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Cc: Driller

SUBJECT: Well Interference and Subsidence River Grove “RG-1” Irrigation Well, Shandon, San Luis Obispo County, California

Dear Sir:

Cleath-Harris Geologists (CHG) has performed a well interference and subsidence evaluation for the River Grove “RG-1” Irrigation well to be located at gps coordinates 35.6444°, -120.4329°, near Shandon, California on Parcel APN 019-171-029. We have visited the site, identified adjacent wells, reviewed available well completion reports, pumping tests and geologic maps, and the proposed use of the new well. Based on this information, we have reached findings related to interference impacts and subsidence potential.

GOVERNOR’S ORDER N-7-22

Per the Governor’s Executive Order N-7-22, the County of San Luis Obispo requires that all water well construction permits for non-exempt wells must be accompanied by a report signed by a California Licensed Professional Geologist with a Certified Hydrogeologist specialty certification that concludes both that extraction of groundwater from the well (1) “is not likely to interfere with the production and functioning of existing nearby wells” and (2) “is not likely to cause subsidence that would adversely impact or damage nearby infrastructure.

PROPOSED WELL

The proposed well is a 940-foot deep 16” diameter steel cased well. Production is anticipated to be 500 gallons per minute based on wells of similar size and producing from the same formation in the area. This well is anticipated to produce up to 220 AFY for irrigation purposes. Current production for irrigation use on the property is met by the existing 8S and McRae 14 wells which are on the property. Production from the proposed “RG-1” well would correspondingly reduce production on the other two wells.



HYDROGEOLOGY

The proposed well will be drilled and completed into clay, sand and gravel beds of the Paso Robles Formation within the Shandon-San Juan Water Groundwater Sustainability Agency management area of the Paso Robles Groundwater Basin. The depth to water in this aquifer at the site is 200 feet below ground surface (925 feet elevation).

INTERFERENCE

Well interference occurs when a pumping well causes the water level to decline in a nearby well. Multiple wells can interfere with each other. This analysis is specific to the interference of the proposed well on existing wells. The amount of water level drawdown caused by interference has been estimated based on using the non-equilibrium well equation (the Theis equation). Local aquifer transmissivity is estimated at 11,000 gallons per day per foot at the proposed well, based on the literature values for average transmissivities for the Shandon area (Fugro/Cleath and Associates 2002). Aquifer storativity is estimated at 0.002 (dimensionless), based on representative specific storage values from literature and was converted to specific storage values using local aquifer thickness. The proposed well is anticipated to pump up to 500 gallons per minute (gpm) and will be used to produce up to 220 acre-feet per year for irrigation use. For interference calculations, the well is assumed to pump 12 hours per day at 500 gpm over a 200-day irrigation season. Interference estimates assume there is no recharge to the aquifer during the irrigation season. Recharge and associated water level recovery is assumed to occur between irrigation seasons.

The nearest well to the proposed “RG-1” well is Well 8S which lies some 3,200 feet away on the same parcel. The property owner for the proposed well agrees that anyone with the right to use existing onsite wells will also have the right to use the proposed well. With this condition in place, any interference caused by the proposed well will not likely affect the production and functioning of existing onsite wells, since the required function would include consideration of available supply from the proposed well. Therefore, the interference analysis is focused on offsite wells.

The closest off-property well to the proposed “RG-1” well (WCR 715416) lies 3,350 feet away. A water level drawdown of up to forty feet (approximately five percent of the locally available saturated aquifer thickness), would not be expected to significantly impact the production and functioning of the existing offsite well. Calculations using the non-equilibrium equation and the above parameters and assumptions result in seasonal interference of 18 feet of water level drawdown at the closest offsite well due to pumping at the proposed well, which is less than the impacts threshold.



Therefore, provided the property owner agrees that anyone with the right to use existing onsite wells will also have the right to use the proposed well, extraction of groundwater from the proposed well is not likely to interfere with the production and functioning of existing nearby wells.

SUBSIDENCE

Subsidence has not historically been observed in this area (USGS, https://ca.water.usgs.gov/land_subsidence/california-subsidence-areas.html).

Additionally, the Paso Robles Groundwater Basin Groundwater Sustainability Plan (GSP) evaluated subsidence in the Shandon area (including the property the well is sited on) and found it to be less than 0.1 foot as shown in Figure 5-13 of the GSP document. Therefore, the proposed well's operation is not likely to cause subsidence that would adversely impact or damage nearby infrastructure.

Very truly yours,

CLEATH-HARRIS GEOLOGISTS

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