NEW PRODUCTION APPLICATION ANTELOPE VALLEY WATERMASTER

Please include an application fee according to the fee schedule posted on the Watermaster website: https://avwatermaster.net. Make check out to: Antelope Valley Watermaster

Mail to: Antelope Valley Watermaster, 5022 West Avenue N, Suite 102 #158, Palmdale, CA 93551 <u>OR</u> email to: <u>info@avwatermaster.net</u>

Call Watermaster Administrative staff at 661-234-8233 with questions.

Date 09-30-22

Proposed Well Site APN 3052-016-017

Property Owner/Well Owner Barrel Springs Properties, LLC

Property Owner/Well Owner Mailing Address 1719 CALIFORNIA AVE #B, SAN'I'A MONICA, CA 90403

Contact Phone Number_661-816-5179 Contact email_david@redbricksolution.com

New Well Latitude/Longitude (or x, y) 34.531357,-118.067000 Antelope Valley Subarea: Central Antelope Valley

Use of New Well (Agricultural, Domestic, Industrial, Municipal, Monitoring, etc.) Agricultural

If Domestic well, will well be used to supply one single family household only? Yes/No.

Do other wells exist on this property? Yes/No. If Yes, indicate if active, inactive, or abandoned and show on Site Plan.

When will a meter be installed on the well? Immediately upon installation of the well

New Production requests are to include the following (Section 18.5.13 of the Judgment):

- 1. <u>Payment</u> of an application fee sufficient to recover all costs of application review, field investigation, reporting, and hearing, and other associated costs, incurred by the Watermaster and Watermaster Engineer in processing the application for New Production. Please attach a check to this application submittal for the fee associated with a New Production application as per the fee schedule posted on the Watermaster website. Check can be made out to Antelope Valley Watermaster.
- 2. <u>Written summary</u> describing the proposed quantity, sources of supply, season of use, purpose of use, place of use, manner of delivery, and other pertinent information regarding the New Production.
- 3. Maps¹ identifying the location of the proposed New Production, including Basin Subarea.
- 4. <u>Well information² including proposed well design, estimated annual pumping, and agreement to install a meter in accordance with the Rules & Regulations. Plus, a statement that once the well is installed, the applicant will provide water well permits, specifications and well-log reports, pump specifications and testing results, and water meter specifications associated with the New Production.</u>
- 5. <u>Written confirmation that applicant has obtained all necessary entitlements and permits</u> including all applicable Federal, State, County, and local land use entitlements and other permits necessary to commence the New Production.
- 6. <u>Written confirmation that applicant has complied with applicable laws and regulations</u> including all applicable Federal, State, County, and local laws, rules and regulations, including but not limited to, the California Environmental Quality Act (Public Resources Code §§ 21000, et. seq.).
- 7. <u>Preparation of a water conservation plan</u>, approved and stamped by a California licensed and registered professional civil engineer with expertise in groundwater hydrology, demonstrating that the New Production will be designed, constructed and implemented consistent with California best water management practices.
- 8. <u>Preparation of an analysis of the economic impact</u> of the New Production on the Basin and other Producers in the Subarea of the Basin.
- 9. <u>Preparation of an analysis of the physical impact</u> of the New Production on the Basin and other Producers in the Subarea of the Basin.
- 10. A written statement, signed by a California licensed and registered professional civil engineer with expertise in groundwater hydrology, determining that the <u>New Production will not cause Material Injury</u>. Material injury could be in the form of

¹ Maps are to include North arrow and scale, location of proposed well with dimensions in feet from well to nearest cross streets, and location of site features, including major buildings, landscaped areas, all existing wells, roads, etc.

² Please attach a diagram showing proposed well construction, including maximum well depth, casing diameter and materials, ground surface elevation, screen intervals, and estimated pumping capacity. A completed DWR Well Completion Report is required to be submitted to the Antelope Valley Watermaster upon completion of well.

significant and unreasonable 1. Chronic lowering of groundwater levels, 2. Reduction of groundwater storage, 3. Degraded water quality, 4. Land subsidence, 5. Depletions of interconnected surface water such that beneficial uses are impacted.

- 11. Written confirmation that the applicant agrees to pay the applicable Replacement Water Assessment for any New Production.
- 12. Other pertinent information which the Watermaster Engineer may require.

In addition, all New Production applicants who are not Parties to the Judgment³ are to comply with Section 20.9 of the Judgment, consult with the Watermaster Engineer, and seek the Watermaster's stipulation to allow them to intervene to become bound by the Judgment prior to commencing Production. The non-Party applicant must file a motion to intervene with the court that includes reference to their effort to obtain the Watermaster's stipulation to the intervention. It is strongly recommended that the non-Party applicant consult with a lawyer to assist them with compliance with Section 20.9 of the Judgment. If applicant believes they are part of the Non-Pumper Class (see footnote below) and therefore does not need to intervene in the Judgment, please provide supporting documents or statements demonstrating adherence to items 1-6 in the footnote.

SIGNATURES

Under penalty of perjury, I understand and agree to be bound by the terms of the Antelope Valley Adjudication Judgment and to pay the applicable Replacement Water Assessment for any New Production. I certify that the information provided on this Request for New Production is correct to the best of my knowledge and that the signature below, whether original, electronic, or photocopied, is authorized and valid, and is affixed with the intent to be enforceable. I understand that it is my responsibility to notify the Antelope Valley Watermaster of any changes in any of the information provided on this form within 15 days. I also understand that additional information may be required if there is a suspected potential for a material injury as defined in the Judgment. I further understand and agree that the purpose, place and quantity of New Production, if any, approved by the Watermaster pursuant to this application shall be the only purpose and place, and the maximum amount, of New Production that I can Produce in any given Year. I certify that I will comply with the restrictions set forth in Section 14.n of the Watermaster Rules and Regulations setting forth limitations on New Production, and that my failure to comply with these restrictions may result in a revocation of my New Production rights.

Signature of Applicant

David W Larson, PE Red Brick Solution, LLC Date_9-30-22

³ An applicant may already be a Party to the Judgment if they are part of the Non-Pumper Class (Willis Class) and meet the criteria described in Section 3.5.22 of the Judgment, as follows:

^{1.} They are a private party and not a "governmental" entity.

^{2.} They (or their successor in interest—see no.4 below) own real property within the Adjudicated Area and were not pumping water at the time of the Judgment being entered as of December 2015.

^{3.} They (or their successor in interest—see no. 4 below) did not pump water on their property "at any time during the five Years preceding January 18, 2006."

^{4.} Non-Pumper class status applies to those who are successors in title or interest (via gift or purchase or inheritance or otherwise) to a Non-Pumper Class member's land that meets the above criteria.

^{5.} Note the term "Non-Pumper Class Member" does not apply to those who opted out or to those connected to a municipal water system, public utility, or mutual water company from which they receive water service. Also, their land cannot be considered "improved" by the Assessor's Office of Los Angeles or Kern County, unless the person declares under penalty of perjury that they do not pump and have never pumped water on those properties.

^{6.} Finally, the Non-Pumper Class does not include anyone individually named in the Public Water Suppliers' crosscomplaint unless those persons opted into the Non-Pumper Class.

To be completed by the Watermaster:	
Watermaster Engineer Approval	Date
Watermaster Board Approval	Date

NOTE: This application is not for a well construction permit; a completed and approved application must be submitted to the appropriate well permitting agency (e.g., Kern or Los Angeles Counties) for a well construction permit, if the well is to be installed within the Antelope Valley Adjudicated Area.

RED BRICK SOLUTION

CONSULTING ENGINEERS & ARCHITECTS

WWW REDBRICKSOLUTION.COM

MAIN OFFICE:

331 S Rio Grande Street Suite 203 Salt Lake City, Ut 84101 T 801.224.5335

SOUTHERN CALIFORNIA:

10770 "I" Avenue Suite 108 Hesperia, CA 92395 M 661.816.5179 September 30, 2022

Antelope Valley Watermaster 5022 West Avenue N, Suite 102 #158 Palmdale, CA 93551

RE: New-Production Well Application, APN 3052-016-017

- Payment: Will be mailed from The People Concern
- 2. Written Summary:

The new production well has a proposed quantity of 120 AFY. The use will be for agricultural and farmworker housing that will be year-round on the private property. The water will be delivered via an onsite private water system.

3. Maps:

See attached map

4. Well Information:

See attached well design included with the Water Conservation Practices. We will agree to install a meter in accordance with the Rules & Regulations. Once installed, we will provide all water well permits, specifications and well-log reports, pump specifications and testing results, and water meter specifications associated with the New Production Well.

5. Written Confirmation that applicant has obtained all necessary entitlements and permits:

A Boring/Exploratory Hole was approved by the Department of Public Health. We also have Serviceability letters from Palmdale Water District grating permission to seek approval from AV Watermaster for a Production Well. Once approved, we will obtain a well permit from the County and retain a qualified driller with a California License C-57, who will secure any additional permits needed to drill my well, including the completion of a Department of Water Resources Well Completion Report.

 Written confirmation that applicant has complied with applicable laws and regulations: We have complied with all applicable rules and regulations. Drilling of

my well qualified for a Categorical Exemption under CEQA.

- 7. Water conservation plan: See attached Water Conservation Practices
- 8. Analysis of the Economic Impact: See attached report by Geosyntec
- 9. Analysis of the Physical Impact: See attached report by Geosyntec
- Written Statement determining New Production Well will not cause material Injury: See attached report by Geosyntec
- Written Confirmation that the applicant agrees to pay the applicable Replacement Water Assessment for any New Production: We agree to pay the applicable Replacement Water Assessment for our New Production well.

Water Conservation Practices

ANTELOPE VALLEY WATERMASTER

Domestic		Agricultural		Commercial/Industrial	Municipal		Monitoring
Date 10-3-22			Pr	oposed Well Site APN 3052-	016-017		
Property Owner/Well	Owner	BARREL SPRING	S PF	OPERTIES LLC			
Property Owner/Well	Owner	Mailing Address 17	19 (California Ave, #B, Santa	Monica, CA 90403		
Contact Phone Numb	er 661-	-816-5179		Contact email david@r	edbricksolution.com		1
Estimated annual pur Describe the propos	nping fi ed use	om New Well <u>120</u>	ttacł	acre-feet/year Well ca	pacity <u>Assumed 150</u> (cessary) <u>Water for ag</u>	gallons, ricultu	/minute ral use and
Tarmworker nousin	g.						
Lot/Parcel Size 58ac Proposed Structure	s) (e.g.	ac home, office, barn	res) , etc.) and size (square feet) <u>Sto</u>	rage Garage (1,600s	sf), Ca 48 Far	retakers
housing units (080	laach :	totaling 47 040st)	with	a total Square footage of	61 344ef	101 011	
Number of full bathr Is there (or will there Is there (or will there	ooms_ e be) a e be) a	145 pool? <u>No</u> spa/hot tub? <u>No</u>	. Nu	Imber of half bathrooms <u>8</u> Size of pool <u>N/A</u> Size of spa/hot tube <u> </u>	(gallons) N/A	_ (gallo	ns)
Area to contain irriga Describe all propose	ated la d lands	ndscaping <u>357,192</u> caping (type and h	2 ow n	square-feet nany) <u>Annual Grasses an</u>	d Flowers		
Area to contain irriga Describe all propose	ated cro d crops	ops or fruit trees <u>1</u> and fruit trees (ty	,576 pe ar	,872 square-feet nd how many) _Row Crop v	egetable gardens an	id Orcl	hard Area
Please provide detai Farm animals with	ls on po in the f	otential water use Orchard area (24	not n 4ac)	nentioned above (e.g. farm)	animals, etc.)		

Water Conservation Checklist

Please indicate which of the following measures will be used:

ENERGY STAR [®] water-conserving appliances installed, e.g., dishwasher, washing machine appl.
Water-efficient showerhead using conventional aerator or venturi technology for flow rate < 2.5 gpm fixture
Water-efficient sink faucets/aerators < 2.2 gallons/minute
Ultra-low flow (< 1.6 gpm/flush) toilets installed
Low-volume, non-spray irrigation system installed, e.g., drip irrigation, bubblers, drip emitters, soaker hose, stream-rotator spray heads
Weather-based irrigation controllers, e.g., computer-based weather record
Collect and use rainwater as permitted by local code
Separate and re-use greywater as permitted by local code
Composting or waterless toilet as permitted by local code
Drought-resistant, native plants (site-appropriate)
Xeriscape landscaping
Evapotranspiration-based irrigation controller with a rain sensor
Soil moisture sensor-based irrigation controller

Please provide additional details here Water conservation specifics have yet to be determined, but we are designing the project to be Certified LEED Platinum. Attachment A contains the Water Conservation Practices summary for the project.

SIGNATURES

I understand and agree to abide by the terms of the Antelope Valley Adjudication Judgment. I certify that the information provided on this Water Conservation Practices for Single Family Home form is correct to the best of my knowledge and that the signature below, whether original, electronic, or photocopied, is authorized and valid, and is affixed with the intent to be enforceable. I understand that it is my responsibility to notify the Antelope Valley Watermaster of any changes in any of the information provided on this form within 15 days.

Signature of Applicant _

David W Larson, PE Red Brick Solution, LLC

tom

Date 10-03-22

Water Conservation Practices ANTELOPE VALLEY WATERMASTER

ATTACHMENT A

Proposed Well Site APN: 3052-016-017

Planned water conservation measures at the property of the proposed well site include the installation of low-flow fixtures and fittings in residential kitchens and lavatories across the property and implementation of drought-tolerant plants in the landscaped areas watered with drip irrigation systems, as indicated in the Water Conservation Checklist on Page 2 of the Water Conservation Form.

The plan is to attain LEED Platinum certification for the property. The certification requires (a) reduction of outdoor water use by at least 30 percent from the baseline of the property's peak watering month, calculated using the USEPA WaterSense Water Budget Tool, (b) reduction of indoor water use by at least 20 percent from the baseline, using a combination of fixtures and fittings noted in the Water Conservation Checklist, and (c) installation of permanent building water meters measuring total potable water use, as well as compilation of monthly and annual meter read summaries for at least the first 5 years of the project. Additional credits needed to obtain Platinum-level certification will be met by prioritizing Water Efficiency credits as much as feasible, including those for the optimization of process water use.

The following best management practices for high desert agricultural water conservation will also be evaluated throughout property development to identify and target opportunities for their implementation:

- 1. Use of smart-sensor irrigation controllers to monitor weather, soil moisture, and/or evapotranspiration.
- Use of selective irrigation methods across the property, including additional drip irrigation or mobile drip irrigation, low-energy precision application, mid and low elevation spray application, and sprinkler irrigation.
- 3. Reduction of tillage across crop fields to maintain soil water storage capacity.
- 4. Planting of cover crops, including cereals, brassicas, legumes, rye, and barley, to increase infiltration into underlying soils.
- 5. Planned crop rotation management.
- 6. Improvement of soil structure through incorporation of aggregate and/or organic material (e.g., mulch) to increase stability, porosity, and water storage capacity.
- 7. Further selection of drought-tolerant and native vegetation for crops and/or cover crops.
- 8. Rainwater capture and use.
- 9. Fitting drainage systems with water control structures to manage water table elevation.
- 10. Management of soil salinity and plant-specific composting practices.



65 N. Raymond Ave, Suite 200 Pasadena, California 91103 PH 626.788.4683 www.geosyntec.com

September 30, 2022

John Maceri, CEO jmaceri@thepeopleconcern.org The People Concern 2116 Arlington Ave. Ste. 100 Los Angeles, CA 90018

Subject: Analysis of Potential Economic and Physical Impacts of the Proposed Well Proposed Farm and Affordable Farmworker Housing, Antelope Valley, California

Dear John,

Geosyntec has reviewed geologic, hydrogeologic, and production well information within a few miles of the property for a farm and affordable farmworker housing community that is proposed by The People Concern, which is a California 501(c)(3) Non-profit Organization for Public Benefit. The property is south of Palmdale and just south of the California Aqueduct. It is bounded on the south by Barrel Springs Road, and on the east by 40th Street East. **Figure 1**, below, shows the property boundary on an aerial photograph.



Figure 1. Aerial Photo of Property Vicinity

Based on the information from several sources including geologic maps, Water Well Drillers Reports available from the California Department of Water Resources (DWR) for wells in the vicinity, and reports on the Antelope Valley Basin available from the Antelope Valley Water Master (AVWM) website, we have estimated groundwater production potential from a proposed well on the property. In addition, we have evaluated the potential physical and economic impacts of the proposed groundwater production to the surrounding area.

Geologic and Hydrogeologic Setting

The property straddles the San Andreas Fault: most of it is southwest of the fault, but the northeast corner is northeast of the Fault. **Figure 2** shows the location of the property and the proposed well location on a geologic map¹ of the vicinity, a portion of which is underlain by the same aerial photo shown by **Figure 1**.



Figure 2. Geologic Map of Project Vicinity

¹ Jennings, C.W., and R.G. Strand, 1969. Geologic Map of California, Los Angeles Sheet. California Division of Mines and Geology. <u>https://ngmdb.usgs.gov/Prodesc/proddesc_16341.htm</u> <u>http://archives.csuchico.edu/digital/collection/coll19/id/99</u>

The property is within the boundaries of the Antelope Valley Groundwater Basin (e.g. Department of Water Resources Basin 6-044): the southwest margin is the basin is approximately 1 to 2 miles from the proposed well location. However, the property is not within the domain of the Antelope Valley Groundwater Model (USGS 2014): the southern margin of the model is a few miles northwest of the property. Consequently, we were not able to utilize aquifer properties assigned to the model to estimate aquifer properties in the vicinity of the property.

Based on the geologic map (**Figure 2**), the middle portion of property is underlain by deposits of unconsolidated quaternary alluvium and the western and eastern portions are underlain by Quaternary colluvium. Bedrock is exposed at the ground surface in many areas nearby. The area has a complicated geologic structure as a consequence of the proximity to the San Andreas Fault, which is actually a fault zone consisting of a several subsidiary parallel faults and local basins within the fault zone. Consequently, the rocks and alluvial deposits have much less continuity and their properties vary on a much smaller scale than within the main portion of the Antelope Valley Basin north of the fault zone.

Based on boring logs included on Well Drillers Reports for wells in the vicinity of the property, the alluvial deposits are generally a few hundred feet deep, but the clay content generally increases with depth. Some wells are completed in areas mapped as bedrock. The geologic map could be incorrect at some of these locations, but some of these wells may tap transmissive fractures associated with the fault zone.

A few areas with springs occur along Barrel Springs Road, which runs along the base of the slopes of the San Gabriel Mountains south of the property and the fault zone. The springs support local areas with trees and vegetation, which are visible on aerial photos (**Figure 1**). The springs are likely fed by groundwater discharging from the San Gabriel Mountains in drainages and fractures in bedrock. This water also likely accumulates in the local alluvial basins along the San Andreas Fault zone, which is likely a partial hydraulic barrier.

Aquifer Properties Based on Driller's Well Reports

Estimated aquifer transmissivity (T) can be calculated from specific capacity, which is pumping rate (Q) divided by drawdown (S) (lowering) of water level in a well (e.g. Heath, 1989)²:

$T \sim 300 \text{ x Q/S},$

where T is in units of ft^2/d Q has units of gpm, and S has units of ft

² R. C. Heath, 1989, Basic Groundwater-Hydrology, USGS Water-Supply Paper 2220.

And average hydraulic conductivity (K) is transmissivity divided by the thickness (b) of the formation tapped by the well:

$$K (ft/d) = T (ft^2/d) / b (ft)$$

Calculations of estimated transmissivity, hydraulic conductivity, and details from two well reports in the vicinity are provided in the table below. Based on these calculations, the estimated hydraulic conductivity is approximately 0.5 ft/d, which is reasonable for heterogenous alluvium. If we account for head losses in the pumping wells, assuming well efficiencies of 70%, the transmissivity and hydraulic conductivities are higher by a factor of 1/0.7, or 1.43, which results in a hydraulic value of ~0.7 ft/d.

Well Number	Well ID on Geo Map	Pumping Rate (gpm)	Duration (hrs)	Depth to Water Before Test (ft)	Reported Drawdown (ft)	Calculated Transmissivity ¹ (ft ² /d)	Perforated or Screened Interval (ft)	Estimated Thickness of Productive Formration (ft)	Calculated Hydraulic Conductivity (ft/d)
251697	10	40	8	Flowing	250	48	32 to 292	100	0.48
287630	7	7	3	50	100	21	147 to 187	40	0.53

Notes:

1 Estimate of Transmissivity = 300 x Puming Rate / Drawdown,

T = 300xQ/S, where T has units of ft2/d, Q gpm, and S ft (Heath, 1989)

Calculated Drawdown with Distance from a New Production Well

We used the Jacob approximation of the Theis Aquifer Solution, which are both commonly used aquifer pumping solutions, to calculate theoretical drawdown with distance from the proposed production rate (e.g. Heath, 1989, see footnote above).

In addition, using the aquifer testing analysis software, AQTESOLV³, we calculated the drawdown at a range of distances from the pumping well using the Theis solution with a no-flow boundary along the San Andreas Fault, which may be a partial barrier to groundwater flow that would result in greater drawdown. This results in more drawdown than calculated with the standard Theis Aquifer Solution, which assumes the aquifer is uniform and of infinite extent. We then fitted a curve to the calculated drawdowns a few distances from the pumping well, and plotted the curve on a graph (**Figure 3**, below) of distance versus drawdown both the standard Theis solution (no hydraulic barrier along the fault) and the solution that represents a complete hydraulic barrier along the fault. This graph provides a range of potential drawdown with distance assuming a pumping rate of 20 gpm and an average hydraulic conductivity of 0.5 ft/d an aquifer thickness of 200 ft, which results transmissivity of 100 ft²/d.

Page 4

³ Duffield, G.M. (2007) AQTESOLV for Windows User's Guide. Version 4.5, HydroSOLVE, Inc., Reston.

Based on our review of the boring logs included with the Drillers Well Reports for wells in the vicinity that are completed in alluvium, and our professional judgement, a hydraulic conductivity in the range of 0.5 to 1 ft/d is reasonable, so the calculations of drawdown with distance using a hydraulic conductivity of 0.5 are considered conservative.

The drawdown would be linearly proportionally greater at a given distance for greater flow rate: e.g. a drawdown in response to a pumping rate of 40 gpm would be twice as much as calculated for 20 gpm.



Figure 3. Calculated Drawdown with Distance from Pumping Well $(T = 100 \text{ ft}^2/\text{d}, b = 200 \text{ ft}, Q = 20 \text{ gpm})$

Evaluation of Potential Physical and Economic Impacts of a New Production Well

The primary potential physical impact of groundwater drawdown is subsidence of the ground surface that can occur because of compaction with of the groundwater levels. Based on existing maps of long-term subsidence in the Antelope Basin⁴, the potential for subsidence due to the proposed groundwater production for the project is expected to be negligible (<0.1 ft).

We calculated cost for the additional energy needed for potential additional lift of water in wells due to potential lowering of groundwater due to the proposed new production well. The table and graph below (**Figure 4**) show the cost per month for a range of additional pumping lift values. The assumed electricity cost is \$0.16 per kilowatt hour (kWh), which is the reported cost for the Palmdale area (<u>https://www.electricitylocal.com/states/california/palmdale/</u>).

Lift (ft)	ft-lbs/min	kWh/min	kWh/hr	Pump HP*	kWh/mo	\$/mo**
0						C
10	2979	0.001	0.067	0.1	49.1	\$8
30	8936	0.003	0.202	0.3	147.3	\$24
40	11914	0.004	0.269	0.4	196.4	\$31
50	14893	0.006	0.337	0.5	245.5	\$39
100	29786	0.011	0.673	0.9	491.1	\$79

Potential Additional Pumping Costs Due to Lower Groundwater Level

Notes:

Pumping rate = 25 gpm Well efficiency = 70%

*Pump HP assumes 1 kWh is equivalent to the energy of a 1.34 HP pump over 1 h ** 16 cents per KWh in Palmdale



Figure 4. Energy Cost Associated with Lower Water Level in a Well

⁴ Todd Groundwater, 2022, Antelope Valley Watermaster 2021 Annual Report.

Based on the distances of other well from the proposed new well, and the calculations of hypothetical drawdown in response to pumping the new well at 20 gpm a conservatively high estimated potential additional cost to operate the closest wells is in the range of \$20 to \$30 per month. And, as discussed above, the drawdown calculations are based on a conservatively low value of hydraulic conductivity. A factor of two less drawdown is likely more realistic.

We appreciate the opportunity to provide you with groundwater supply consulting services and collaborate with you on this important project.



Gordon Thrupp, PhD, PG, CHG Senior Consultant

Tara Rolfe, PG, CHG Senior Hydrogeologist

cc Christie Larson <u>Christie@redbricksolution.com</u> Dave Larson, PE <u>david@redbricksolutions.com</u>



65 N. Raymond Ave, Suite 200 Pasadena, California 91103 PH 626.788.4683 www.geosyntec.com

Item 10 for New Production Application Proposed Farm and Affordable Farmworker Housing, Antelope Valley, California

Geosyntec has reviewed geologic, hydrogeologic, and production well information within a few miles of the property for a farm and affordable farmworker housing community that is proposed by The People Concern, which is a California 501(c)(3) Non-profit Organization for Public Benefit. We have prepared a letter report that evaluates the groundwater production potential in the vicinity of the property and the potential economic and physical impact (*The Letter Report is also included as an Attachment to the Application Packet for Items 8 and 9 of the New Production Application*) of groundwater pumping to meet the water supply needs for the farm and housing community.

Geosyntec made calculations of the lowering of groundwater (drawdown) in response to pumping from the proposed well that are presented in the letter report. Based on the compilations of aquifer properties estimated from well reports for existing wells in the vicinity and geologic maps, and assuming A conservatively low transmissivity of 100 ft²/d¹ for was assumed for the alluvial aquifer beneath the property for screening level calculations of the potential influence of the production. With this and other conservative assumptions, the calculated lowering of groundwater at known existing wells would be a small portion of the depth to groundwater in the wells when they are pumping, which is commonly 100 ft or more based on information from Drillers Well Reports in the general vicinity available from the Department of Water Resources (DWR).

The calculations presented in our Letter Report, which is provided in the application packet to address Items 8 and 9, are intended to be serve as a basis for conservative screening-level evaluation of groundwater production potential and the resulting potential lowering of groundwater levels in the vicinity. The alluvial aquifer beneath the property may be a factor of four or more transmissive than assumed (i.e., hydraulic conductivity of 2 ft/d instead of 0.5 ft/d), which would result in less drawdown than calculated for the calculations presented using continuous pumping at 20 gpm. And, for example, if the aquifer is four times as transmissive as assumed, the same drawdown would be calculated with a factor of four higher pumping rate (80 instead of 20 gpm). Moreover, our calculations are also conservative because the analytical aquifer solution assumes no recharge to the alluvial aquifer and only horizontal radial inflow within an aquifer of infinite extent.

Based on our analysis groundwater production is feasible at the property and we make the following conclusions:

1. Chronic lowering of groundwater levels in the general vicinity is not expected to occur because groundwater discharge from the San Gabriel Mountains generally along the

¹ For example, average hydraulic conductivity of 0.5 ft/d and aquifer thickness of 200 ft.

Item 10 to Accompany the Production Permit

Proposed Farm and Affordable Farmworker Housing, Antelope Valley, California October 1, 2022

alignment of Barrel Springs Road provides recharge to the alluvial aquifer in the vicinity of the property, so the groundwater production can be sustainable.

- 2. Reduction of groundwater storage is anticipated to be minor for the same reasons that chronic lowering of groundwater levels is not expected to occur.
- 3. The groundwater production will not degrade water quality, and the well will be constructed with a proper surface seal in accordance with California Well Standards.
- 4. Based on subsidence data for the Antelope Groundwater Basin, modeling of subsidence in the basin by USGS, and the poorly graded make-up of the alluvial aquifer, subsidence due the proposed production is expected to be negligible (<0.1 ft).
- 5. The conservatively high calculations of drawdown at the distance of the nearest surface water (Bear Creek) south of Barrel Springs Road is too small to result in significant depletion of water in the creek. Moreover, like the springs, this creek too is hydraulically upgradient of the property, and is fed by groundwater discharge from the slopes and bedrock of the San Gabriel Mountains to the south to surface drainages and on-lapping alluvial aquifers. Additionally, portions of Bear Creek appear to be lined, and it is called the Palmdale Ditch. Thus, no impacts to beneficial uses of the land and water resources are expected to occur due to the proposed groundwater production.

The proposed new production of a maximum of 120 acre feet per year (AFY) will have negligible, if any, influence on the Native Safe Yield of the Antelope Valley Groundwater Basin, which is 82,300 AFY. Moreover, the proposed pumping is near the southwest margin of the Basin and is separated from the main portion of the Basin by the San Andreas Fault Zone, which is likely a partial hydraulic barrier. The Barrel Springs Properties are included in the Basin's Small Pumpers Class (SPC) but do not have an existing pumping allocation for the parcel planned for a new well.

The People Concern are committed sustainable use of water and other natural resources, and understand that pumping groundwater will be subject to a replenishment fee. If the groundwater production potential is less than the water demand, they will revise the project accordingly.

Sincerely,

Ministry will revise the project accordingly.

Gordon Thrupp, PhD, PG, CHG Senior Consultant

ONAL GE

CERTIFIED DROGEOLOGIST Exp. 2/29/24

OF CAL

Mark Hana, PhD, PEG, CHG Senior Principal Engineer

Attachment 1

Preliminary Proposed Well Construction



Actual depth, screened interval, slot size, filter pack sand will be based on material encountered during drilling. Anticipated maximum depth is 300 ft.

Estimated pumping capacity is 25 to 150 gpm. A suitable dedicated submersible pump will be in selected following development and testing.



PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

BOARD OF DIRECTORS

W. SCOTT KELLERMAN **Division** 1

ATTN:

Carol Sevilla Barrel Springs Properties, LLC. 1719 California Avenue Santa Monica, CA 90403

GLORIA DIZMANG **Division 3**

DON WILSON

Division 2

KATHY MAC LAREN-GOMEZ RE: **Division** 4

VINCENT DINO **Division 5**

SERVICEABILITY - PROPERTY APN 3052-016-017 W.S.M. 34-63;66

To Antelope Valley Watermaster:

DENNIS D. LaMOREAUX General Manager

ALESHIRE & WYNDER LLP Attorneys



The above-mentioned parcel is located within the service boundaries of the Palmdale Water District (District). However, currently there is no infrastructure within proximity of the abovementioned parcel to provide water service at this time and the District has no plans in the near future to construct any facilities within practical reach of the parcel. Therefore, the District grants permission to the parcel owner to seek approval through the Antelope Valley Watermaster for construction of a private well to serve this parcel. The permission granted by this letter shall be valid for one year from the date the letter was issued.

Please feel free to contact me at (661) 456-1020 if you have any questions.

truly yours Ver

Engineering Manager SR/jv

August 11, 2022





ENVIRONMENTAL HEALTH



Drinking Water Program

5050 Commerce Drive, Baldwin Park, CA 91706 Telephone: (626) 430-5420 • http://publichealth.lacounty.gov/eh/ep/dw/dw main.htm

Work Plan Approval

WORK SITE ADDRESS	CITY	ZIP	EMAIL ADDRESS
0050 040 047/D D	Delmadele	02550	david@redbricksolution.com
3052-016-017/Barrel Springs Road	Paimdale	93550	josh@vicswelldrilinginc.com

NOTICE:

WORK FLAN APPROVALS ARE VALID FOR 180 DAYS. 30 DAY EXTENSIONS OF WORK PLAN APPROVALS ARE CONSIDERED ON AN INDIVIDUAL (CASE-BY-CASE) BASIS AND MAY BE SUBJECT TO ADDITIONAL PLAN REVIEW FEES (HOURLY RATE AS APPLICABLE).

WORK PLAN MODIFICATIONS MAY BE REQUIRED IF WELL AND GEOLOGIC CONDITIONS ENCOUNTERED AT THE SITE INSPECTION ARE FOUND TO DIFFER FROM THE SCOPE OF WORK PRESENTED TO THE DEPARTMENT OF PUBLIC HEALTH-DRINKING WATER PROGRAM.

WORK PLAN APPROVALS ARE LIMITED TO COMPLIANCE WITH THE CALIFORNIA WELL STANDARDS AND THE LOS ANGELES COUNTY CODE AND DOES NOT GRANT ANY RIGHTS TO CONSTRUCT, RENOVATE, OR DECOMMISSION ANY WELL. THE APPLICANT IS RESPONSIBLE FOR SECURING ALL OTHER NECESSARY PERMITS SUCH AS WATER RIGHTS, PROPERTY RIGHTS, COASTAL COMMISSION APPROVALS, USE COVENANTS, ENCROACHMENT PERMISSIONS, UTILITY LINE SETBACKS, CITY/COUNTY PUBLIC WORKS RIGHTS OF WAY, ETC.

THIS PERMIT IS NOT COMPLETE UNTIL ALL OF THE FOLLOWING REQUIREMENTS ARE SIGNED BY THE DEPUTY HEALTH OFFICER. WORK SHALL NOT BE INITIATED WITHOUT A WORK PLAN APPROVAL STAMPED BY THE DEPARTMENT OF PUBLIC HEALTH-DRINKING WATER PROGRAM.

TO BE COMPLETED BY DEPARTMENT OF PUBLIC HEALTH-DRINKING WATER PROGRAM:

X	WORK PLAN APPROVED FOR: Soil Boring/Exp. Hole	PERMIT NUMBER:	SR0303673	DATE:	August 15, 20	22
Plesul	 DITIONAL APPROVAL C Work plan approval is isomodifications to the scop As discussed, please enconstruction. Ensure to backfill using cement grout, proceeding cement grout, proceeding Ensure soil borings are sonored grout mition. Ensure soil borings are sonored grout. Well Standard 11. 	ONDITIONS sued for scop be of work wi sure the bori a tremie pipe g upward fro ealed per Ca cratio of 5-6 onite may be tonite chips a s must cor s (Bulletins 7 is for an exp ell-Public W	S: be of work submit Il require addition ing/exploration ho e under pressure m the bottom of t alifornia Well Star gallons of water added to the cer and/or soil cutting nply with all app 74-81 and 74-90) ploratory boring fater Well.	tted to the I al work plan ole is backfi or equivale he boring/e ndards 74-9 per 94-pour ment-based js. plicable red and the Los only. A ne	Drinking Water Pron n review. Iled within 24 hou ent equipment wi xploration hole to 00 nd bag of Portlan 1 mix. quirements public s Angeles County w application with	rogram. Any urs of boring th approved o surface. d cement. shed in the y Code, Title ith fee to be
API	PROVED BY: 26415 (Santa C (661) 2	chey, REHS Carl Boyer Dr. Clarita, Ca 913 87-7017	350 Ju	i A	acher	5770

Antelope Valley Watermaster



Legend



AV Adjudication Area

AV Management Subareas