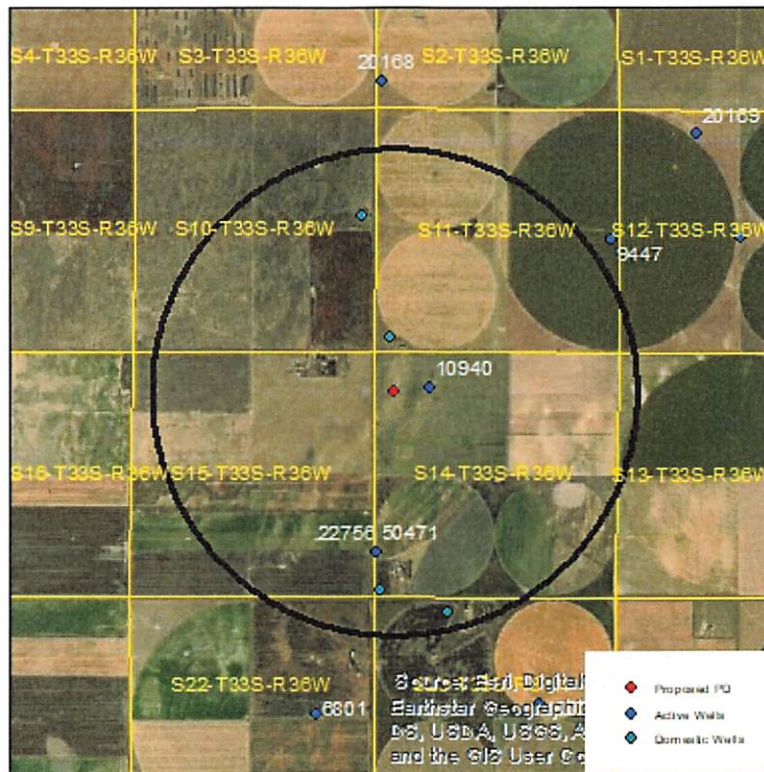


## Evaluation of proposed move for Water Right No. 10940

Proposed: Move water right no. 10940 to a new well location, 765 ft to the southwest.



Wells within 1 mile: 22756 & 50471, a domestic well in section 10-33-36, a domestic well in section 11-33-36, a domestic well in section 14-33-36, and a domestic well in section 23-33-36.

The saturated thickness at the proposed well location is estimated to be 241 ft, based upon the GMD3 model. For saturated thickness greater than 200 ft, the drawdown allowance is 4.0 ft.

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

$S = 0.2041$ ,  $T = 6148.7 \text{ ft}^2/\text{day}$ ,  $tp_{\text{current}} = 0 \text{ days}$ ,  $Q_{\text{current}} = 0 \text{ gpm}$ ,  $tp_{\text{proposed}} = 169 \text{ days}$ ,  $Q_{\text{proposed}} = 750 \text{ gpm}$

Theis drawdowns were calculated as follows:

22756 & 50471: Net drawdown = **4.3 ft**

Domestic 10-33-36: Net drawdown = **4.0 ft**

Domestic 11-33-36: Net drawdown = **7.6 ft**

Domestic 14-33-36: Net drawdown = **3.8 ft**

Domestic 23-33-36: Net drawdown = **3.5 ft**

Net drawdown exceeds the drawdown allowance of 4.0 ft for water right numbers 22756 & 50471, and the domestic well in section 11-33-36. Critical well analysis is necessary for those wells.

**Critical Well Evaluation:**

**22756 & 50471:**

Water Column = 241 ft

DP = 4.3 ft (Net drawdown from the proposal indicated above)

DE = 48.3 ft (Water level decline from 2021 through 2046 based upon GMD3 model)

DD = 41.9 ft (S = 0.2041, T = 45,992 gpd/ft, Q = 750 gpm, tp = 96.4 days, efficiency = 70%)

DT = 94.5 ft

Economic Drawdown Constraint (EDC) =  $0.4 * 241 \text{ ft} = 96.4 \text{ ft}$

Physical Drawdown Constraint (PDC) =  $241 \text{ ft} - 60 \text{ ft} = 181 \text{ ft}$

Total drawdown of 94.5 ft is less than the EDC and PDC, so this well is **not critical**.

**Domestic 11-33-36:**

Water Column = 223 ft

DP = 7.6 ft (Net drawdown from the proposal indicated above)

DE = 51.1 ft (Water level decline from 2021 through 2046 based upon GMD3 model)

DT = 58.7 ft

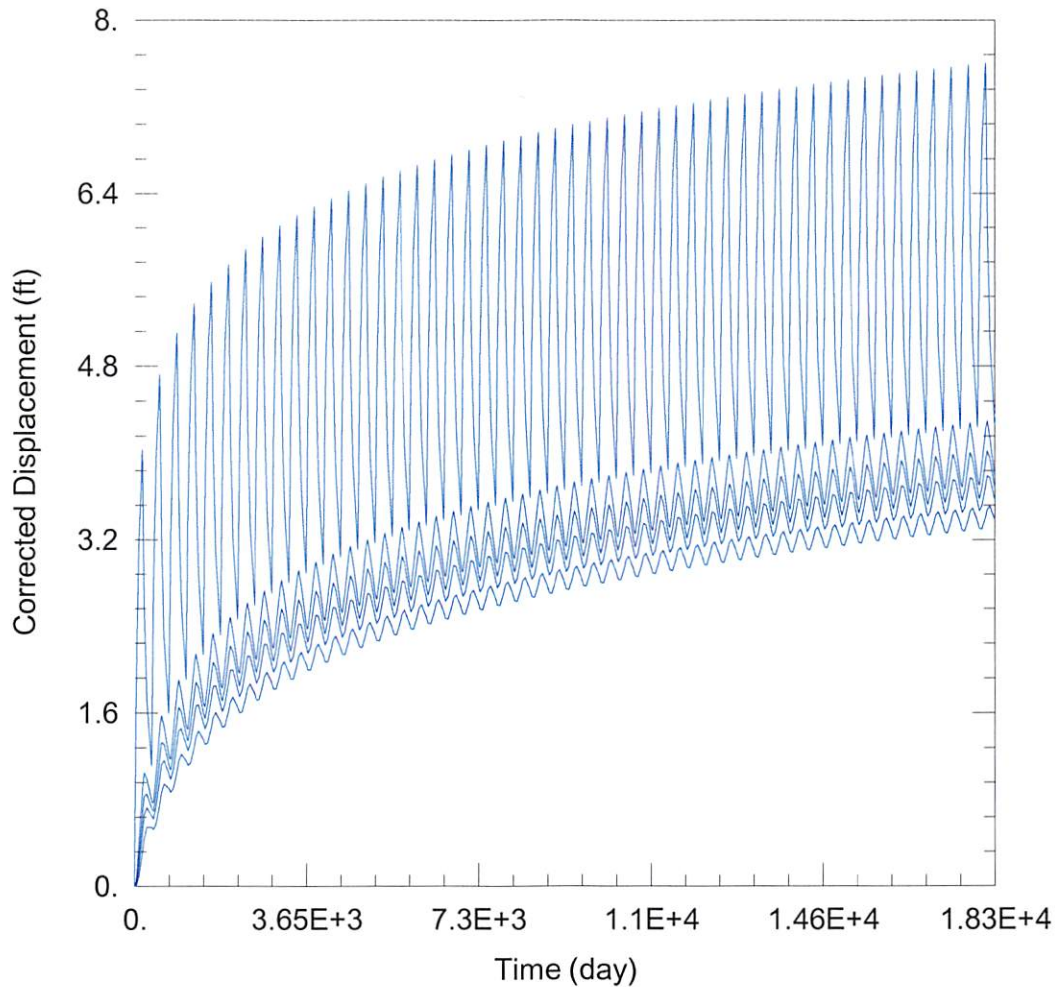
Economic Drawdown Constraint (EDC) =  $0.4 * 223 \text{ ft} = 89.2 \text{ ft}$

Physical Drawdown Constraint (PDC) =  $223 \text{ ft} - 20 \text{ ft} = 203 \text{ ft}$

Total drawdown of 58.7 ft is less than the EDC and PDC, so this well is **not critical**.

**Conclusion:**

The proposed moves are in an area with ample saturated thickness and aquifer properties that allow for productive wells. If the well is operated at its full authorized rate and authority, noticeable interaction effects exceeding 4 ft may occur. However, analysis shows that neighboring wells with these effects have a large amount of saturated thickness and declines are not great enough that they are likely to lose much productivity due to this change. GMD3 staff recommends approval of the application.



### WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2021\_Moves\10940\10940 Proposed.aqt

Date: 10/12/21

Time: 16:19:43

### PROJECT INFORMATION

Company: GMD 3

Project: 10940

Location: Stevens County

### WELL DATA

#### Pumping Wells

Well Name	X (ft)	Y (ft)
10940	-119845	112169

#### Observation Wells

Well Name	X (ft)	Y (ft)
□	-119845	112169
□ <a href="#">22756 &amp; 50471</a>	-120237	108707
□ <a href="#">Domestic 10-33-36</a>	-120569	116003
□ <a href="#">Domestic 11-33-36</a>	-119923	113356
□ <a href="#">Domestic 14-33-36</a>	-120140	107877
□ <a href="#">Domestic 23-33-36</a>	-118663	107374

### SOLUTION

Aquifer Model: Unconfined

Solution Method: Theis

T = 6148.7 ft<sup>2</sup>/day

S = 0.2041

Kz/Kr = 1.

b = 241. ft