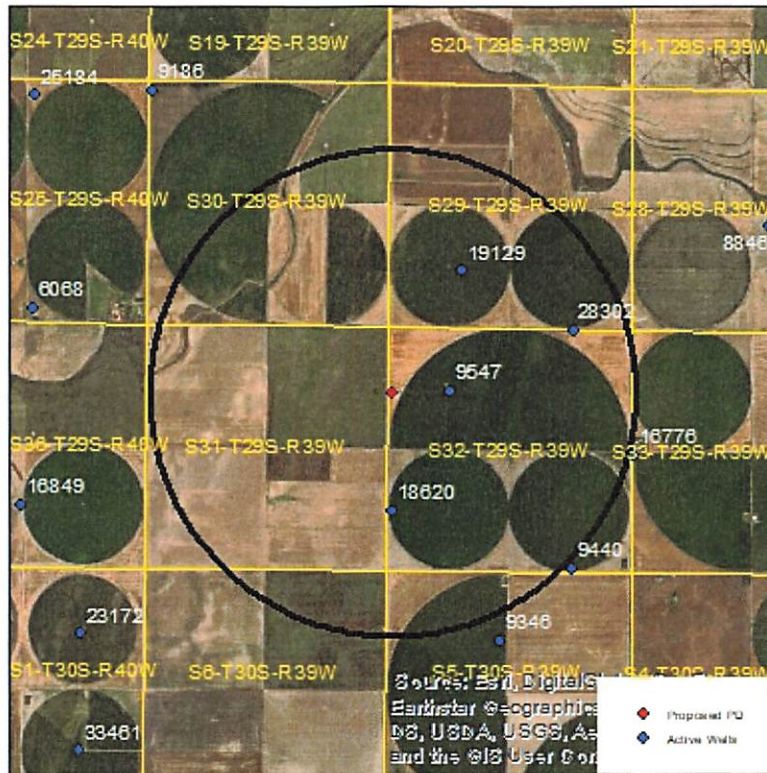


## Evaluation of proposed move for Water Right No. 9547

Proposed: Move water right no. 9547 to a new well location a distance of 1,249 ft to the west.



Wells within 1 mile: 18620, 28302, and 19129.

The saturated thickness at the proposed well location is estimated to be 147 ft, based upon the GMD3 model. For saturated thickness between 125 ft and 150 ft, the drawdown allowance is 3.0 ft.

**50 year Theis Analysis:** The proposed well location was very near the section line, so the average storage coefficient (S) and transmissivity (T) between sections 12 and 7 in the model were used at the proposed location. The S and T value in section 7 was used at the current well location. The following values were used to run the analysis:

Current Well:  $S = 0.1565$ ,  $T = 1774.5 \text{ ft}^2/\text{day}$

Proposed Well:  $S = .1705$ ,  $T = 3605.9 \text{ ft}^2/\text{day}$

$tp_{\text{current}} = 160 \text{ days}$ ,  $Q_{\text{current}} = 498 \text{ gpm}$  (based on 2018 field inspection),  $tp_{\text{proposed}} = 201 \text{ days}$ ,  
 $Q_{\text{proposed}} = 1080 \text{ gpm}$

Theis drawdowns were calculated as follows:

18620:                      Drawdown from current location = 7.87 ft  
                                  Drawdown from proposed location = 13.30 ft  
                                  Net drawdown = 5.4 ft

28302: Drawdown from current location = 7.76 ft  
Drawdown from proposed location = 10.20 ft  
Net drawdown = **2.4 ft**

19129: Drawdown from current location = 8.36 ft  
Drawdown from proposed location = 12.16 ft  
Net drawdown = **3.8 ft**

Net drawdown exceeds the drawdown allowance of 3.0 ft for water right nos. 18620 and 19129. Critical well analysis is necessary on those wells.

**Critical Well Evaluation:**

**18620:**

Water Column = 147 ft

DP = 5.4 ft (Net drawdown from the proposal indicated above)

DE = 42.4 ft (Water level decline from 2021 through 2046 based upon GMD3 model)

DD = 70.6 ft (S = 0.1565, T = 13,273 gpd/ft, Q = 377 gpm, tp = 151 days, efficiency = 70%)

DT = 118.4 ft

Economic Drawdown Constraint (EDC) =  $0.4 * 147 \text{ ft} = 58.8 \text{ ft}$

Physical Drawdown Constraint (PDC) =  $147 \text{ ft} - 60 \text{ ft} = 87 \text{ ft}$

Total drawdown of 118.4 ft is greater than the EDC and PDC, so this well is **critical**.

**19129:**

Water Column = 149.5 ft

DP = 3.8 ft (Net drawdown from the proposal indicated above)

DE = 48.1 ft (Water level decline from 2021 through 2046 based upon GMD3 model)

DD = 56.3 ft (S = 0.2552, T = 53,823 gpd/ft, Q = 1180 gpm, tp = 104 days, efficiency = 70%)

DT = 108.2 ft

Economic Drawdown Constraint (EDC) =  $0.4 * 150 \text{ ft} = 60 \text{ ft}$

Physical Drawdown Constraint (PDC) =  $150 \text{ ft} - 60 \text{ ft} = 90 \text{ ft}$

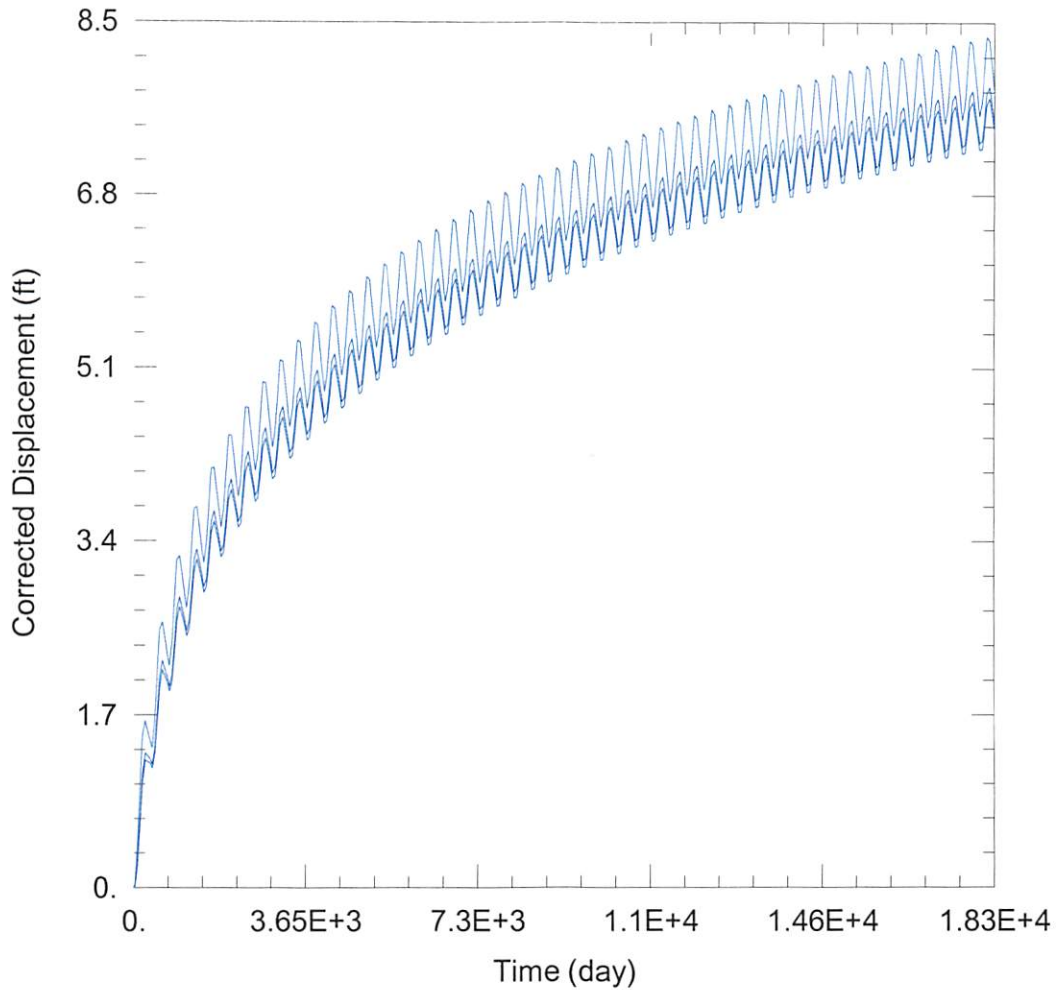
Total drawdown of 108.2 ft exceeds both the EDC and PDC, so this well is **critical**.

**Conclusion:**

The proposed move is located in an area with rapidly depleting aquifer and if the new well is operated at the proposed rate and quantity, it is likely to create noticeable effects on neighboring critical wells. GMD3 staff recommends a rate limitation of 700 gpm and a quantity limitation of 804 AF at the proposed new well location. This rate and quantity would produce the following net effects on neighboring critical wells:

**18620:** Net Drawdown = 3.0 ft

**19129:** Net Drawdown = 1.6 ft



### WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2021\_Moves\9547\9547 Current.aqt

Date: 05/04/21

Time: 10:39:46

### PROJECT INFORMATION

Company: GMD 3

Project: 9547

Location: Stanton County

### WELL DATA

#### Pumping Wells

Well Name	X (ft)	Y (ft)
9547	-235866	223583

#### Observation Wells

Well Name	X (ft)	Y (ft)
□	-235866	223583
□ <u>18620</u>	-237125	220987
□ <u>28302</u>	-233203	224871
□ <u>19129</u>	-235600	226159

### SOLUTION

Aquifer Model: Unconfined

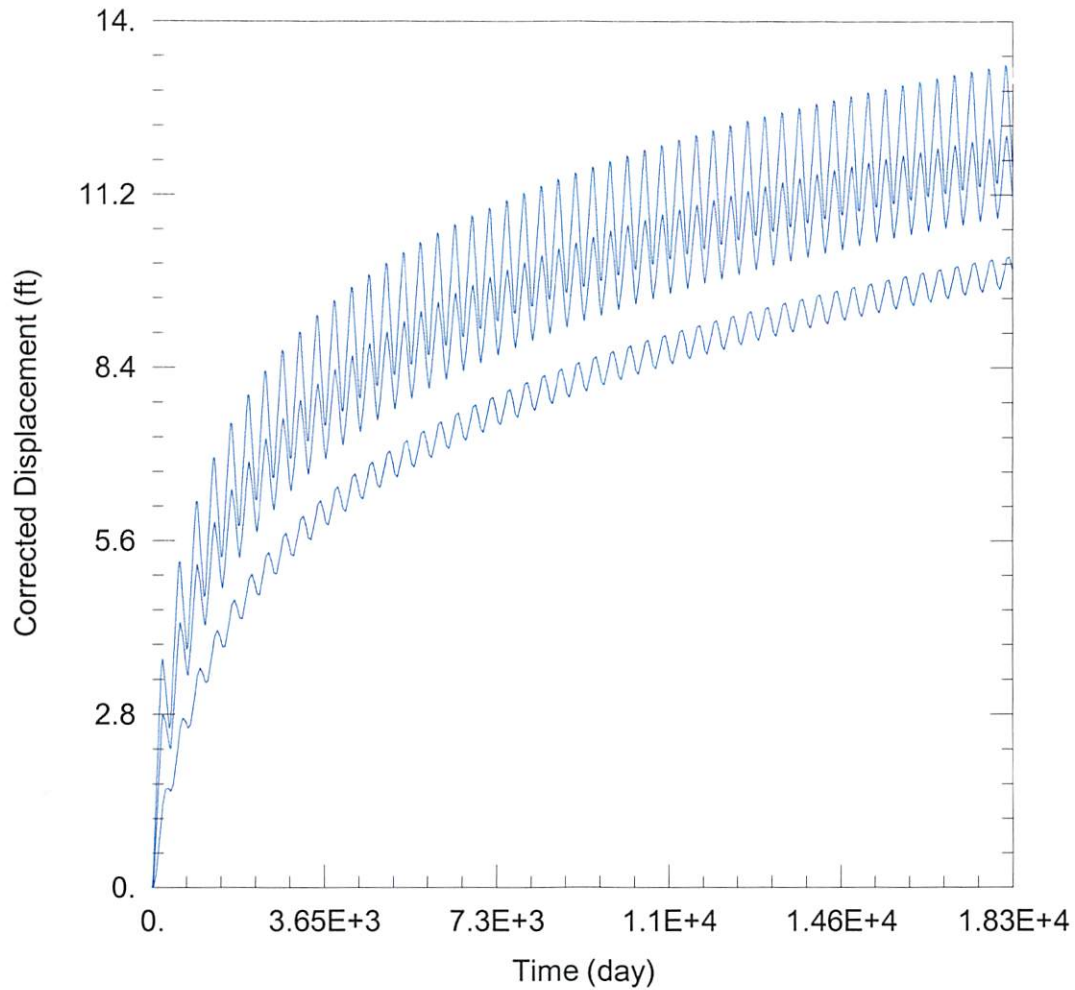
Solution Method: Theis

T = 1774.5 ft<sup>2</sup>/day

S = 0.1565

Kz/Kr = 1.

b = 147. ft



WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2021\_Moves\9547\9547 Proposed.aqt

Date: 05/05/21

Time: 11:18:51

PROJECT INFORMATION

Company: GMD 3

Project: 9547

Location: Stanton County

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
9547	-237114	223539

Observation Wells

Well Name	X (ft)	Y (ft)
□	-237114	223539
□ <u>18620</u>	-237125	220987
□ <u>28302</u>	-233203	224871
□ <u>19129</u>	-235600	226159

SOLUTION

Aquifer Model: Unconfined

Solution Method: Theis

T = 3605.9 ft<sup>2</sup>/day

S = 0.1705

Kz/Kr = 1.

b = 147. ft