



9004 & 18156: Drawdown from current location = 1.71 ft  
Drawdown from proposed location = 10.75 ft  
Net drawdown = **9.0 ft**

8604: Drawdown from current location = 1.77 ft  
Drawdown from proposed location = 11.47 ft  
Net drawdown = **9.7 ft**

16505: Drawdown from current location = 1.77 ft  
Drawdown from proposed location = 11.03 ft  
Net drawdown = **9.3 ft**

Domestic 10-28-42: Drawdown from current location = 1.84 ft  
Drawdown from proposed location = 10.40 ft  
Net drawdown = **8.6 ft**

Net drawdown exceeds the drawdown allowance of 4.0 ft for all wells within 1 mile of the proposed location. Critical well analysis is necessary on those wells.

**Critical Well Evaluation:**

**8418:**

Water Column = 365 ft

DP = 10.4 ft (Net drawdown from the proposal indicated above)

DE = 15.3 ft (Expected aquifer decline over the next 25 years based on average rate of decline in nearby observation wells)

DD = 8.5 ft ( $S = 0.00034$ ,  $T = 91,660$  gpd/ft,  $Q = 205$  gpm,  $t_p = 169$  days, efficiency = 70%)

DT = 34.2 ft

Economic Drawdown Constraint (EDC) =  $0.4 * 365$  ft = 146 ft

Physical Drawdown Constraint (PDC) =  $365$  ft – 60 ft = 305 ft

Total drawdown of 34.2 ft is less than the EDC and PDC, so this well is **not critical**.

**9004 & 18156:**

Water Column = 365 ft

DP = 9.0 ft (Net drawdown from the proposal indicated above)

DE = 15.3 ft (Expected aquifer decline over the next 25 years based on average rate of decline in nearby observation wells)

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

DT = 24.3 ft

Economic Drawdown Constraint (EDC) =  $0.4 * 365 \text{ ft} = 146 \text{ ft}$

Physical Drawdown Constraint (PDC) =  $365 \text{ ft} - 60 \text{ ft} = 305 \text{ ft}$

Total drawdown of 24.3 ft is less than the EDC and PDC, so this well is **not critical**.

**8604:**

Water Column = 330 ft

DP = 9.7 ft (Net drawdown from the proposal indicated above)

DE = 15.3 ft (Expected aquifer decline over the next 25 years based on average rate of decline in nearby observation wells)

DD = 37.3 ft ( $S = 0.00034$ ,  $T = 91,660 \text{ gpd/ft}$ ,  $Q = 909 \text{ gpm}$ ,  $tp = 118 \text{ days}$ , efficiency = 70%)

DT = 62.3 ft

Economic Drawdown Constraint (EDC) =  $0.4 * 330 \text{ ft} = 132.0 \text{ ft}$

Physical Drawdown Constraint (PDC) =  $330 \text{ ft} - 60 \text{ ft} = 270 \text{ ft}$

Total drawdown of 62.3 ft is less than the EDC and PDC, so this well is **not critical**.

**16505:**

Water Column = 330 ft

DP = 9.3 ft (Net drawdown from the proposal indicated above)

DE = 15.3 ft (Water level decline from 2021 through 2046 based upon GMD3 model)

DD = 21.0 ft ( $S = 0.00034$ ,  $T = 91,660 \text{ gpd/ft}$ ,  $Q = 510 \text{ gpm}$ ,  $tp = 134 \text{ days}$ , efficiency = 70%)

DT = 45.6 ft

Economic Drawdown Constraint (EDC) =  $0.4 * 330 \text{ ft} = 146 \text{ ft}$

Physical Drawdown Constraint (PDC) =  $330 \text{ ft} - 60 \text{ ft} = 270 \text{ ft}$

Total drawdown of 45.6 ft is less than the EDC and PDC, so this well is **not critical**.

**Domestic 10-28-42:**

Water Column = 38 ft

DP = 8.6 ft (Net drawdown from the proposal indicated above)

DE = 15.3 ft (Water level decline from 2021 through 2046 based upon GMD3 model)

DT = 23.9 ft

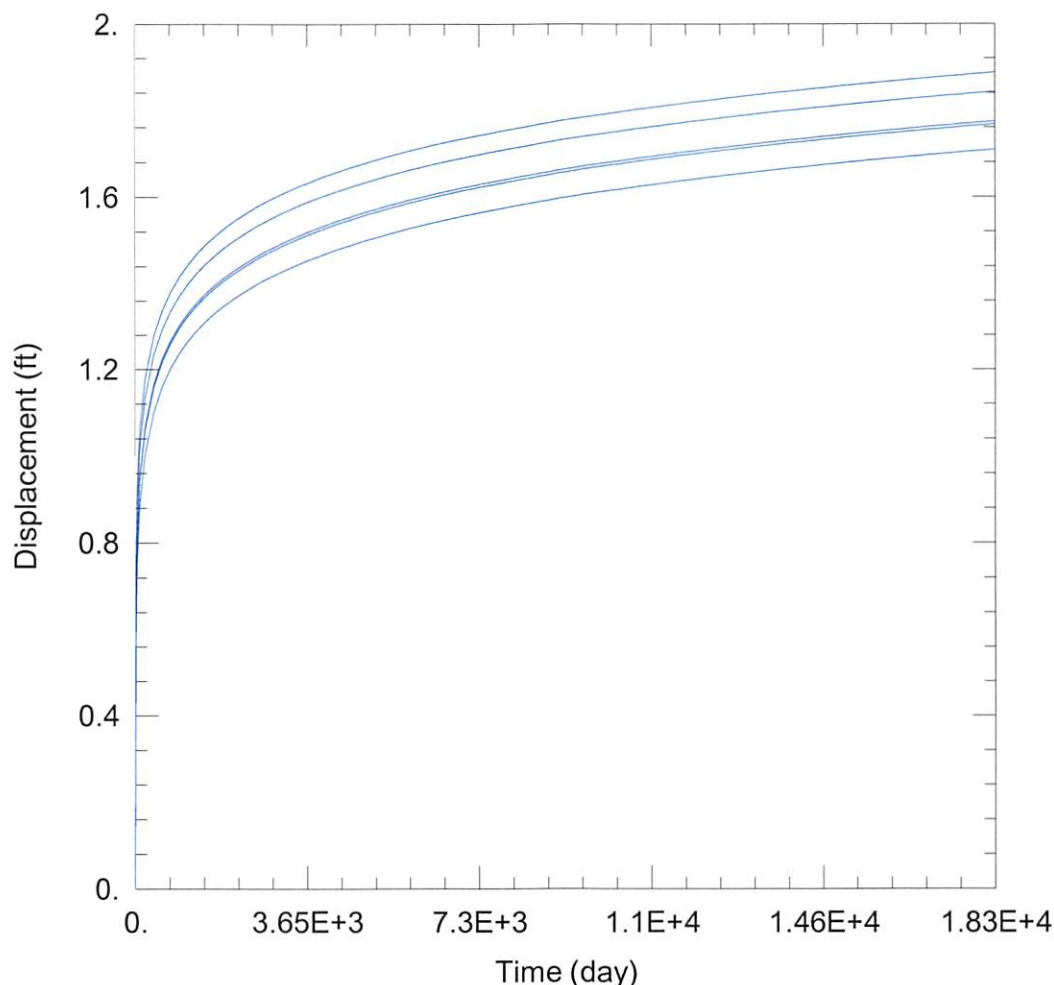
Economic Drawdown Constraint (EDC) =  $0.4 * 38 \text{ ft} = 15.2 \text{ ft}$

Physical Drawdown Constraint (PDC) =  $38 \text{ ft} - 20 \text{ ft} = 18 \text{ ft}$

Total drawdown of 23.9 ft is greater than the EDC and PDC, so this well is **critical**.

**Conclusion:**

The proposed move is located in an area where the Ogallala portion of the High Plains Aquifer has mostly been depleted. The driller's log shows good formation in the top 60 ft, and nothing but rock, consolidated sand and sandstone, and clay in the remaining 305 ft. Most well logs in the area are not available, but those that are also drilled below the extent of the Ogallala Aquifer, so saturated thickness estimates ranged from 330 ft to 365 ft in the absence of a driller's log. Had the analysis been limited to the extent of the Ogallala Aquifer, most of the wells would have been identified as critical. The domestic well was flagged as critical and is likely to become inoperable in the next 25 years if it is not already. This well is owned by the applicant. Neighbors who are concerned about the move, or would like more information on well interaction effects, should contact either GMD3 staff at (620) 275-7147 or DWR staff at (620) 276-2901.



### WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2021\_Moves\8209\8209 Current.aqt

Date: 08/23/21

Time: 16:08:15

### PROJECT INFORMATION

Company: GMD 3

Project: 8209

Location: Stanton County

### WELL DATA

#### Pumping Wells

#### Observation Wells

Well Name	X (ft)	Y (ft)
8209	-313463	272618

Well Name	X (ft)	Y (ft)
□	-313463	272618
□ 8418	-315180	269928
□ 9004 & 18156	-315320	267340
□ 8604	-310138	269502
□ 16505	-309077	271063
□ Domestic 10-28-42	-315782	275463

### SOLUTION

Aquifer Model: Confined

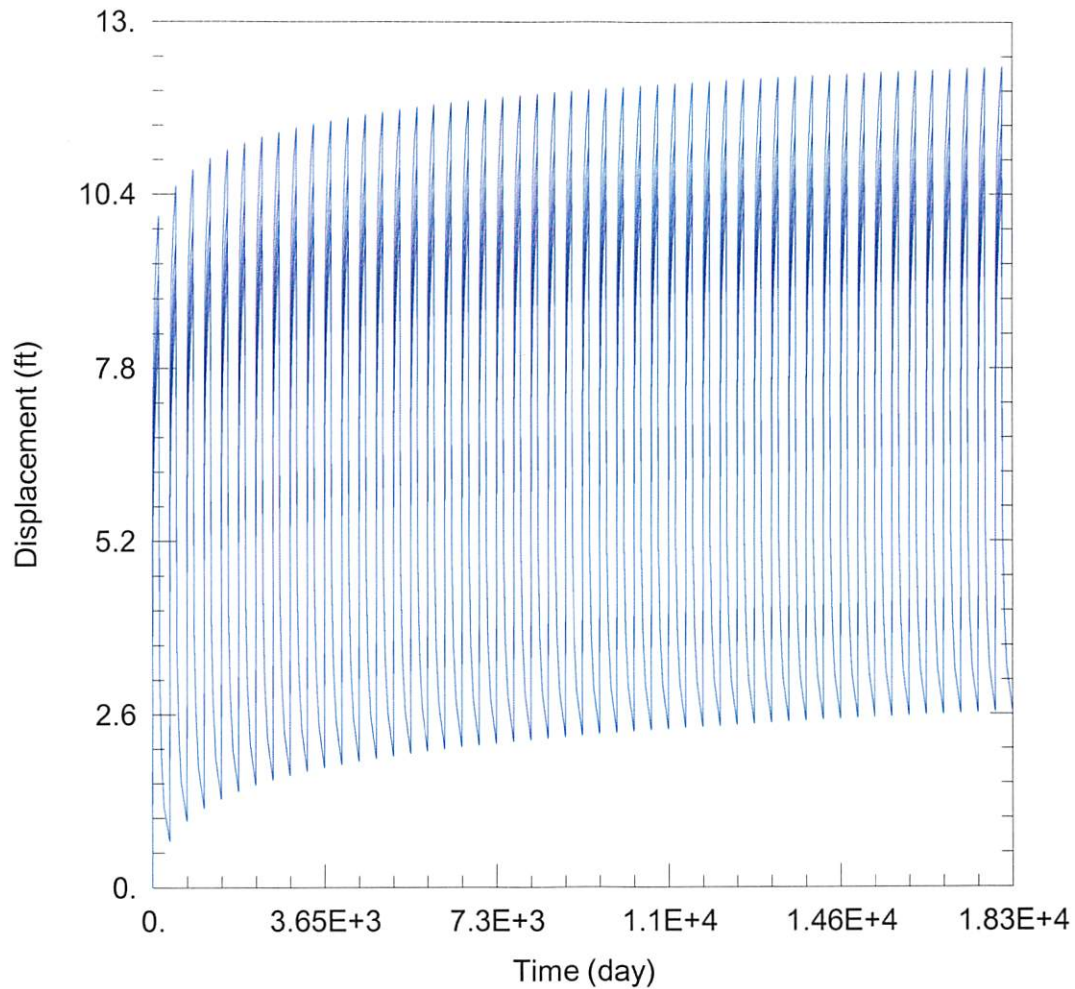
Solution Method: Theis

T = 1.225E+4 ft<sup>2</sup>/day

S = 0.00034

Kz/Kr = 1.

b = 365. ft



### WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2021\_Moves\8209\8209 Proposed.aqt

Date: 08/23/21

Time: 16:08:08

### PROJECT INFORMATION

Company: GMD 3

Project: 8209

Location: Stanton County

### WELL DATA

#### Pumping Wells

Well Name	X (ft)	Y (ft)
8209	-313077	271171

#### Observation Wells

Well Name	X (ft)	Y (ft)
□	-313077	271171
□ 8418	-315180	269928
□ 9004 & 18156	-315320	267340
□ 8604	-310138	269502
□ 16505	-309077	271063
□ Domestic 10-28-42	-315782	275463

### SOLUTION

Aquifer Model: Confined

Solution Method: Theis

T = 1.225E+4 ft<sup>2</sup>/day

S = 0.00034

Kz/Kr = 1.

b = 365. ft