Evaluation of proposed move for Water Right Nos. 41295 & 42758

Proposed: Move water right nos. 41295 & 42758 a distance of 2573 ft to the northeast.

Wells within 1 mile: 42160, 30589 & 41057, and a domestic well in section 19-33-39.

The saturated thickness at the proposed well location is estimated to be 276 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 = 0.154, T = 4222 ft^2/day, tp$_{current}$ = 172 days, Q$_{current}$ = 348 gpm, tp$_{proposed}$ = 78 days, Q$_{proposed}$ = 1855 gpm

Theis drawdowns were calculated as follows:

42160:	Drawdown from current location = 2.63 ft
	Drawdown from proposed location = 6.02 ft
	Net drawdown = **3.4 ft**
30589_41057:	Drawdown from current location = 2.13 ft
	Drawdown from proposed location = 6.78 ft
	Net drawdown = **7.9 ft**

Domestic 19-33-39:   Drawdown from current location = 3.03 ft

Drawdown from proposed location = 10.9 ft

Net drawdown = **7.9 ft**

Net drawdown exceeds the drawdown allowance for the well authorized under water right nos. 30589 & 41057, and the domestic well in section19-33-39. Critical well analysis was performed for those wells.

Critical Well Evaluation:

30589 & 41057:

Water Column = 304 ft

DP = 4.65 ft (Net drawdown from the proposal indicated above)

DE = 5.1 ft (Water level decline from 2024 through 2049 based upon GMD3 model)

DD = 37.1 ft (S = 0.1679, T = 5346.2 ft²/day, Q = 589 gpm, tp = 68 days, efficiency = 70%)

DT = 46.9 ft

Economic Drawdown Constraint (EDC) = 0.4 * 304 ft = 121.6 ft

Physical Drawdown Constraint (PDC) = 304 ft – 60 ft = 244.0 ft

Total drawdown of 46.9 ft is less than the EDC and the PDC, so this well **is not critical.**

Domestic 19-33-39:

Water Column = 287.3 ft

DP = 7.88 ft (Net drawdown from the proposal indicated above)

DE = 6.6 ft (Water level decline from 2024 through 2049 based upon GMD3 model)

DT = 14.5 ft

Economic Drawdown Constraint (EDC) = 0.4 * 287.3 ft = 114.9 ft

Physical Drawdown Constraint (PDC) = 287.3 ft – 20 ft = 267.3 ft

Total drawdown of 14.5 ft is less than the EDC and the PDC, so this well **is not critical.**

Conclusion:

The proposed move is in an area with abundant saturated thickness. The water rights' authorized rate and quantity is very large and if fully utilized, effects may be noticeable. Nearby wells with larger effects were analyzed and found to not be critical because there is sufficient saturated thickness to support current water uses. Concerned neighbors should contact GMD3 at (620) 275-7147 or the Division of Water Resources at (620) 276-2901.
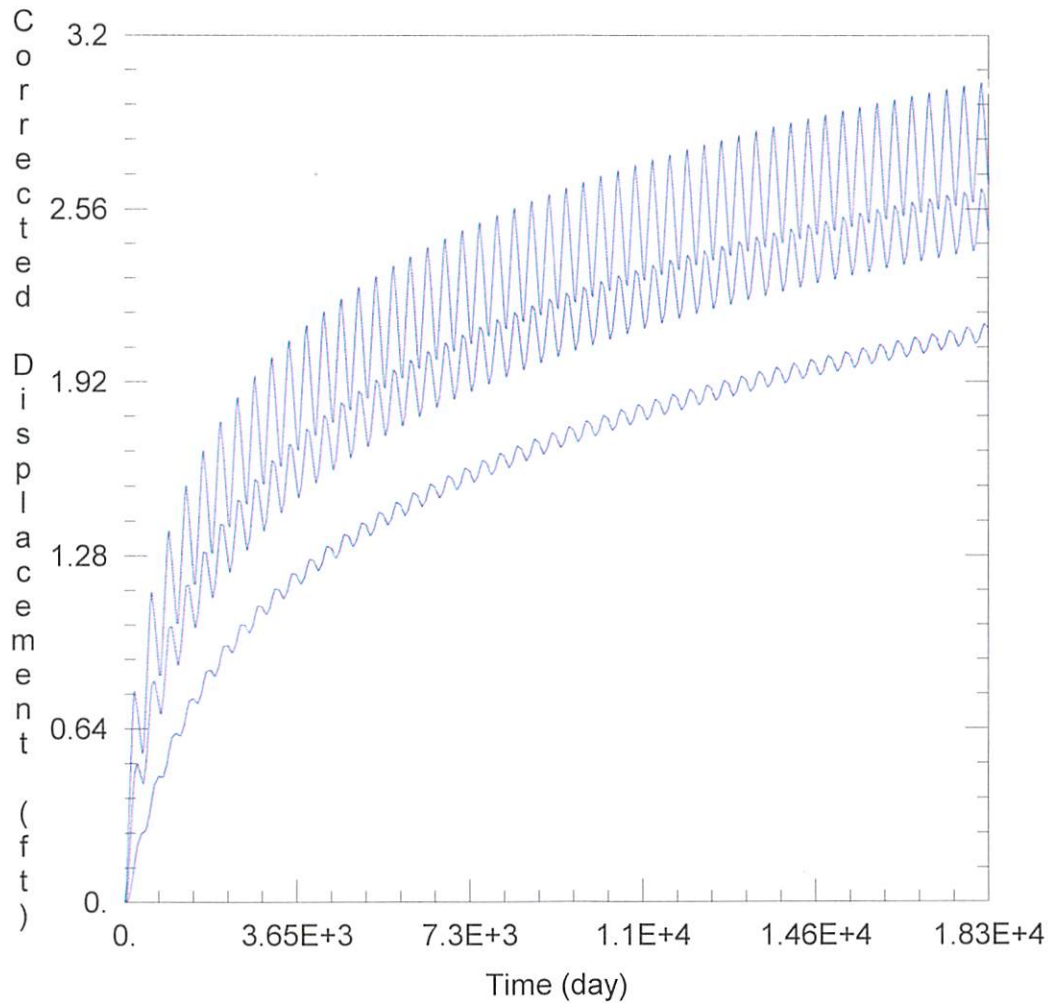
WELL TEST ANALYSIS

Data Set:
Date: 05/17/24   **Time:** 13:59:24

PROJECT INFORMATION

Project: 41295_42758

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
41295_42758	-238998	103199

Observation Wells

Well Name	X (ft)	Y (ft)
□	-238998	103199
□ 42160	-241621	106263
□ 30589_41057	-237490	108790
□ Domestic 19-33-39	-235862	103727

SOLUTION

Aquifer Model: Unconfined   **Solution Method:** Theis
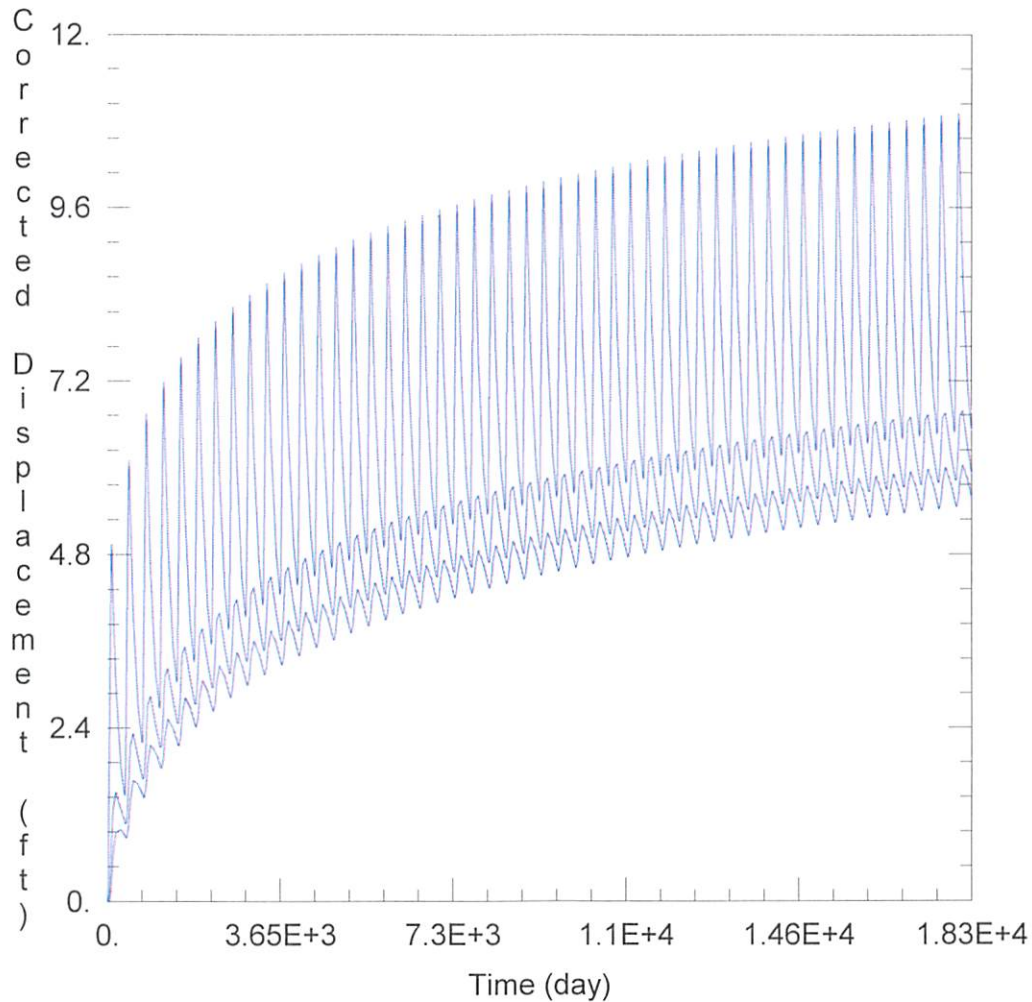
T   = 4222. ft²/day   S   = 0.154
Kz/Kr = 1.   b   = 276.3 ft

WELL TEST ANALYSIS

Data Set: C:\Users\scanstation\Documents\move requests\41295_42758\41295_42758 proposed.aqt

Date: 05/17/24   Time: 14:03:05

PROJECT INFORMATION

Project: 41295_42758

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
41295_42758	-237236	105074

Observation Wells

Well Name	X (ft)	Y (ft)
□	-237236	105074
□ 42160	-241621	106263
□ 30589_41057	-237490	108790
□ Domestic 19-33-39	-235862	103727

SOLUTION

Aquifer Model: Unconfined   Solution Method: Theis

T   = 4222. ft^2/day   S   = 0.154
Kz/Kr = 1.   b   = 276.3 ft