.3 ft ($S = 0.001403$, $T = 20,300 \text{ ft}^2/\text{day}$, $Q = 135 \text{ gpm}$, $t_p = 210 \text{ days}$, efficiency = 70%)

DT = 36.5 ft

Economic Drawdown Constraint (EDC) = $0.4 * 93 \text{ ft} = 37.2 \text{ ft}$

Physical Drawdown Constraint (PDC) = $93 \text{ ft} - 60 \text{ ft} = 33.0 \text{ ft}$

Total drawdown of 36.5 ft is greater than the PDC, so this well is **critical**.

20257:

Water Column = 89 ft

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

DE = 34.5 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DD = 0 ft

DT = 37.8 ft

Economic Drawdown Constraint (EDC) = $0.4 * 89 \text{ ft} = 35.6 \text{ ft}$

Physical Drawdown Constraint (PDC) = $89 \text{ ft} - 60 \text{ ft} = 29 \text{ ft}$

Total drawdown of 37.8 ft is greater than the EDC and PDC, so this well is **critical**.

26527:

Water Column = 89 ft

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

DE = 34.5 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DD = 3.6 ft ($S = 0.001403$, $T = 20,300 \text{ ft}^2/\text{day}$, $Q = 150 \text{ gpm}$, $t_p = 118 \text{ days}$, efficiency = 70%)

DT = 41.5 ft

Economic Drawdown Constraint (EDC) = $0.4 * 89 \text{ ft} = 35.6 \text{ ft}$

Physical Drawdown Constraint (PDC) = $89 \text{ ft} - 60 \text{ ft} = 29 \text{ ft}$

Total drawdown of 41.5 ft is greater than the EDC and PDC, so this well is **critical**.

19809:

Water Column = 111 ft

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

DE = 34.2 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DD = 9.5 ft ($S = 0.001403$, $T = 20,300 \text{ ft}^2/\text{day}$, $Q = 400 \text{ gpm}$, $tp = 126 \text{ days}$, efficiency = 70%)

DT = 47 ft

Economic Drawdown Constraint (EDC) = $0.4 * 111 \text{ ft} = 44.4 \text{ ft}$

Physical Drawdown Constraint (PDC) = $111 \text{ ft} - 60 \text{ ft} = 51 \text{ ft}$

Total drawdown of 47 ft is greater than the EDC, so this well is **critical**.

13145 ID10:

Water Column = 111 ft

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

DE = 34.2 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DD = 12.6 ft ($S = 0.001403$, $T = 20,300 \text{ ft}^2/\text{day}$, $Q = 530 \text{ gpm}$, $tp = 126 \text{ days}$, efficiency = 70%)

DT = 49.8 ft

Economic Drawdown Constraint (EDC) = $0.4 * 111 \text{ ft} = 44.4 \text{ ft}$

Physical Drawdown Constraint (PDC) = $111 \text{ ft} - 60 \text{ ft} = 51 \text{ ft}$

Total drawdown of 49.8 ft is greater than the EDC, so this well is **critical**.

13145 ID5:

Water Column = 104 ft

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

DE = 35.9 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DD = 3.1 ft ($S = 0.001403$, $T = 20,300 \text{ ft}^2/\text{day}$, $Q = 126 \text{ gpm}$, $tp = 257 \text{ days}$, efficiency = 70%)

DT = 42.0 ft

Economic Drawdown Constraint (EDC) = $0.4 * 104 \text{ ft} = 41.6 \text{ ft}$

Physical Drawdown Constraint (PDC) = $104 \text{ ft} - 60 \text{ ft} = 44 \text{ ft}$

Total drawdown of 42.0 ft is greater than the EDC, so this well is **critical**.

Domestic 1:

Water Column = 89 ft

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

DE = 34.5 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DT = 39.1 ft

Economic Drawdown Constraint (EDC) = $0.4 * 89 \text{ ft} = 35.6 \text{ ft}$

Physical Drawdown Constraint (PDC) = $89 \text{ ft} - 20 \text{ ft} = 69 \text{ ft}$

Total drawdown of 39.13 ft is greater than the EDC, so this well is **critical**.

Domestic 2:

Water Column = 89 ft

DP = 3.9 ft (Net drawdown from the proposal indicated above)

DE = 34.5 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DT = 38.4 ft

Economic Drawdown Constraint (EDC) = $0.4 * 89 \text{ ft} = 35.6 \text{ ft}$

Physical Drawdown Constraint (PDC) = $89 \text{ ft} - 20 \text{ ft} = 69 \text{ ft}$

Total drawdown of 38.4 ft is greater than the EDC, so this well is **critical**.

Domestic 3:

Water Column = 104 ft

DP = 3.1 ft (Net drawdown from the proposal indicated above)

DE = 35.9 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DT = 39.0 ft

Economic Drawdown Constraint (EDC) = $0.4 * 104 \text{ ft} = 41.6 \text{ ft}$

Physical Drawdown Constraint (PDC) = $104 \text{ ft} - 20 \text{ ft} = 84 \text{ ft}$

Total drawdown of 39.0 ft is less than the EDC and PDC, so this well is **not critical**.

Domestic 4:

Water Column = 104 ft

DP = 3.1 ft (Net drawdown from the proposal indicated above)

DE = 35.9 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DT = 39.0 ft

Economic Drawdown Constraint (EDC) = $0.4 * 104 \text{ ft} = 41.6 \text{ ft}$

Physical Drawdown Constraint (PDC) = $104 \text{ ft} - 20 \text{ ft} = 84 \text{ ft}$

Total drawdown of 39.0 ft is less than the EDC and PDC, so this well is **not critical**.

Domestic 5:

Water Column = 104 ft

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

DE = 35.9 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DT = 38.9 ft

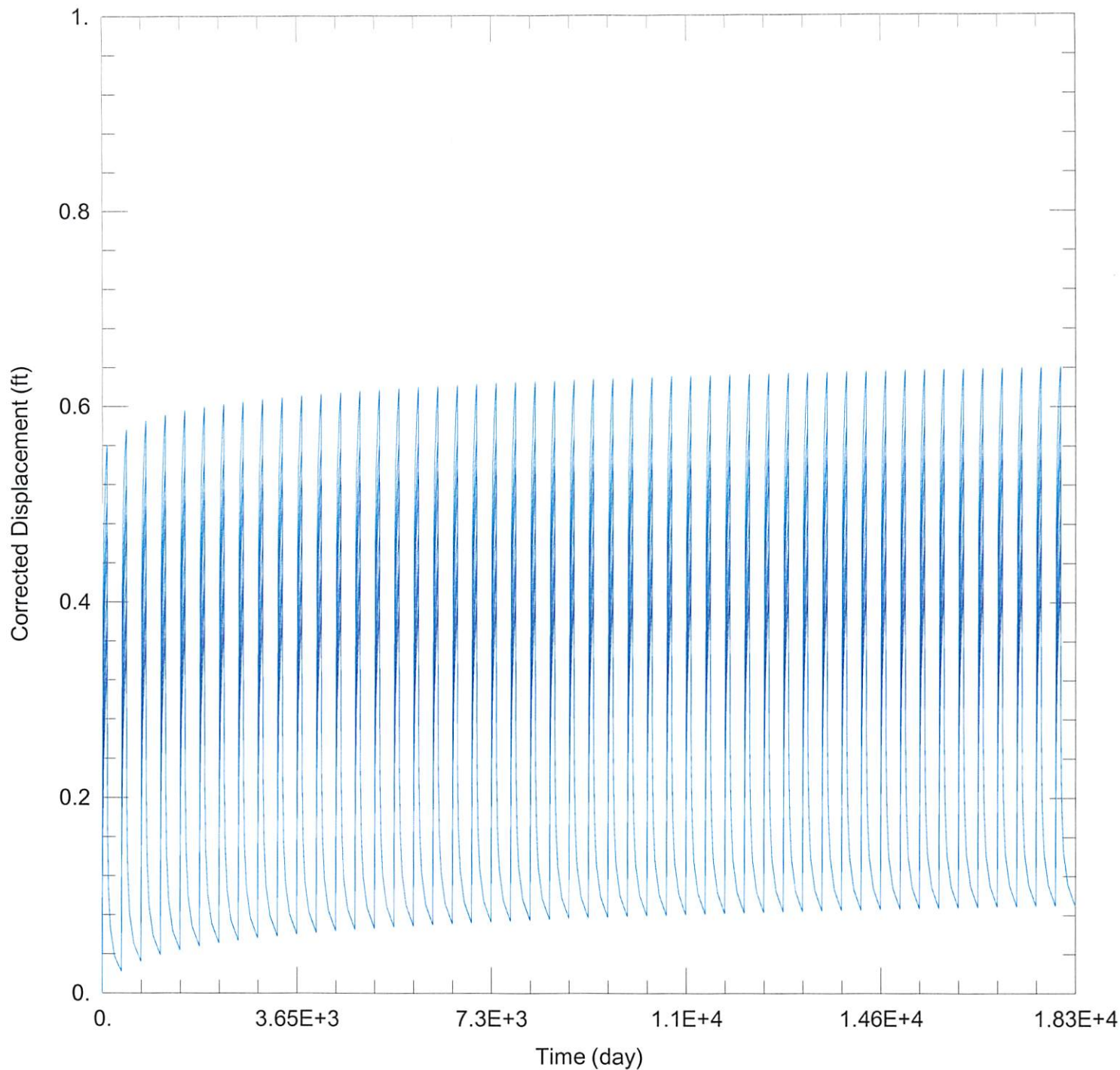
Economic Drawdown Constraint (EDC) = $0.4 * 104 \text{ ft} = 41.6 \text{ ft}$

Physical Drawdown Constraint (PDC) = $104 \text{ ft} - 20 \text{ ft} = 84 \text{ ft}$

Total drawdown of 38.9 ft is less than the EDC and PDC, so this well is **not critical**.

Conclusion:

The proposed move is in an area with low saturated thickness and diminishing well yields. If the proposed well were to pump its full authorized authority, there would likely be a noticeable drawdown effect on all neighboring wells. Critical well analysis shows that most of the neighboring wells are critical because model projections show the usable portion of the aquifer declining more than 40% in 25 years, in some cases leaving less than 60 ft of remaining thickness. Concerned neighbors may 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\2022_moves\19622\19622 Current.aqt

Date: 09/27/22

Time: 14:16:03

PROJECT INFORMATION

Company: GMD 3

Project: 19622

Location: Gray County

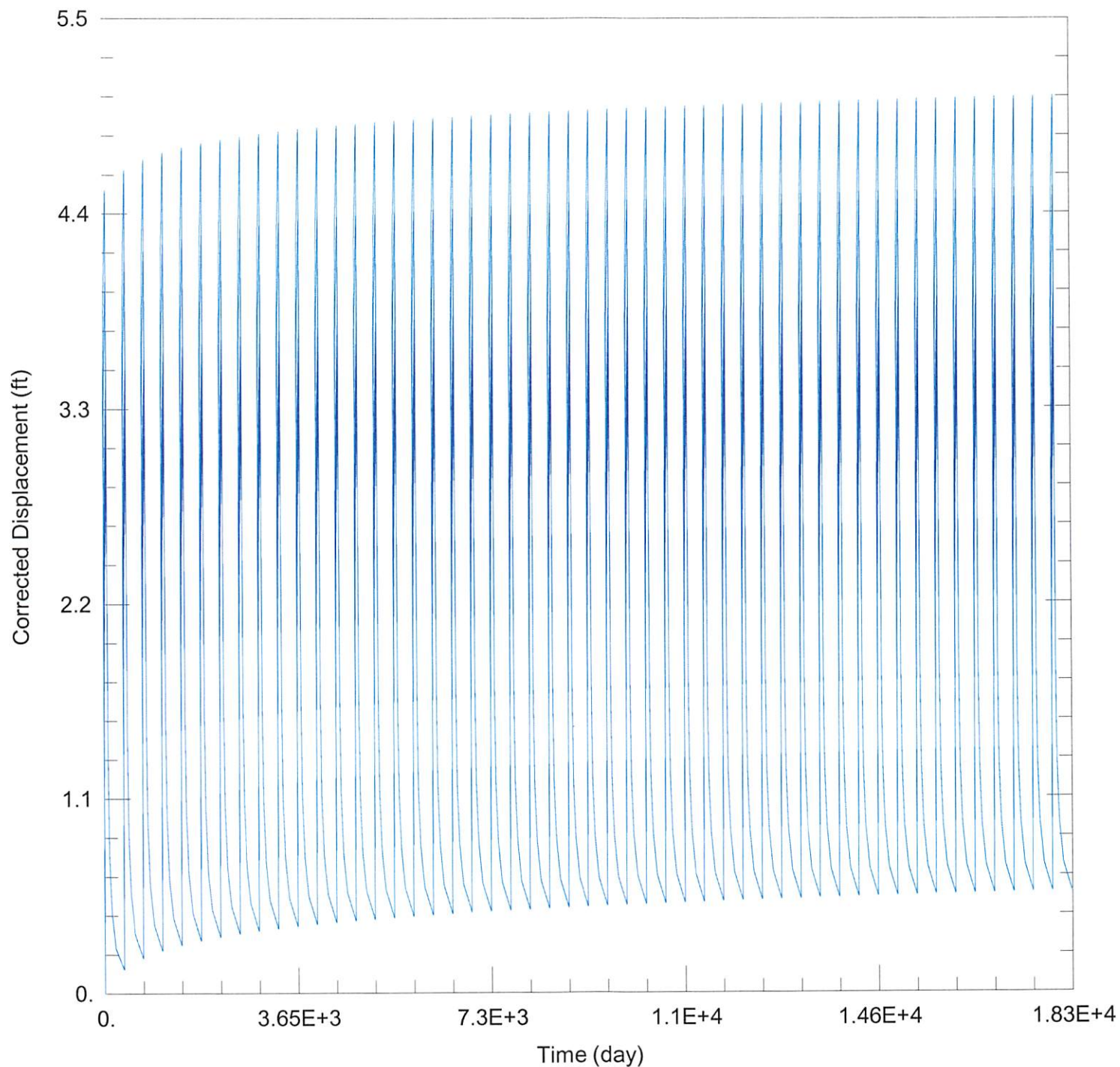
WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
19622	109680	304886

Observation Wells

Well Name	X (ft)	Y (ft)
□	109680	304886



WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2022_moves\19622\19622 Proposed.aqt

Date: 09/27/22

Time: 14:15:57

PROJECT INFORMATION

Company: GMD 3

Project: 19622

Location: Gray County

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
19622	107077	304876

Observation Wells

Well Name	X (ft)	Y (ft)
□	107077	304876