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March 8, 2012

427930.DI.DR

Mike Monasmith
Senior Project Manager
Systems Assessment & Facility Siting Division
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814

Subject: Data Response, Set 2A-2
Hidden Hills Solar Electric Generating System (11-AFC-2)

Dear Mr. Monasmith:

On behalf of Hidden Hills Solar I, LLC; and Hidden Hills Solar II, LLC, please find attached an electronic copy of Data Response, Set 2A-2 in response to Staff's Data Request Set 2A filed on January 9, 2012.

Hard copies will be sent out tomorrow. Please call me if you have any questions.

Sincerely,

CH2M HILL

John L. Carrier, J.D.
Program Manager

Encl.

c: POS List
Project file

Hidden Hills Solar Electric Generating System

(11-AFC-2)

Data Response, Set 2A-2
(Response to Data Request 141)

Submitted to the

California Energy Commission

Submitted by

Hidden Hills Solar I, LLC; and
Hidden Hills Solar II, LLC

March 8, 2012

With Assistance from
CH2MHILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833

Contents

Introduction

Attached is Hidden Hills Solar I, LLC, and Hidden Hills Solar II, LLC (collectively, "Applicant") supplemental response to the California Energy Commission (CEC) Staff's data request number 141 for the Hidden Hills Solar Electric Generating System (HHSEGS) Project (11-AFC-2). The CEC Staff served this data request on January 9, 2012.

Soil & Water Resources (141)

BACKGROUND

As stated in the HHSEGS AFC, Appendix 5.15: Water Resources, Hidden Hills Interim Assessment Report, dated May 2011, "Limited aquifer hydraulic testing has been conducted in the vicinity of the project site" (Cardno Entrix, 2011). The report cites two aquifer tests that yield very little useful information.

The first test is from 1966, when water levels were likely about 45 feet higher than today (see USGS well USGS 360359115573201 162 S22 E53 01DA 1). The exact location of the well was not included in the report. The reported pump rate was 275 gallons per minute (gpm).

The second pump test was conducted at a well in the direct vicinity of the proposed project in 2003, but only lasted 22 hours because of declining water levels. The reported transmissivity was significantly lower than the 1966 test, 7,225 gallons per day per foot (gpd/ft) versus 4,675 gpd/ft. No pump rate was reported from the 2003 test.

The applicant also indicates another pump test should be conducted and states, "The proposed aquifer testing will aid in determining aquifer barrier boundaries such as faults within the aquifer that can limit the expansion of the cone of depression and correspondingly increase drawdown" (Cardno Entrix, 2011). Staff agrees with the applicant, an aquifer test should be performed to evaluate whether a reliable supply of water can be produced for project construction and operation and to better characterize aquifer parameters for local drawdown impact analysis.

DATA REQUEST

141. Please provide the results of a pump test of sufficient duration and flow to demonstrate that the aquifer can provide a reliable supply for project construction and operation. The pump test should also provide sufficient data to evaluate whether any barriers to flow exist.

Response: An Aquifer Performance Test (APT) was conducted at the Hidden Hills SEGS project site from February 17 to February 21, 2012 employing the approach and methods described in the Long-Term Aquifer Performance Testing Plan, a copy of which is provided as Appendix A. The results of the test are described in this response. A report on the APT is being prepared that will include additional details on the testing, installation and logging of monitoring wells, water quality data results, and appendices containing data associated with the APT. The report will also include a more detailed discussion and analysis of the conclusion that groundwater pumping will not affect groundwater dependent vegetation. It is anticipated that the report will be completed by the end of March, 2012.

APT Set Up

As an initial effort to select the wells to use for the APT, an evaluation of the six existing production wells located on the site was conducted (Figure 1). The following results were determined from this effort:

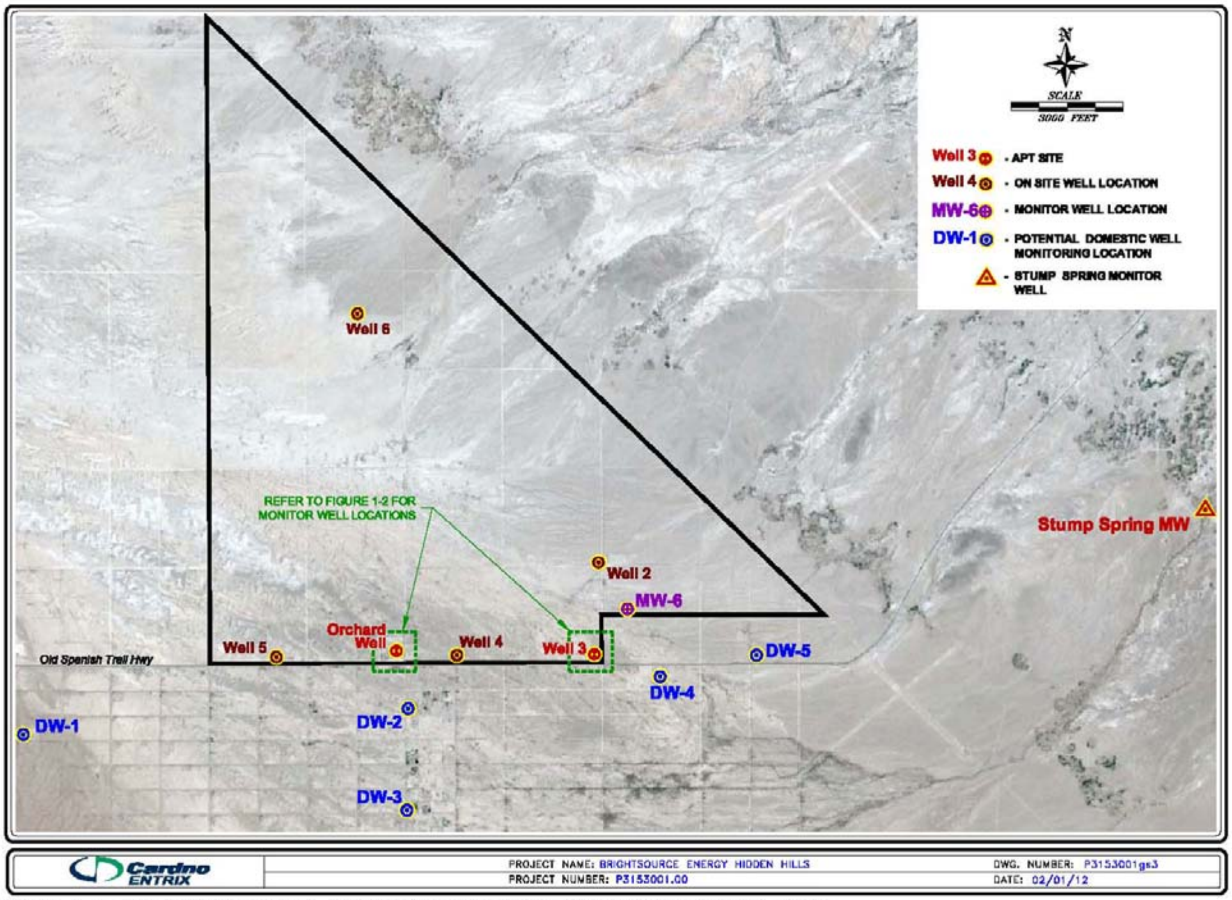


FIGURE 1–1. MAP SHOWING AQUIFER PERFORMANCE TEST WELLS AND ADJACENT MONITOR WELLS.

a) Two of these existing wells appeared viable for the test -- the Orchard well and Well #3

b) Two of these existing wells (Well #2 and Well #4) were not sufficiently deep to support pumping withdrawals for the purposes of the APT, but were useful as water level monitoring

c) Two of these wells (Well #5 and Well #6) were dry and no standing water was present in them

Temporary pumps were installed in both the Orchard well and Well #3 for the duration of the APT. A series of six 200-foot-deep monitoring wells were installed at strategic locations near each of these wells (Figure 1). Data recording pressure transducers were installed in each of the monitoring and pumping wells to document water level changes before, during, and after the APT. Additionally, water level changes were tracked at the existing monitoring well located at the Stump Springs area (illustrated as eastern edge of the map provided as Figure 1). The data from these devices were downloaded and used to generate graphs and other analyses of the observed water level changes during the test.

APT Operations

The test was operated for approximately 4.5 days during which time the 2 pumping wells were pumped at a constant flow rate of 45 gallons per minute (gpm) each. The APT was terminated earlier than planned because of a failure of Well #3 caused by an apparent act of vandalism during the night of February 21st.

Water quality samples were also collected from the wells in accordance with the APT plan. Results of these analyses are anticipated to be available from the laboratories in the next 2 weeks.

APT Results

The water level changes observed during the course of the test are illustrated in Figure 2. At the Orchard well, observed water level drawdown was a total of approximately 73 feet during the course of the test (Figure 3), while the drawdown at the monitoring wells located 50 and 200 feet away from the Orchard well were 16.6 and 2.5 feet, respectively. Measurable drawdown was not evident in the existing wells (Well #2 and Well #4). Water levels in the Stump Springs monitoring well followed a declining trend from about a month before the start of pumping and continued the same trend without significant change during and after the pumping test.

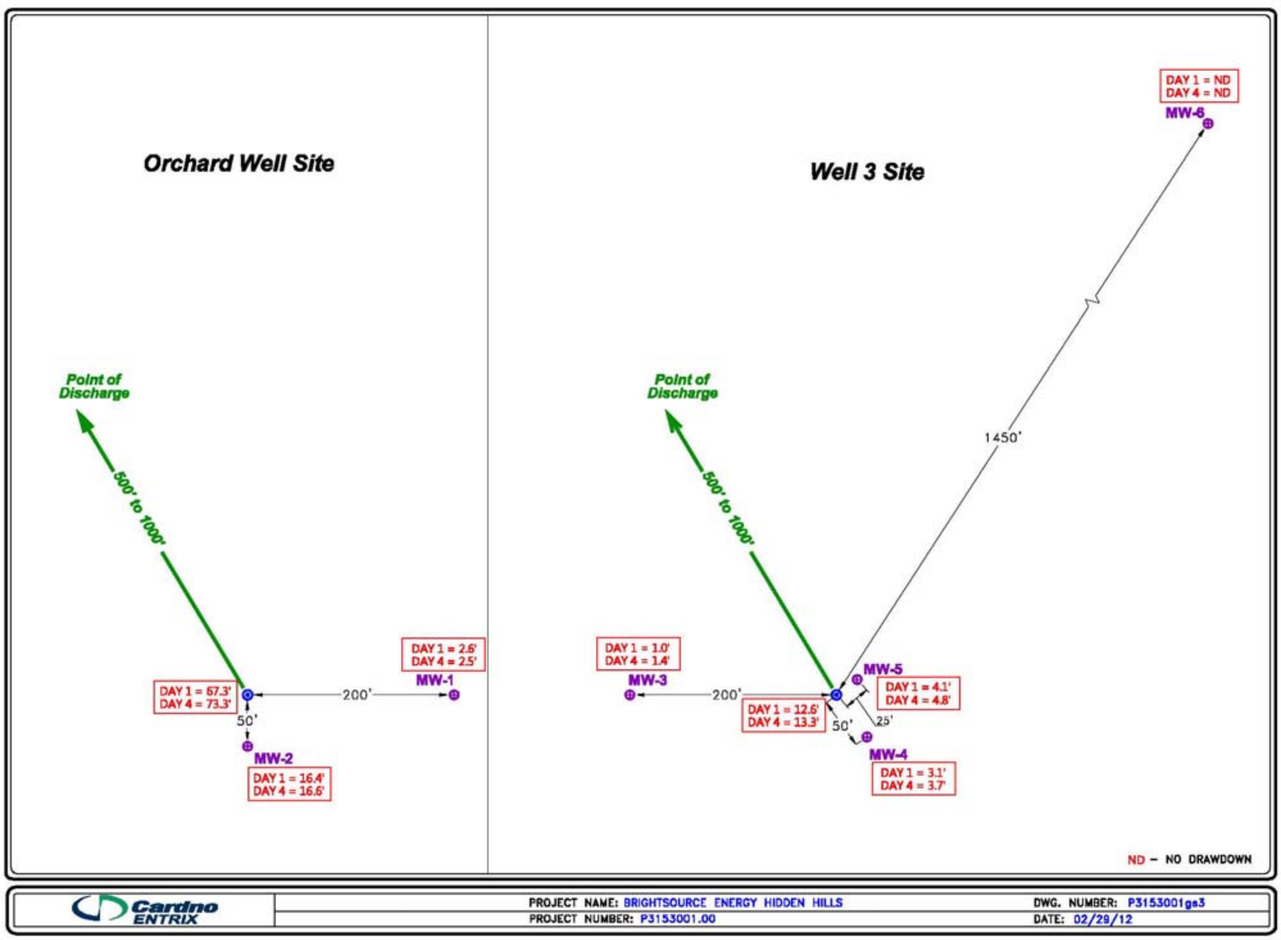


FIGURE 1. APT WELL LOCATIONS AND DRAWDOWN IN FEET AT DAY 1 AND DAY 4.

Figure 2. Schematic diagram of observed drawdowns in monitoring wells

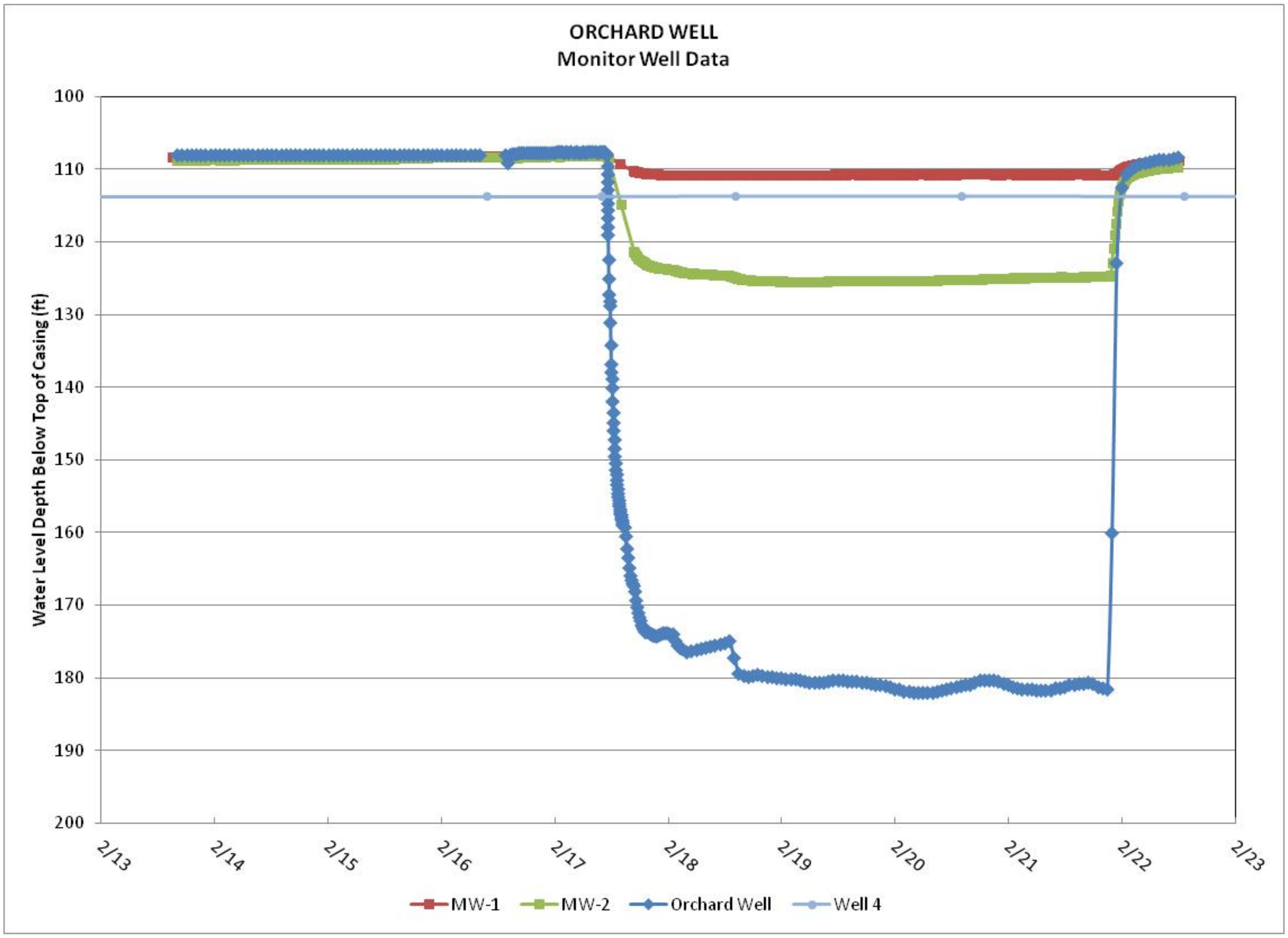


Figure 3. Observed water levels in Orchard well and nearby monitoring wells.

Water levels in Well #3 were observed to drawdown a total of approximately 13 feet during the course of the test (Figure 4), while the drawdown at the monitoring wells located 25, 50 and 200 feet away from Well #3 were 4.8, 3.7 and 1.4 feet, respectively. Measurable drawdown was not evident at MW-6 (1,400 feet away), nor at the more distant monitoring points in the existing wells (Well #2 and Well #4).

The water level data supports our preliminary interpretation that the aquifer is capable of supplying the 140 acre-feet per year (af/yr) needed for the project and that drawdown offsite will be minimal.

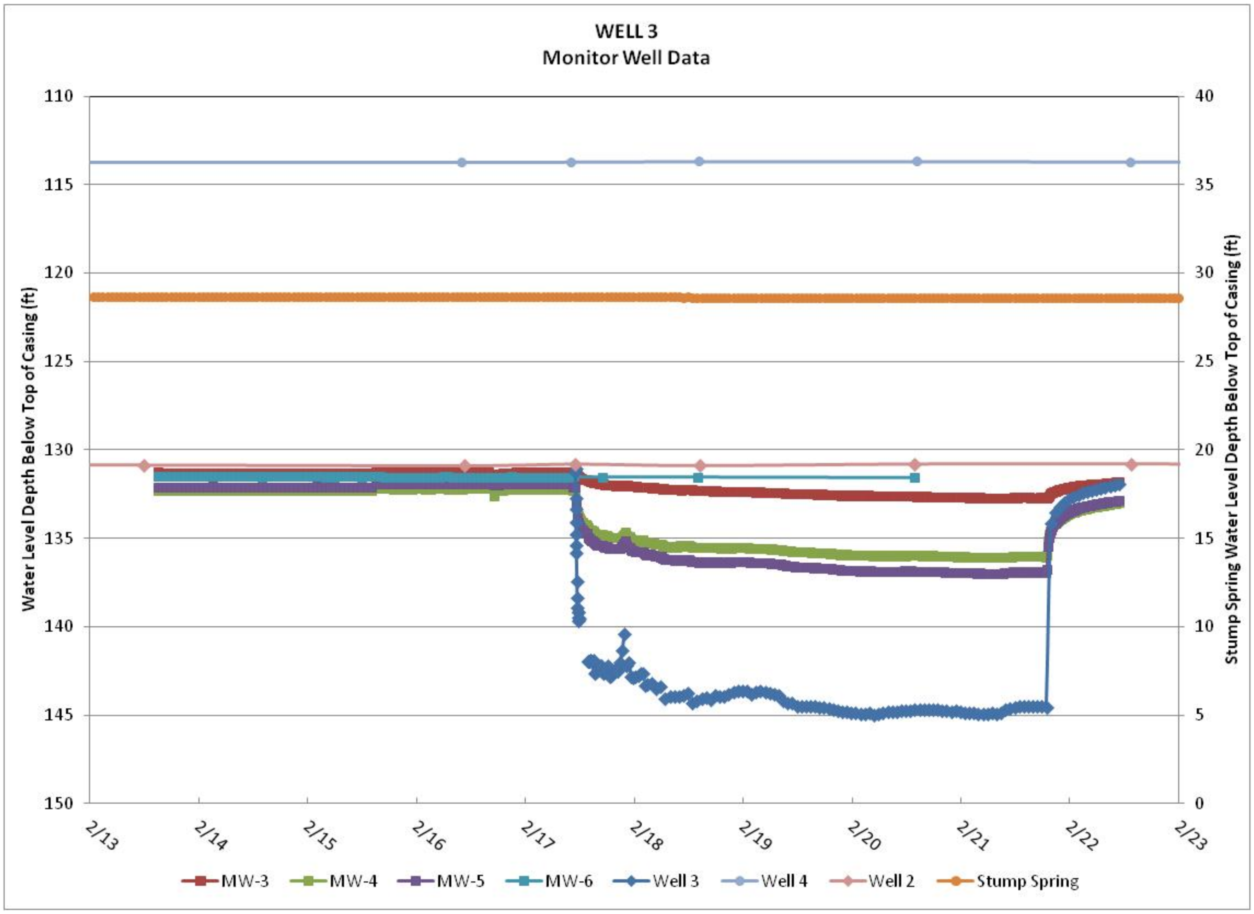


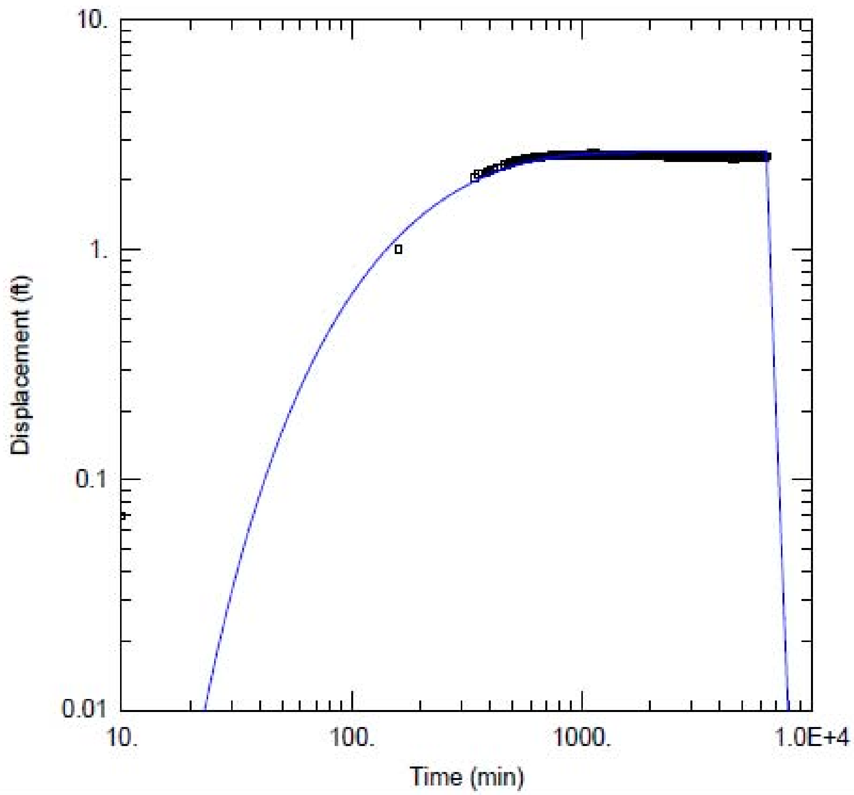
Figure 4. Observed water levels in Well #3 and nearby monitoring wells.

Aquifer Test Analysis

The monitoring well data showed that the cone of depression created around each pumping well did not extend far from the well. Each well created a separate cone of depression that did not interfere with the other well. Because the cones of depression were separate, the drawdowns associated with pumping can be analyzed individually.

The pumping test data was analyzed using Aqtesolv, an industry standard aquifer analysis package. The drawdown data for each monitoring well was plotted against time and fitted to the appropriate type curve to determine the transmissivity, storage and boundary conditions of the aquifer at each monitoring well. All five monitoring wells followed leaky artesian curves indicating that the aquifer is bounded by a semi-permeable confining unit that allows a slow release of recharge to the aquifer. The two wells were found to follow slightly different leaky artesian type curve families, which indicate that the nature of the confining unit is not totally consistent across the site. The transmissivity of the aquifer varies by over an order of magnitude between the two pumping wells, indicating that the aquifer is not homogeneous across the site.

Figure 5 presents the drawdown vs. time plot for MW-1, located 200 feet from the Orchard well. The drawdown follows the Hantush-Jacob (no storage in the confining unit) leaky artesian curve. MW-2 produced a similar plot that also followed a Hantush-Jacob curve. The calculated transmissivity of the aquifer ranges from 1,635 gallons per day per foot (gpd/ft) at MW-1 to 670 gpd/ft at MW-2. While the transmissivity of the aquifer was relatively low around this well, the leakance value was relatively high and the pumping levels stabilized quickly. Both monitoring wells reached steady state by the end of the test.



WELL TEST ANALYSIS

Data Set: C:\Program Files\HydroSOLVE\AQTESOLV for Windows Pro 3.5\BSE MW1.aqt
Date: 02/29/12 Time: 12:43:47

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
Orchard Well	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ MW1	200	0

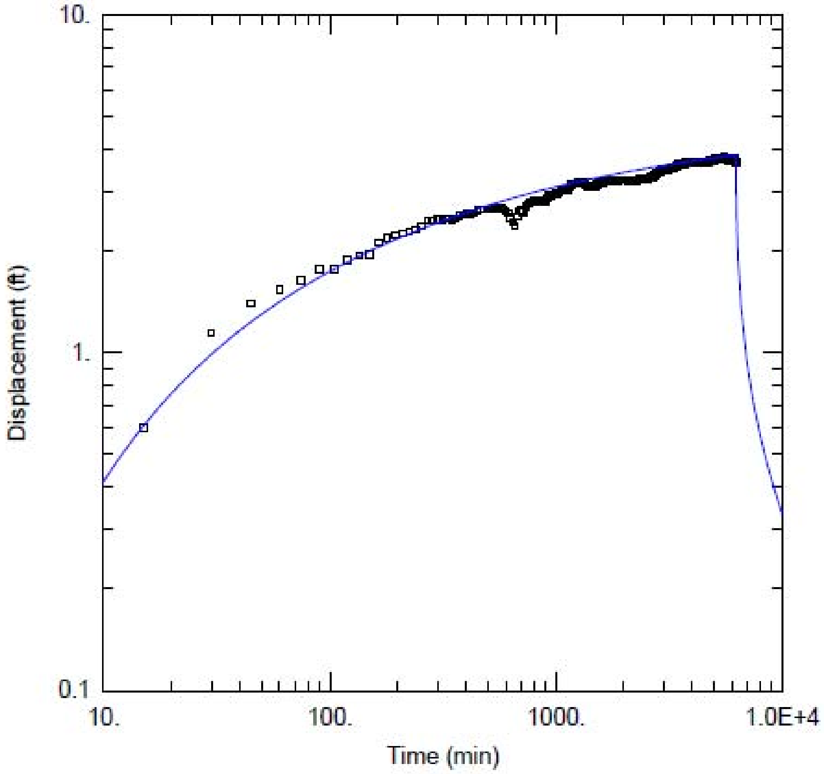
SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

T = 1634.7 gal/day/ft
r/B = 1.
b = 1000. ft
S = 0.001431
Kz/Kr = 0.1

Figure 5. Drawdown vs. time plot for MW-1, located 200 feet from the Orchard well.

Figure 6 presents the drawdown vs. time plot for MW-4, located 50 feet from the Well 3. The drawdown follows the Hantush (with storage in the confining unit) leaky artesian curve. MW-3 and MW-5 produced a similar plot that also followed a Hantush curve. The transmissivity of the aquifer ranged from 11,750 gpd/ft at MW-3 to 6,980 gpd/ft at MW-5. While the transmissivity of the aquifer was approximately an order of magnitude higher around this well, the leakance value was relatively low and the pumping levels had not stabilized by the end of the test. We believe that water levels would have stabilized within a few more days of additional pumping for reasons explained later in this response.



WELL TEST ANALYSIS

Data Set: C:\Program Files\HydroSOLVE\AQTESOLV for Windows Pro 3.5\BSE MW4.aqt
Date: 02/29/12 Time: 11:10:30

AQUIFER DATA

Saturated Thickness: 1000. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
Well 3	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ MW4	50	0

SOLUTION

Aquifer Model: Leaky Solution Method: Neuman-Witherspoon

T = 7342.1 gal/day/ft
r/B = 0.1
T' = 1.077E+4 gal/day/ft
S = 0.005166
ß = 0.001
S' = 0.001

Figure 6. Drawdown vs. time plot for MW-4, located 50 feet from the Well 3.

Projection of Drawdown During the Operational Life of the Project

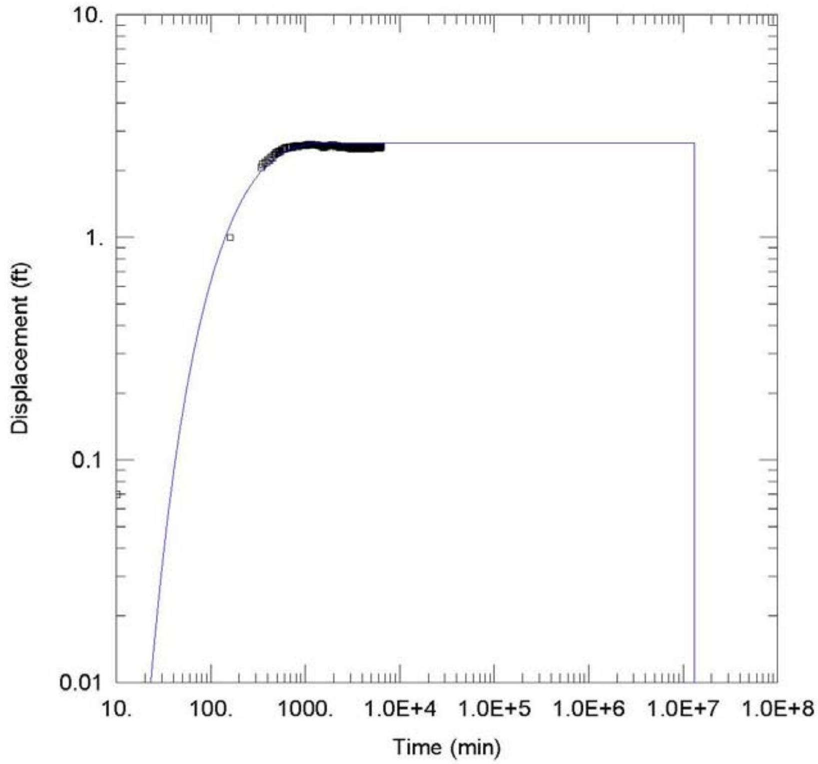
The project is expected to have an operational life of approximately 25 years. While it is not possible to pump wells for 25 years to demonstrate the ability of the aquifer to produce sufficient water, it is possible to project future drawdown in the aquifer from the pumping test data.

In a perfectly confined homogeneous aquifer with no gradient (no regional flow), the cone of depression created by a pumping well would theoretically expand for as long as the well was pumped. In nature, no aquifers are perfectly confined and there is almost always some regional flow within the aquifer. In real world conditions, the cone of depression around a pumping well grows until it intercepts enough recharge or regional flow to replace the water being pumped at which point the cone stabilizes and ceases to expand. This creates a new steady-state condition in the aquifer where recharge and discharge are balanced and the flow pattern does not change unless there is some other disturbance in the system.

The aquifer supporting the Orchard well and Well #3 receives recharge from overlying units through the leaky confining layer and receives recharge from regional flow in the aquifer. These boundary conditions will replace the water produced from the wells and return the aquifer to a steady state condition where the pumpage is balanced by recharge. Under these conditions, the aquifer can sustain the pumping indefinitely unless external forces disrupt the system. This is evident in the Orchard well data where the aquifer reached steady-state within a day of pumping. Well #3 receives less recharge from leakance so it had not reached steady state by the end of the test. However, the expansion of the cone of depression was slowing and we believe it was close to capturing enough regional flow to stabilize water levels within a few days. For the following calculation, we conservatively assumed that the cone of depression around Well #3 would not stabilize and projected drawdown would continue to occur in the aquifer for 25 years of pumping.

We used the pumping test data and the curve fits to project drawdown at the monitoring wells for a period of 25 years at a constant pumping rate of 140 af/yr from both wells combined (45 gpm from each well). Please note that this analysis assumes a flat potentiometric surface in the aquifer with no regional flow to replace the pumped water.

Figure 7 presents the drawdown vs. time plot for MW-1, 200 feet from the Orchard well, projected out to 25 years of pumping at 45 gpm. The plot shows that the well has already reached steady state and no growth of the cone of depression is expected. Water levels in the aquifer will not change as a result of extended pumping from the Orchard Well.



WELL TEST ANALYSIS

Data Set: C:\Program Files\HydroSOLVE\AQTESOLV for Windows Pro 3.5\BSE MW1-25yr.aqt
Date: 03/08/12 Time: 18:11:07

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
Orchard Well	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ MW1	200	0

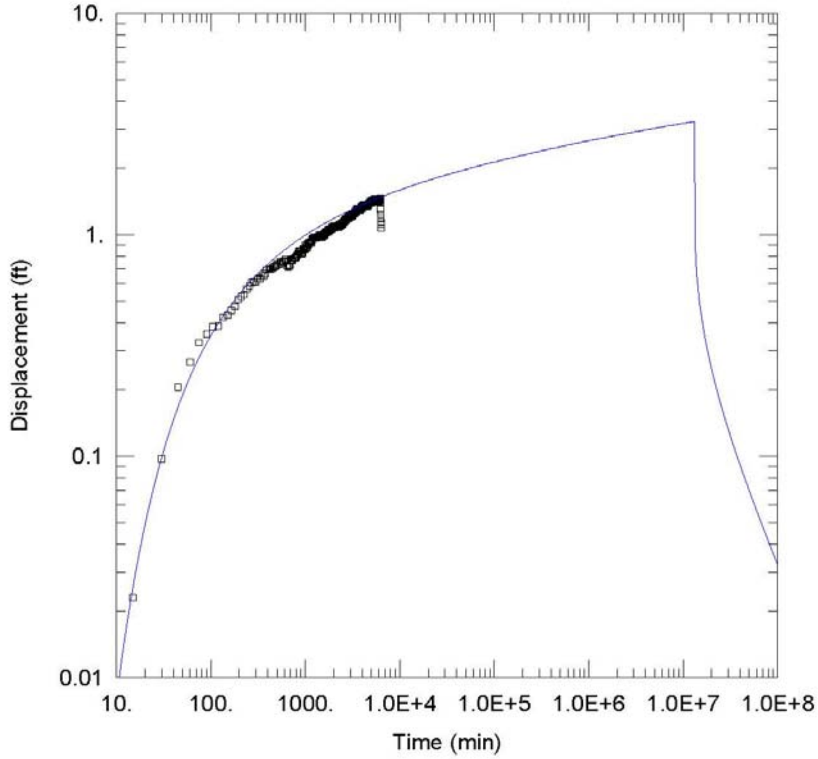
SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

T = 1634.7 gal/day/ft
r/B = 1.
b = 1000. ft
S = 0.001431
Kz/Kr = 0.1

Figure 7. Drawdown vs. time plot for MW-1, 200 feet from the Orchard Well after 25 years of pumping.

Figure 8 presents the drawdown vs. time plot for MW-3, 200 feet from the Well #3, projected out to 25 years of pumping at 45 gpm. The plot shows that the water levels will continue to slowly decline and reach about 3.2 feet in 25 years. This represents an increase of about 2 feet from the drawdown observed at the end of the pumping test. We believe that the cone of depression would stabilize from intercepting regional flow long before this amount of drawdown was created. Even if the assumption of recharge from regional flow is incorrect, the drawdown in the aquifer will still be minimal. We created similar plots for MW-4 and MW-5 and calculated drawdown values of 6.1 and 7.1 feet, respectively, after 25 years.



WELL TEST ANALYSIS

Data Set: C:\Program Files\HydroSOLVE\AQTESOLV for Windows Pro 3.5\BSE MW3 25yr.aqt
Date: 03/08/12 Time: 18:12:45

AQUIFER DATA

Saturated Thickness: 1000. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
Well 3	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ MW3	200	0

SOLUTION

Aquifer Model: Leaky Solution Method: Neuman-Witherspoon

T = 1.175E+4 gal/day/ft S = 0.002805
r/B = 0.1 ß = 0.1
T' = 1.077E+4 gal/day/ft S' = 0.001

Figure 8. Drawdown vs. time plot for MW-3, 200 feet from the Well #3, projected out to 25 years of pumping at 45 gpm.

The calculated drawdown values after 25 years of pumping were used to create a distance drawdown plot as a means of estimating the radius of influence of the well after 25 years.

Figure9 is a plot of the drawdown vs. distance from Well #3 after 25 years pumping at 45 gpm with no recharge from regional flow. The calculated values lie on a straight line, which indicates the values are reasonable estimates of the expected drawdown. The radius of influence (line of 0 drawdown) is about 1,500 feet, which indicates that pumping from Well #3 will not significantly interfere with neighboring wells and will not extend much beyond the limits of the property. The cone of depression will not extend to the State Line Fault or to Stump Springs. Due to the limited radius and magnitude of the cone of depression during the operational life of the plant, we do not expect any impact to the mesquite thickets, or other groundwater-dependent vegetation.

The plot also indicates that about 13 feet of drawdown can be expected one foot from the center of Well #3, suggesting that Well #3 is fairly efficient in its current condition. The slope of the distance drawdown line was used to estimate the transmissivity of the aquifer using the Distance Drawdown Method. The plot allows for the calculation of transmissivity of approximately 6,000 gpd/ft, which represents an estimate of the average value of the aquifer transmissivity around the well and is consistent with the values calculated by the Hantush method at the nearby monitoring wells.

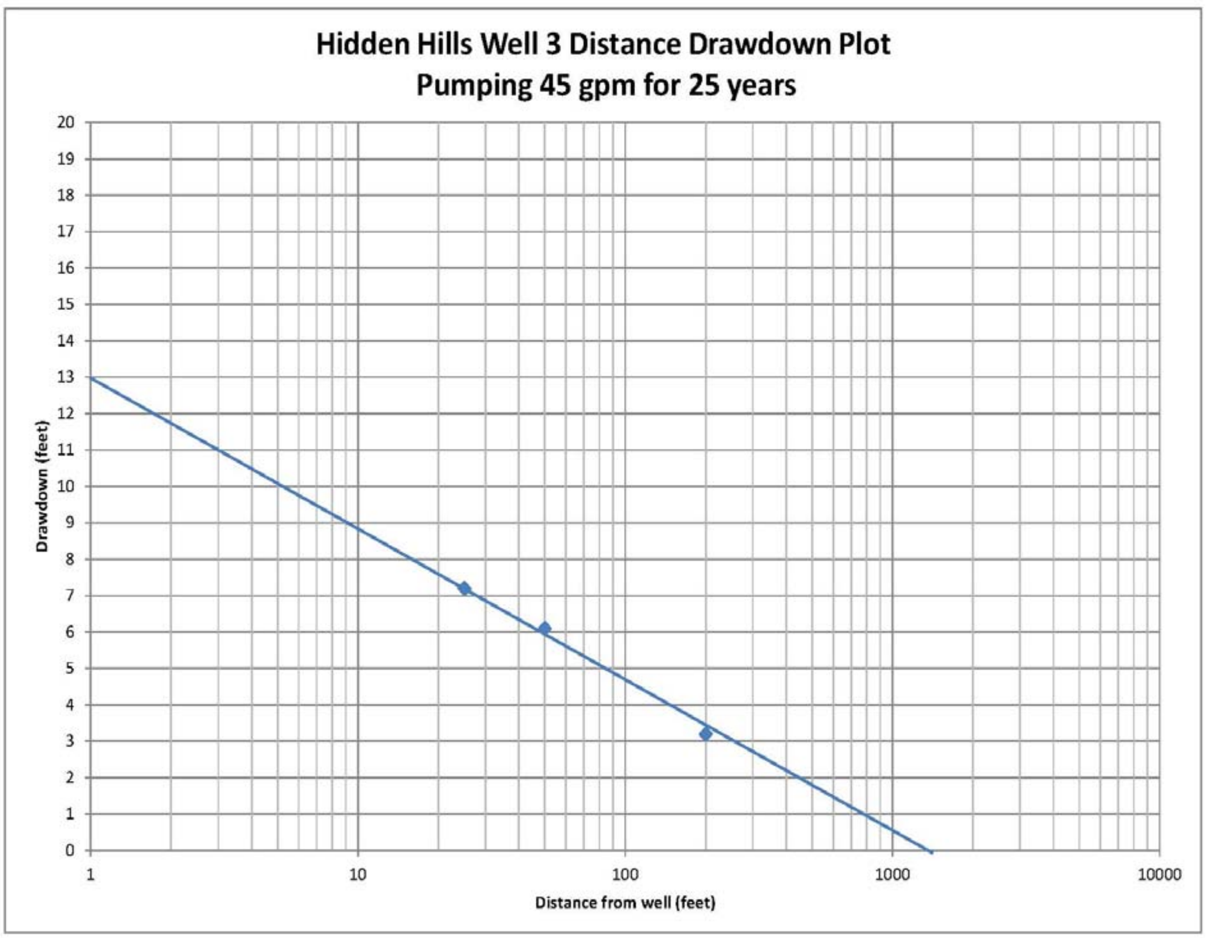
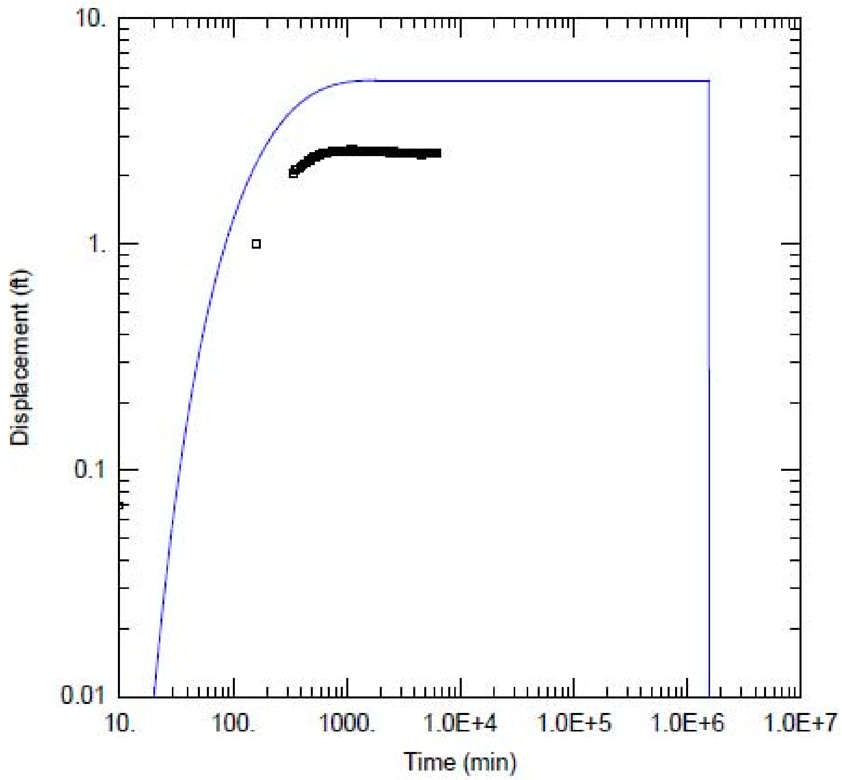


Figure 9. Drawdown vs. distance from Well #3 after 25 years pumping at 45 gpm with no recharge from regional flow.

Projection of Drawdown During the Construction Phase of the Project

The project is expected to require approximately 280 af/yr of water (equivalent to a total groundwater pumping rate of 180 gpm) during a 2- to 3-year construction phase. This water will be provided by two or more wells located onsite. We calculated the expected drawdown in the aquifer by using the aquifer properties and type curves for each monitoring well measured during the pumping test and shifting the type curves to reflect a pumping rate of 90 gpm per well for two pumping wells for a duration of 3 years. The analysis indicates that even pumping at the higher rate for 3 years will only create small increases in drawdown in the aquifer around the wells.

Figure 10 is a plot of the drawdown vs. time plot for MW-1, located 200 feet from the Orchard well after 3 years of pumping at 90 gpm. The measured drawdown values from the pumping test are also shown on the plot for comparison. The plot shows that the drawdown will increase by less than 3 feet to about 5.3 feet and stabilize within a few days of pumping.



WELL TEST ANALYSIS

Data Set: C:\Program Files\HydroSOLVE\AQTESOLV for Windows Pro 3.5\BSE MW1 construction.aqt
Date: 03/03/12 Time: 14:22:00

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
Orchard Well	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ MW1	200	0

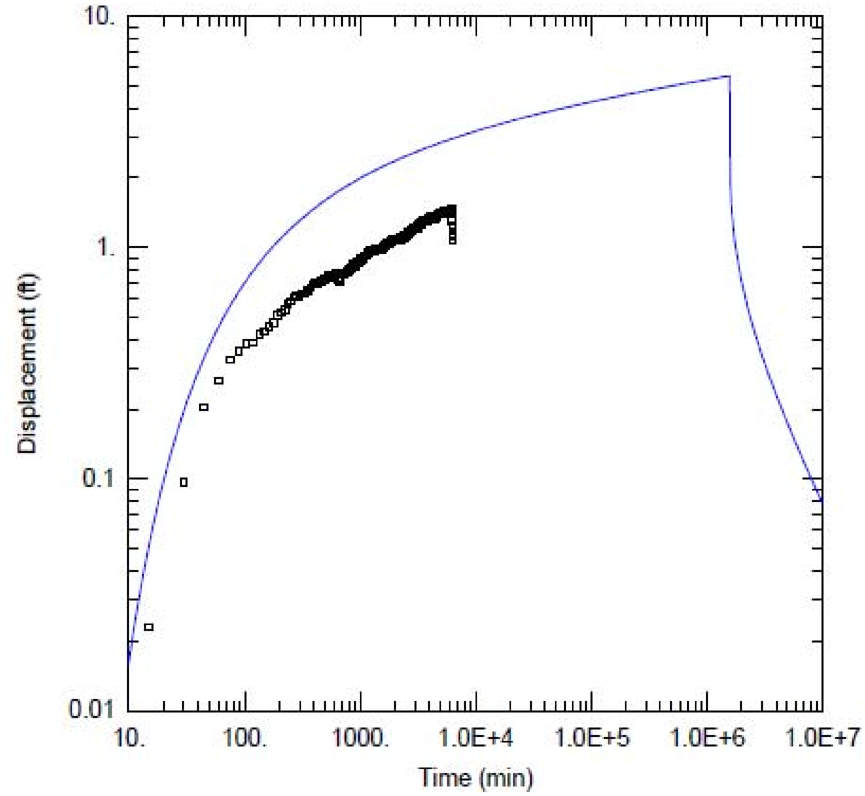
SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

T = 1634.7 gal/day/ft
S = 0.001431
r/B = 1.
Kz/Kr = 0.1
b = 1000. ft

Figure 10. Drawdown vs. time plot for MW-1, located 200 feet from the Orchard well after 3 years of pumping at 90 gpm.

Figure 11 is a plot of the drawdown vs. time plot for MW-3, located 200 feet from Well #3 after 3 years of pumping at 90 gpm. The measured drawdown values from the pumping test are also shown on the plot for comparison. The plot shows that the drawdown will increase by about 4 feet to about 5.6 feet of drawdown. The plot indicates that the water levels will not have stabilized, but as in the discussion of the projected water levels over the operational life of the project, we believe that the aquifer will reach steady state well before 3 years and stabilize before this level of drawdown is created.



WELL TEST ANALYSIS

Data Set: C:\Program Files\HydroSOLVE\AQTESOLV for Windows Pro 3.5\BSE MW3 construction.aqt
Date: 03/03/12 Time: 14:21:05

AQUIFER DATA

Saturated Thickness: 1000. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
Well 3	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ MW3	200	0

SOLUTION

Aquifer Model: Leaky Solution Method: Neuman-Witherspoon

T = 1.175E+4 gal/day/ft
r/B = 0.1
T' = 1.077E+4 gal/day/ft

S = 0.002805
ß = 0.1
S' = 0.001

Figure 11. Drawdown vs. time plot for MW-3, located 200 feet from Well #3 after 3 years of pumping at 90 gpm.

Summary

The pumping test provided reliable measurements of the aquifer properties at the project site. The duration of the test was long enough to measure the transmissivity, storage, leakance, and boundary conditions of the aquifer. The data indicates that the aquifer can sustainably supply the water needed to support the project for 25 years of operation and for the 3-year construction period. No significant interference with adjacent private wells is expected and no impacts on Stump Springs are anticipated.

The aquifer is not homogenous on the project site and the aquifer is more productive around Well #3 than around the Orchard well. At this time, it is anticipated that the planned production wells for the project will not be located at Well #3 or the Orchard well. Assuming that these two wells represent the typical range in variability in the aquifer, it will be possible to find well locations that have aquifer properties more similar to Well #3 than the Orchard well and are located farther from the neighboring private wells and Stump Springs. The data provided by the pumping test clearly indicate that the aquifer is capable of supporting the water needs of the project with negligible impact on neighboring wells or water-dependent vegetation.

While it is not possible to predict future development in the Pahrump Valley, the historic water level data provided by Nye County indicates that water levels west of the State Line Fault system have been relatively stable over the last 20 years. Barring unforeseen changes in the pumping pattern in the valley, it is unlikely that regional pumping will substantially impact the aquifer at the project site or substantially change the prediction of this analysis.

Appendix A
Long-Term Aquifer Performance Testing Plan

APPENDIX A

Cardno ENTRIX

Shaping the Future

Long-Term Aquifer Performance Testing Plan

Hidden Hills Solar Electric Generating System

Date: February 1, 2012

Prepared By:

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www.cardnoentrix.com

Prepared For:

BrightSource Energy
199 Harrison Street, Suite 2150
Oakland, CA 94612

Table of Contents

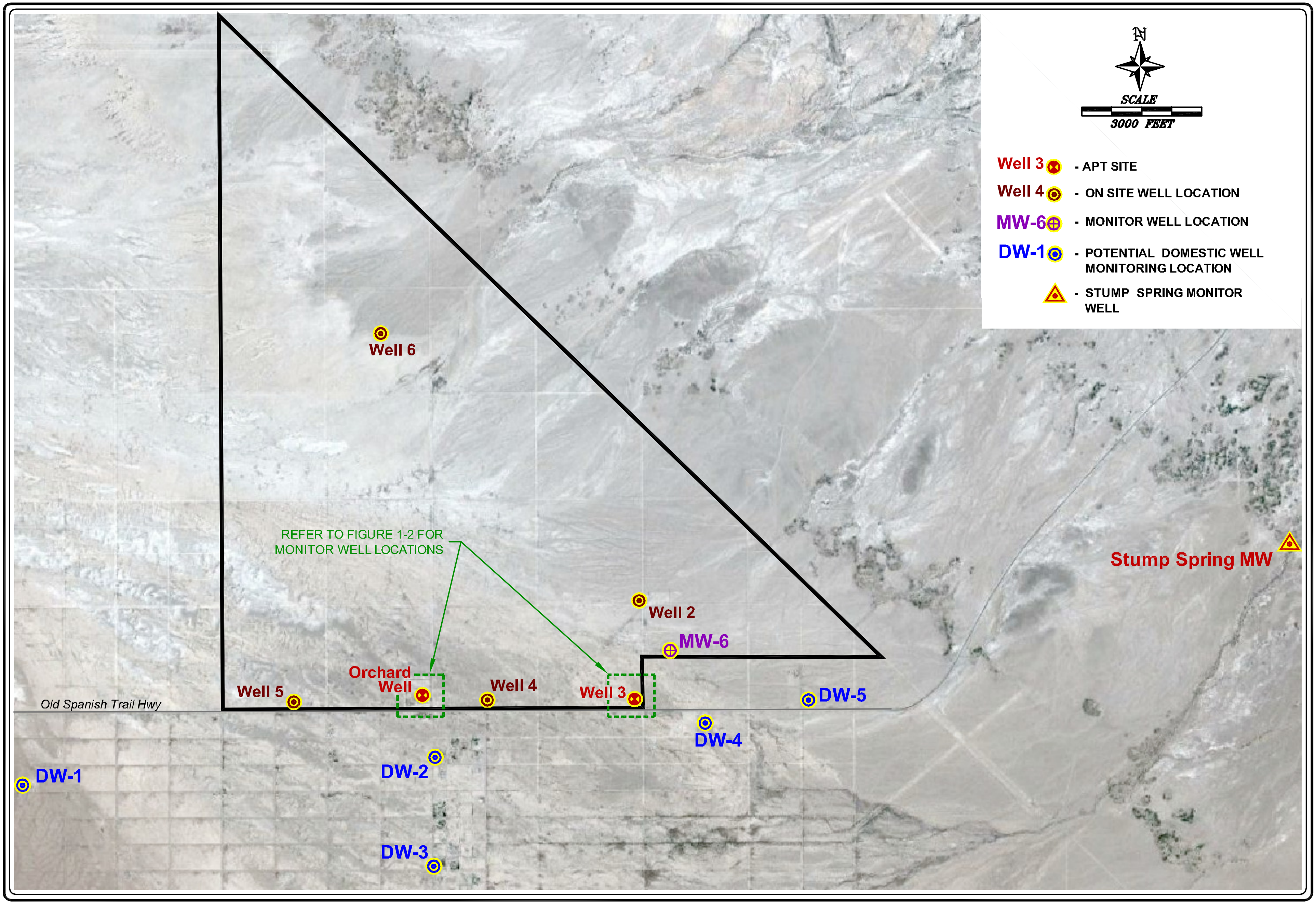
1.0 Background

Cardno ENTRIX will conduct a comprehensive aquifer performance test (APT) at the Hidden Hills Solar Electric Generating System site to determine the project area aquifer yield and potential effects associated with groundwater pumping. The APT data will be used to:

1) determine the project area aquifer hydraulic coefficients (i.e., transmissivity, storativity, and leakance),
2) assess the drawdown impacts to nearby users based on actual measured drawdown at selected locations,
3) assess the potential for drawdown impacts at Stump Spring,
4) determine anisotropy and potential presence of hydraulic barrier boundaries within the aquifer and,
5) assess the potential biological drawdown impacts from the project on groundwater dependent vegetation around the site.

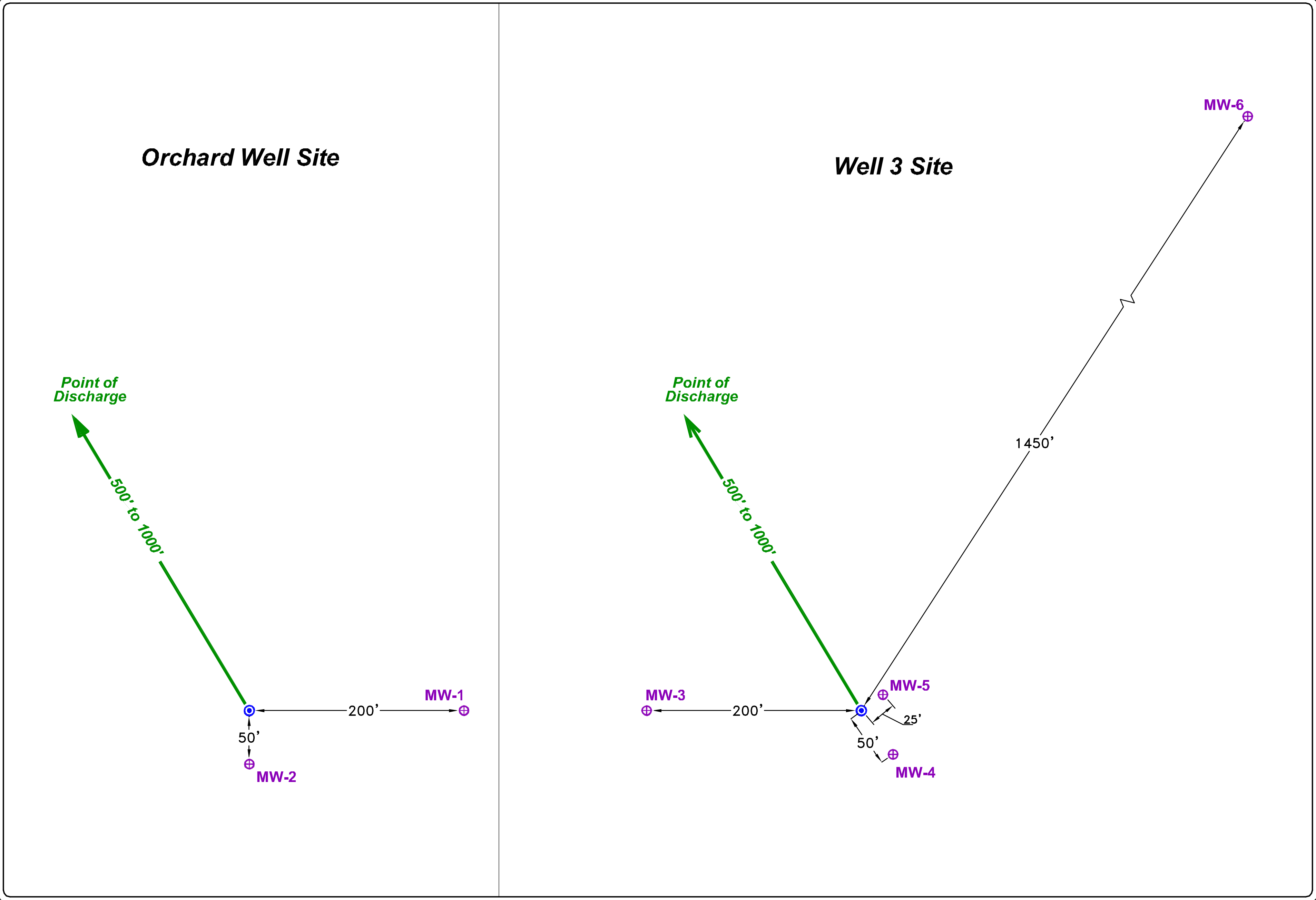
The projected water demand for the proposed project is approximately 140 acre-feet per year (AFY) to be provided from three wells located across the site. The APT is designed to simulate projected operations to the degree possible using existing on site wells. For the APT, two existing onsite wells will be used as pumping wells to replicate the proposed operational scenario. The plan is to use Well #3 and the Orchard well, located along Tecopa Highway (Figure 1-1). Although the existing wells that will be used for the proposed APT are not in the final locations where the production wells will ultimately be located, they are on the project site and will provide a sufficiently accurate determination of potential drawdown to understand potential effects of the project.

Six small-diameter monitoring wells will be installed near the pumping wells (Figure 1-2). Well installation permits will be obtained from Inyo County. Installing monitoring wells closer to the pumped wells will allow the collection of accurate measurements of the drawdown field around each well and thereby determination of the aquifer properties such as transmissivity, storage, and anisotropy. The well pumping closest to Stump Spring will have three wells drilled approximately 25, 50, and 200 feet from the pumping well, as well as a distant well approximately 1,400 to the northeast. The wells will be laid out as possible to fit on the site with nominal orientations of 120 degrees apart. The pumping well will have two monitoring wells located approximately 50 and 200 feet from the pumping well oriented approximately 90 degrees apart. The monitoring wells will be drilled to a similar depth of the pumping well and screened in a sand and gravel unit at the same depth or higher than the pumping interval of the adjacent pumping well. The nominal depth of the monitoring wells is assumed to be 150 to 200 feet. Cardno ENTRIX personnel will obtain the permits, oversee well construction and testing, collect lithologic and hydrogeologic data, and provide evaluation of site data and testing results. Dust control measures will be used to minimize dust generation during the phases of operations (primarily drilling activity) that could create dust.



Cardno ENTRIX	PROJECT NAME: BRIGHTSOURCE ENERGY HIDDEN HILLS	DWG. NUMBER: P3153001gs3
	PROJECT NUMBER: P3153001.00	DATE: 02/01/12

FIGURE 1–1. MAP SHOWING AQUIFER PERFORMANCE TEST WELLS AND ADJACENT MONITOR WELLS.



PROJECT NAME: BRIGHTSOURCE ENERGY HIDDEN HILLS	DWG. NUMBER: P3153001gs3
PROJECT NUMBER: P3153001.00	DATE: 02/01/12

Cardno ENTRIX

FIGURE 1–2. PROPOSED APT MONITOR WELL LOCATIONS.

2.0 Materials and Preparation for the APT

Cardno ENTRIX will coordinate the necessary site preparation and testing procedures. A licensed drilling contractor will provide/furnish the items listed below that are necessary to facilitate the completion of the APT.

- Furnish, install, and operate generators to power the pumps in the production wells.
- Provide throttling devices to adjust pumping rates as specified, and furnish and install a gate valve or equivalent on the discharge side of the pump to obtain the optimal discharge rate, shut off flow, and stop gravity drainage.
- Provide all necessary materials and personnel to ensure continuous operation of the pump for the duration of the test.
- Furnish and install an in-line flowmeter on each pump with a flow rate indicator and totalizer that has been calibrated within the last 90 days, and is capable of measuring discharge up to 200 gpm.
- Furnish and install all piping and hardware necessary to provide a leak-proof seal at the wellhead and along the discharge line to the point of discharge (POD).
- Furnish and install discharge line of sufficient capacity to convey the produced formation waters to the specified POD without reducing the flow below the target pumping rate.
- Install an access port on top of the production wellheads with a minimum inner diameter of 1-inch to permit installation of a 50-psi pressure transducer. The transducer must be able to reach within 10 feet of the top of the pump bowl. (Transducers will be provided for the project by Cardno ENTRIX).
- Furnish and install flow diffusers at the POD for each well to prevent erosion.
- Conduct dust control measures by deploying watering truck during dust generating components of the work.
- Demobilization

3.0 APT Set-Up and Execution

The constant rate APT will be performed by pumping two existing onsite wells simultaneously while monitoring pressure response data in the pumped wells, six monitoring wells, possibly three nearby domestic wells (if permission and viable well access are determined), and the monitoring well at Stump Spring (Figure 1-1). The monitoring well locations will be strategically selected to enable delineation of the extent of the cone of depression induced by each individual well.

The APT will be conducted at a combined constant pumping rate of approximately 90 gallons per minute (gpm) at the wells for 7 days and will be extended up to a maximum of 14 days or until steady state is reached. A minimum of 72 hours of background data will be collected before the test. Data loggers will be installed in the production wells, in the six monitoring wells located adjacent to the production wells, in the Stump Spring monitor well, and in the selected domestic wells. The data loggers will remain in the monitoring wells for a minimum of 72 hours after the completion of the test to monitor recovery of the water levels in the wells. Water level measurements at wells 4 and 5 will also be collected before, during and after the test.

Water samples from the well will be collected for laboratory analysis of major ions after approximately four hours of pumping and at the end of the APT to assess water quality. A summary of the water quality parameters to be evaluated are provided in Table 3-1 shown below.

Table 3-1 Selected Water Quality Parameters for Laboratory Testing

Calcium (Ca)	Hardness ($CaCo_3$)
Magnesium (Mg)	Iron (Fe)
Sodium (Na)	Manganese (Mn)
Potassium (K)	Arsenic (As)
Bicarbonate (HCO_3)	Mercury (Hg)
Carbonate (CO_3)	Selenium (Se)
Total Dissolved Solids	pH
Gross Alpha/Beta	Radium 226/228
Uranium	Oxygen-18/Deuterium
Sulfate (SO_4)	Pesticide Scan
Chloride (Cl)	Herbicide Scan
Nitrate as N	Volatile Organic Compound (VOC) Scan
CAM17 metals	

Water discharged from the pumped wells will be conveyed to a POD. The POD for each well will be selected at a significant distance from the well to avoid the recirculation of water, to avoid influence to the monitoring wells, and at a location to prevent offsite discharge of produced groundwater. The clay-rich sediments at the surface should aid in retarding recharge and will limit recirculation. The POD will be located approximately 500 feet to 1,000 feet from the pumped well. Water conveyed to the POD will be discharged through a diffuser device to spread the discharge in an effort to reduce ponding. In addition to discharging water to the POD, produced groundwater will be stored in water tankers which will then be used to control dust emissions onsite.

Cardno ENTRIX will provide Lahontan Regional Water Quality Control Board a description of the proposed testing with provisions for maintaining the water onsite and outline measures to avoid any offsite impacts in order to obtain their approval to conduct the test.

Cardno ENTRIX will execute the following specific requirements to facilitate the conductance of the APT and demobilization of selected equipment:

- Record 72 hours of background water-level readings from the site prior to initiating pumping.
- Collect water level monitoring data during the test.
- Collect water level monitoring data for approximately 72 hours after cessation of pumping, or until water-levels recover to pre-pumping conditions.
- Conduct and coordinate water quality sampling with laboratory.
- Oversee the removal of all equipment from the site and re-sealing of the wellheads at the production wells at the completion of the APT.
- Organize and deliver all data collected from each phase of testing to BrightSource Energy in Microsoft Excel format.

4.0 Analyses of Monitoring Data and Summary Report

Subsequent to the completion of the APT, monitoring data collected from each well will be analyzed to estimate transmissivity, storage coefficient, and leakance of the aquifer of interest. The drawdown data will be also used to determine anisotropy and the presence of “boundary effects” within the aquifer. The cone of depression will be compared to the location of Stump Spring and known groundwater dependent vegetation to evaluate the potential for pumping at the site to cause water level drawdown at the spring. Field data will be made available within seven days of completion of the test. The results will be provided in a letter report summarizing the testing procedures and data evaluation. The report will be completed within 30 days of completion of the test.

Cardno ENTRIX

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APPLICATION FOR CERTIFICATION FOR THE *HIDDEN HILLS SOLAR ELECTRIC GENERATING SYSTEM*

DOCKET NO. 11-AFC-2

PROOF OF SERVICE
(Revised 2/1/2012)

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DECLARATION OF SERVICE

I, John L. Carrier, declare that on March 8, 2012, I served and filed copies of the attached Hidden Hills SEGS Data Response , Set 2A-2 dated March 8, 2012. This document is accompanied by the most recent Proof of Service list, located on the web page for this project at: [www.energy.ca.gov/sitingcases/hiddenhills/index.html].

The document has been sent to the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit or Chief Counsel, as appropriate, in the following manner:

(*Check all that Apply*)

For service to all other parties:

_x___ Served electronically to all e-mail addresses on the Proof of Service list;

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docket@energy.state.ca.us

OR, if filing a Petition for Reconsideration of Decision or Order pursuant to Title 20, § 1720:

____ Served by delivering on this date one electronic copy by e-mail, and an original paper copy to the Chief Counsel at the following address, either personally, or for mailing with the U.S. Postal Service with first class postage thereon fully prepaid:

California Energy Commission
Michael J. Levy, Chief Counsel
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I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

John L. Carrier
CH2M Hill