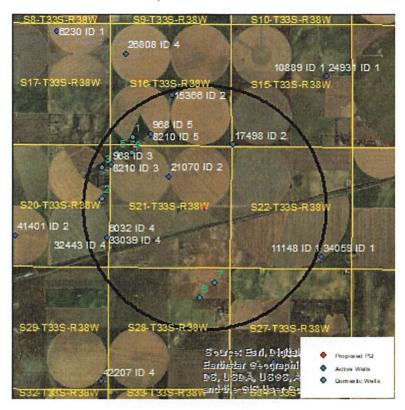
### Evaluation of proposed move for Water Right Nos 968 and 8210

Proposed: Move water right nos. 968 and 8210 ID3 to a new well location, located 2,058 ft to the southeast. Note that these rights have recently switched locations with water right number 21070, and this change is not reflected on the below map.



Wells within 1 mile: 21070, 968 & 8210 ID5, 15366, 17498, 6032 & 32443 & 33039, and 7 domestic wells, numbered on the above map.

The saturated thickness at the proposed well location is estimated to be 216 ft, based upon the GMD3 model. Saturated thickness is estimated to be 174 ft in section 20. For saturated thickness greater than 200 ft, the drawdown allowance is 4.0 ft. For saturated thickness between 150 ft and 200 ft, the drawdown allowance is 3.5 ft.

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

$$S=0.1476,\,T=8614.6\,\,ft^2/day,\,tp_{current}=79\,\,days,\,Q_{current}=800\,\,gpm,\,tp_{proposed}=131\,\,days,\,Q_{proposed}=1653\,\,gpm$$

Theis drawdowns were calculated as follows:

21070: Drawdown from current location = 2.48 ft

Drawdown from proposed location = 5.57 ft

Net drawdown = 3.1 ft

968 & 8210 ID5: Drawdown from current location = 2.99 ft

Drawdown from proposed location = 5.99 ft

Net drawdown = 3.0 ft

15366: Drawdown from current location = 1.94 ft

Drawdown from proposed location = 5.15 ft

Net drawdown = 3.2 ft

17498: Drawdown from current location = 2.16 ft

Drawdown from proposed location = 7.19 ft

Net drawdown = 5.0 ft

6032 & 32443 & 33039: Drawdown from current location = 1.86 ft

Drawdown from proposed location = 5.60 ft

Net drawdown = 3.7 ft

Domestic 1: Drawdown from current location = 2.68 ft

Drawdown from proposed location = 5.66ft

Net drawdown = 3.0 ft

Domestic 2: Drawdown from current location = 2.16 ft

Drawdown from proposed location = 5.56 ft

Net drawdown = 3.4 ft

Domestic 3: Drawdown from current location = 2.25 ft

Drawdown from proposed location = 5.35 ft

Net drawdown = 3.1 ft

Domestic 4: Drawdown from current location = 3.09 ft

Drawdown from proposed location = 6.00 ft

Net drawdown = 3.0 ft

Domestic 5: Drawdown from current location = 2.58 ft

Drawdown from proposed location = 5.57 ft

Net drawdown = 3.0 ft

Domestic 6: Drawdown from current location = 1.45 ft

Drawdown from proposed location = 6.00 ft

Net drawdown = 4.5 ft

Domestic 7: Drawdown from current location = 1.52 ft

Drawdown from proposed location = 6.73 ft

Net drawdown = 5.2 ft

Net drawdown exceeds the drawdown allowance of 4.0 ft for water right numbers 6032 & 32443 & 33039, and 17498, as well as domestic wells 6 and 7. Critical well analysis is necessary on those wells.

### **Critical Well Evaluation:**

### 6032 & 32443 & 33039:

Water Column = 174 ft

DP = 3.7 ft (Net drawdown from the proposal indicated above)

DE = 22.8 ft (Water level decline from 2021 through 2046 based upon GMD3 model)

DD = 112.9 ft (S = 0.134, T = 36,689.4 gpd/ft, Q = 1604 gpm, tp = 86 days, efficiency = 70%)

DT = 139.4 ft

Economic Drawdown Constraint (EDC) = 0.4 \* 174 ft = 69.6 ft

Physical Drawdown Constraint (PDC) = 174 ft - 60 ft = 114 ft

Total drawdown of 139.4 ft is greater than the EDC and PDC, so this well is critical.

#### 17498:

Water Column = 266 ft

DP = 5.0 ft (Net drawdown from the proposal indicated above)

DE = 21.3 ft (Water level decline from 2021 through 2046 based upon GMD3 model)

DD = 50.3 ft (S = 0.1835, T = 61,946.6 gpd/ft, Q = 1212 gpm, tp = 64 days, efficiency = 70%)

DT = 76.6 ft

Economic Drawdown Constraint (EDC) = 0.4 \* 266 ft = 106.4 ft

Physical Drawdown Constraint (PDC) = 266 ft - 60 ft = 206 ft

Total drawdown of 76.6 ft is less than the EDC and PDC, so this well is not critical.

### Domestic 6:

Water Column = 209 ft

DP = 4.5 ft (Net drawdown from the proposal indicated above)

DE = 23.8 ft (Water level decline from 2021 through 2046 based upon GMD3 model)

DT = 28.3 ft

Economic Drawdown Constraint (EDC) = 0.4 \* 209 ft = 83.6 ft

Physical Drawdown Constraint (PDC) = 209 ft - 20 ft = 189 ft

Total drawdown of 28.3 ft is less than the EDC and PDC, so this well is not critical.

#### Domestic 7:

Water Column = 209 ft

DP = 5.2 ft (Net drawdown from the proposal indicated above)

DE = 23.8 ft (Water level decline from 2021 through 2046 based upon GMD3 model)

DT = 29.0 ft

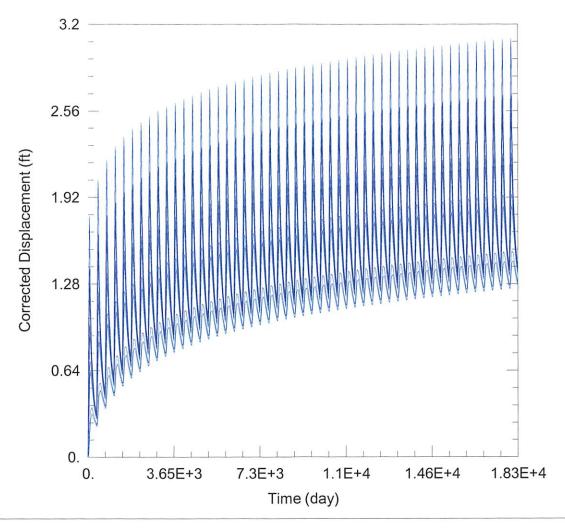
Economic Drawdown Constraint (EDC) = 0.4 \* 209 ft = 83.6 ft

Physical Drawdown Constraint (PDC) = 209 ft - 20 ft = 189 ft

Total drawdown of 29.0 ft is less than both the EDC and PDC, so this well is not critical.

### **Conclusion:**

The proposed moves are located in an area with ample saturated thickness and aquifer properties that allow for productive wells. If the proposed well were to pump its full authorized authority, there would likely be a noticeable effect on some neighboring wells. Critical well analysis shows that one neighboring well, authorized under water right nos. 6032 & 32443 & 33039, is critical because its pumping season saturated thickness is projected to decline by more than 40% over the next 25 years, likely causing some loss in productivity. GMD3 staff is not recommending a limitation to mitigate this effect because this well is operated by the applicant, so any effect would be self-imposed. GMD3 recommends approval of the application as submitted.



# WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2021\_Moves\968\_8210\968 & 8210 Current.aqt

Date: 10/07/21

Time: 10:50:13

## PROJECT INFORMATION

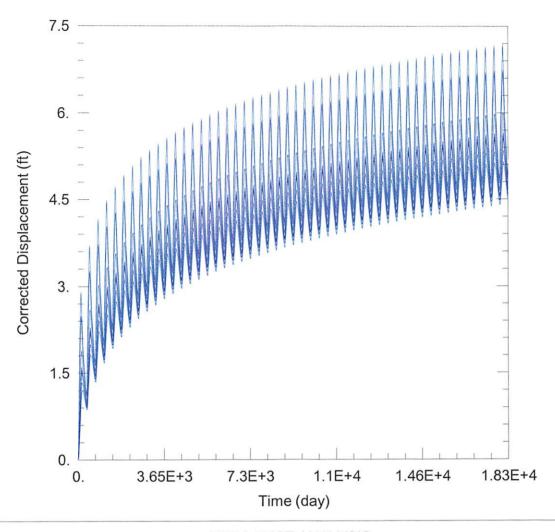
Company: GMD 3
Project: 968 & 8210
Location: Stevens County

## **WELL DATA**

Pumping Wells		
Well Name	X (ft)	Y (ft)
968 & 8210 ID3	-191464	106761

Well Name	X (ft)	Y (ft)
	-191464	106761
<b>21070</b>	-193996	107267
□ 968 & 8210 ID5	-192268	108562
<b>15366</b>	-191352	110278
<b>- 17498</b>	-188687	108114
<ul><li>6032 &amp; 32443 &amp; 33039</li></ul>	-194164	104108
<ul> <li>Domestic 1</li> </ul>	-193053	108428
<ul><li>Domestic 2</li></ul>	-194401	105798
<ul><li>Domestic 3</li></ul>	-194385	107119
<ul><li>Domestic 4</li></ul>	-193058	107768
<ul><li>Domestic 5</li></ul>	-193718	107774
<ul><li>Domestic 6</li></ul>	-190146	101478
<ul><li>Domestic 7</li></ul>	-189483	102130

Observation Wells



# WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2021\_Moves\968\_8210\968 & 8210 Proposed.aqt

Date: 10/07/21 Time: 10:50:06

## PROJECT INFORMATION

Company: GMD 3
Project: 968 & 8210
Location: Stevens County

## **WELL DATA**

Pumping vveils		
Well Name	X (ft)	Y (ft)
968 & 8210 ID3	-189918	105403

Observation Wells			
Well Name	X (ft)	Y (ft)	
	-189918	105403	
<b>21070</b>	-193996	107267	
□ 968 & 8210 ID5	-192268	108562	
<b>- 15366</b>	-191352	110278	
<b>17498</b>	-188687	108114	
<ul><li>6032 &amp; 32443 &amp; 33039</li></ul>	-194164	104108	
<ul><li>Domestic 1</li></ul>	-193053	108428	
<ul><li>Domestic 2</li></ul>	-194401	105798	
Domestic 3	-194385	107119	
Domestic 4	-193058	107768	
Domestic 5	-193718	107774	
Domestic 6	-190146	101478	
Domestic 7	-189483	102130	