DRAFT

Well Test Plan
JVR Energy Park
Jacumba Hot Springs, San Diego County, California

Lead Agency:

County of San Diego
Planning and Development Services
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NOVEMBER 2018

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TABLE OF CONTENTS

Section **Page No.**

APPENDICES

FIGURES

TABLES

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1 INTRODUCTION

1.1 Purpose of the Well Test Plan

This Well Test Plan was prepared on behalf of BayWa Renewable Energy by Dudek for submittal to the County of San Diego Planning and Development Services to satisfy groundwater resource investigation scoping requirements outlined in *Guidelines for Determining Significance and Report Format and Content Requirements – Groundwater Resources* (DPLU 2007), San Diego County Groundwater Ordinance (County of San Diego 2013), and Jacumba Valley Ranch Groundwater Scoping Letter dated January 30, 2018. The JVR Energy Park (Project) will use on-site groundwater as a source of water supply to meet the construction, and the operations and maintenance (O&M) water demands for the 691-acre Project, located on private land in Jacumba Hot Springs on the international border with Mexico in southeastern San Diego County, California (Figure 1).

The intent of this Well Test Plan is to establish methods and procedures for conducting two (2) proposed 24-hour constant rate aquifer tests on the existing on-site Well #2 and the Central Irrigation Well. This Well Test Plan also includes the analysis of the measured 24-hour constant rate aquifer test data. The 24-hour constant rate aquifer test and analysis will be used to measure hydraulic properties of the local aquifer in the immediate area of the wells, and to assess the ability of on-site groundwater wells to meet the water demands of the Project. In addition, groundwater dependent habitat identified on and near the Project site will be evaluated to determine potential impacts from groundwater withdrawal.

1.2 Background

An aquifer test was conducted for on-site Well #3 located approximately 4,400 feet north of Well #2 and 2,700 feet north of the Central Irrigation Well, by Geosyntec Consultants in 2012. Well #3 was tested for 72-hours at a rate of 350 gpm (gallons per minute) with a total draw down of 7.3 feet (Geosyntec 2012). The Project plans to use Well #3 for construction water. This Well Test Plan proposes to test Well #2 and the Central Irrigation Well to supply additional project construction and O&M water.

2 GEOLOGY AND HYDROGEOLOGY

The Project site is located in the eastern portion of the Peninsular Range geomorphic province, which is characterized by a series of northwest-oriented mountains ranges and fault systems. The geology of the project site consists of younger alluvial deposits underlain by older Tertiary-age Jacumba Volcanics and the Table Mountain Formation (Figure 2).

The Project site is within the California Department of Water Resource's (DWR) Bulletin 118 defined Jacumba Valley Groundwater Basin (DWR Basin No. 7-47) (DWR 2016). The Jacumba Valley Groundwater Basin (Basin) consists of two primary aquifer units. The upper alluvial aquifer unit reaches up to 150 feet in thickness and consists of Holocene-age gravels, sands, and clays (DWR 2004). In some areas, this aquifer unit is underlain by the Jacumba Volcanics that act as a semi-confining to confining unit to the lower aquifer. The lower aquifer consists of the Tertiary-age Table Mountain Formation described as medium- to coarse-grained sandstone and conglomerate, and may reach up to 600 feet in thickness (Swenson 1980). The Table Mountain Formation lies unconformably on top of crystalline basement (DWR 2004).

3 PROPOSED AQUIFER TEST

Two separate proposed aquifer tests using pumping wells Well #2 and the Central Irrigation Well will be conducted in accordance with Section 67.703.2 of the County of San Diego Groundwater Ordinance and the County's *Guidelines for Determining Significance and Report Format and Content Requirements – Groundwater Resources* (DPLU 2007). This Well Test Plan proposes to pump Well #2 and the Central Irrigation Well for 24 hours at a constant rate to provide estimated sustainable production rate at each well and data on the capacity of the alluvial aquifer. Before the 24-hour constant rate aquifer testing, a step-rate pumping test will be performed to determine the pumping rate for the 24-hour constant rate aquifer test.

3.1 Proposed Pumping and Monitoring Wells

There are nine (9) water wells located on the Project site. The following section outlines the proposed wells to be used as production test wells and monitoring wells during testing.

3.1.1 Proposed Pumping Wells

Two (2) proposed on-site pumping wells, Well #2 and the Central Irrigation Well are proposed to be tested (Figure 3). Both wells were previously used as irrigation water supply wells and have not been used for several years. Pumping wells will be equipped with a water level pressure transducer. Manual measurements will be recorded periodically during the 24-hour constant rate aquifer test to confirm transducer accuracy.

Well #2

Well #2 is located on the Project site north of Old Highway 80. Well #2 is currently nonoperational and is not equipped with a motor, pump, or power. According to well completion report No. 1089727 (Attachment A), Well #2 was constructed in 2007 to a total depth of 114 feet by Fain Drilling and Pump (Fain). The well casing is 13.5-inch steel. The well screen is wire wrap from 73 to 113 feet. Lithology encountered during drilling included clay, fine-grained sand, and medium

to course grained sand with some boulders. Depth to static groundwater level after well completion was 40 feet below top of casing (btoc) measured on July 23, 2007. The well yield after completion was 2,000 gpm measured by Fain after six hours of airlifting.

On October 23, 2018, a downhole video survey was performed at Well #2 by Victory Well Surveys (Attachment B). Wire wrap screen was measured from 77.2 feet btoc to the bottom of the well casing at 114 feet btoc. The static groundwater level was recorded at 57.57 feet btoc.

The pumping rate for the 24-hour constant rate aquifer test is expected to be between 150-350 gpm. This rate is based on aquifer test of nearby wells. Well #3, located approximately 4,400 feet north of Well #2, was tested in 2012 for 72-hours at a production rate of 350 gpm (Geosyntec 2012). The Highland Center well, located approximately 1,850 feet west of Well #2, is owned and operated by the Jacumba Community Services District (JCSD). The Highland Center Well was tested in October 2016 for 24-hours at a production rate of 174 gpm (Dudek 2016). The final pumping rate for the 24-hour constant rate aquifer test will be determined based on the results of the step-rate pump test.

Central Irrigation Well

The Central Irrigation Well is located on the Project site approximately 1,720 feet north of Old Highway 80. The Central Irrigation Well is currently nonoperational. Sixty feet of 6-inch drop pipe and a submersible pump was removed from the well by Fain on October 22, 2018. No active power connection was supplied to the motor prior to removal. The pumping equipment did not appear to be in working condition and was severely corroded.

No well completion report was identified for the Central Irrigation Well. Well completion information was obtained from a down-hole video survey conducted by Victory Well Surveys on October 23, 2018 (Attachment B). At the land surface, the well is constructed with 13.25-inch steel casing and a 10.13-inch PVC liner. The well is screened with vertical slots from 13.6 feet btoc to the bottom of the liner at 100.8 feet btoc. The downhole video survey revealed sections of the PVC liner that were caving in. Caving of the PVC liner limits the integrity of the well for long-term use, but the well could potentially be used as for short-term Project use.

Due to the current well condition, the pumping rate for the Central Irrigation Well is expected to be a lower rate than the rate for Well #2. The expected pumping rate is 100 – 200 gpm. The final pumping rate for the 24-hour constant rate aquifer test will be determined based on the results of the step-rate pump test.

On-site well completion information and proposed well use is provided in Table 1.

Table 1
On-site and Off-site Groundwater Wells

Existing On-site Well	Well Depth (feet btoc)	Well Screen Interval (feet btoc)	Depth to Groundwater (feet btoc)[a]	Well Production Rate (gpm)	Used as Monitoring Well for Well #2 Test	Used as Monitoring Well for the Central Irrigation Well Test
On-site Wells						
Daley Well	150	51.3 – 150	36.94	Unknown		
Well #1	Unknown	Unknown	59.99	Unknown	X	
Well #2	113.9	77.2 – 113.9	57.56	2,000 (Based on well log)		X
Well #3	100	60 - 100	39.89	350 (Based on 2012 pump test)		X
Unnamed Well (Well #2M)	Unknown	Unknown	Unknown	Unknown	X	
Central Irrigation Monitoring Well	100.8	13.6 – 100.8	46.56	Unknown		
Mid Valley Well	90.7	51.3 – 90.7	48.72	Unknown	X	X
Southwest Irrigation Well	Unknown	Unknown	Unknown	Unknown		
Carrizo Well	Unknown	Unknown	80.22	Unknown		
Off-site Wells						
Highland Center Well	125	75-115	NM	174 (Based on 2016 test)	X	

Notes:
a. Depth to water was measured on October 23, 2018.
btoc = below top of casing
gpm = gallons per minute
NM = Not Measured

3.1.2 Proposed Monitoring Wells

All monitoring wells are decommissioned production wells. Monitoring wells will be equipped with a water level pressure transducer. Manual measurements will be recorded periodically during the 24-hour constant rate aquifer test to confirm transducer accuracy. If one or more wells are deemed unfit for monitoring, additional wells may be included as monitoring wells. The following

section describes the location of the proposed monitoring wells used for each 24-hour constant rate aquifer test.

Well #2 Monitoring Wells

Four (4) wells will be used as monitoring wells during the 24-hour constant rate aquifer test for Well #2. Monitoring wells include: (1) a previously unnamed well (Well #2M) located 20 feet west of Well #2; (2) Well #1 located approximately 300 feet southwest of Well #2 across Old Highway 80; (3) the Mid Valley Well located approximately 1,300 feet north of Well #2; and (4) Highland Center Well located 1,980 feet west of Well #2.

The Central Irrigation Well Monitoring Wells

Three (3) wells will be used as monitoring wells during the aquifer test for the Central Irrigation Well. Monitoring wells include: (1) the Mid Valley Well located approximately 415 feet southeast of the Central Irrigation Well; (2) Well # 2 located approximately 1,700 feet south of the Central Irrigation Well; and (3) Well #3 located approximately 2,700 feet north of the Central Irrigation Well.

3.2 Well Test Procedures

Prior to any aquifer testing performed at the Project site, a water level pressure transducer will be installed in the well casing at each identified monitoring well and the pumping well. Before conducting the step-rate pump test and 24-hour constant rate aquifer test, groundwater levels at the production well will be recorded for a period of at least seven days to identify long-term trends. In addition, barometric pressure will be recorded throughout the period of groundwater level measurements.

A temporary submersible pump and motor will be installed to a sufficient depth to allow for constant rate pumping for 24 hours. A step-rate pumping test of up to 12-hours with up to four different steps/pumping rates of equivalent duration will be conducted to establish the optimal pumping rate for the 24-hour constant rate test.

During the 24-hour constant rate aquifer test, the discharge pipeline will extend to a minimum of 500 feet away from the pumping wells and will be placed outside any surface water drainage. Water will be dispersed via sprinklers, as-needed, to enhance evaporation during the tests and avoid any discharge water from flowing into a downstream surface water body or drainage course. The well pump valving, flowmeter, and groundwater level monitoring equipment will be tested at least 24 hours prior to the start of the tests in accordance with County guidelines.

Flow rate will be monitored using an in-line instantaneous flow meter with totalizer, and readings will be recorded at the minimum of the frequencies outlined in Table 2 during each well test per County guidelines. Flow rates will be measured according to Table 2 while personnel are present on the Project site during the tests. Field personnel will monitor flow rates and make adjustments as necessary to maintain the desired constant flow rate throughout the duration of the tests. A check valve will be installed in the discharge line to avoid backflow of water into the well when the pump is shut off.

Table 2
Groundwater Level and Flow Rate Monitoring Frequency

Time Since Pumping Started	Monitoring Frequency
0 to 10 minutes	30 seconds
>10 to 30 minutes	2 minutes
>30 minutes to 2 hours	10 minutes
>2 hours to 12 hours	30 minutes
>12 to 24 hours	1 hour

Recovery will be monitored in all wells until groundwater levels have recovered back to static conditions or a minimum of 72 hours. Water level transducers will be left in the pumping well and observation wells for a period of at least seven days beyond the recovery period. Manual groundwater level measurements will be recorded at the start of the test, periodically over the test interval, and during recovery after pumping ceases in order to confirm the accuracy of the pressure transducer measurements.

4 PROPOSED WELL TEST ANALYSIS

4.1 Aquifer Hydraulic Properties Analysis

Aquifer transmissivity (the rate at which water flows through a vertical strip of the aquifer 1 foot wide and extending through the full saturated thickness, under a hydraulic gradient of 1 or 100 percent) will be estimated using the Copper-Jacob approximation to the Theis equation (Cooper-Jacob 1946) as follows:

$$T = \frac{2.303\ Q}{4\ \pi\ \Delta s}$$

Where:

T = transmissivity (feet^2/day) [multiply by 7.48 to get units of gpd/ft]
Q = average pumping rate (feet^2/day) [multiply GPM by 193]
π = pi (3.14)
ΔS = difference in drawdown over one log cycle (feet)

The aquifer coefficient of storage (also called storativity) is the volume of water released from storage per unit decline in hydraulic head in the aquifer per unit area of the aquifer. Due to well loses and inefficiency of the pumping well, an observation well is required to calculate the coefficient of storage. The coefficient of storage from the aquifer testing at each pumping well will be estimated using the Copper-Jacob approximation to the Theis equation (Cooper-Jacob 1946) as follows:

$$S = 2.25Tt_o/r^2$$

Where:

S = Coefficient of Storage (dimensionless)
T = transmissivity (feet^2/day)
t_o = intercept with x-axis, time (days)
r = distance to observation well (feet)

An estimate of groundwater drawdown at the nearest residential well and groundwater dependent habitat induced by Project pumping at 1 year will be estimated using the Cooper-Jacobs approximation of the Theis Non-Equilibrium Flow Equation (USGS 1962):

$$s = \frac{264\,Q}{T} \quad \log_{10}\frac{0.3\,Tt}{r^2S}$$

Where:

s = predicted drawdown (feet)
Q = average pumping rate (GPM)
T = Transmissivity (gpd/ft)
t = time (days)
r = distance from pumping well (feet)
S = coefficient of storage (dimensionless)

Based on the actual results of the drawdown data collected during the 24-hour constant rate aquifer tests, the use of additional analysis methods will be evaluated, as appropriate, in consultation with the County Groundwater Geologist.

4.2 Groundwater Dependent Habitat Analysis

Potentially occurring groundwater dependent habitat on and in the vicinity of the Project site is depicted in Figure 4. The County's Guideline 4.2.C from the Biological Guidelines for Determining Significance have the following threshold for determining a significant impact to riparian habitat or a sensitive natural community: "*The project would draw down the groundwater*

table to the detriment of groundwater-dependent habitat, typically a drop of 3 feet or more from historical low groundwater levels."

Potential groundwater dependent habitat within the Project site include grasslands, vernal pools, meadows, other herbs, and the riparian and bottomland habitat. Additionally within the Project site are groundwater dependent vegetation and wetlands identified by the DWR's as Natural Communities Commonly Associated with Groundwater (NCCAG). These potential groundwater dependent habitats are within a 0.5-mile radius of both proposed pumping wells. Projected drawdown derived from the results of the 24-hour constant rate aquifer test will be used to assess potential impacts to groundwater dependent habitat due to groundwater pumping.

5 REFERENCES

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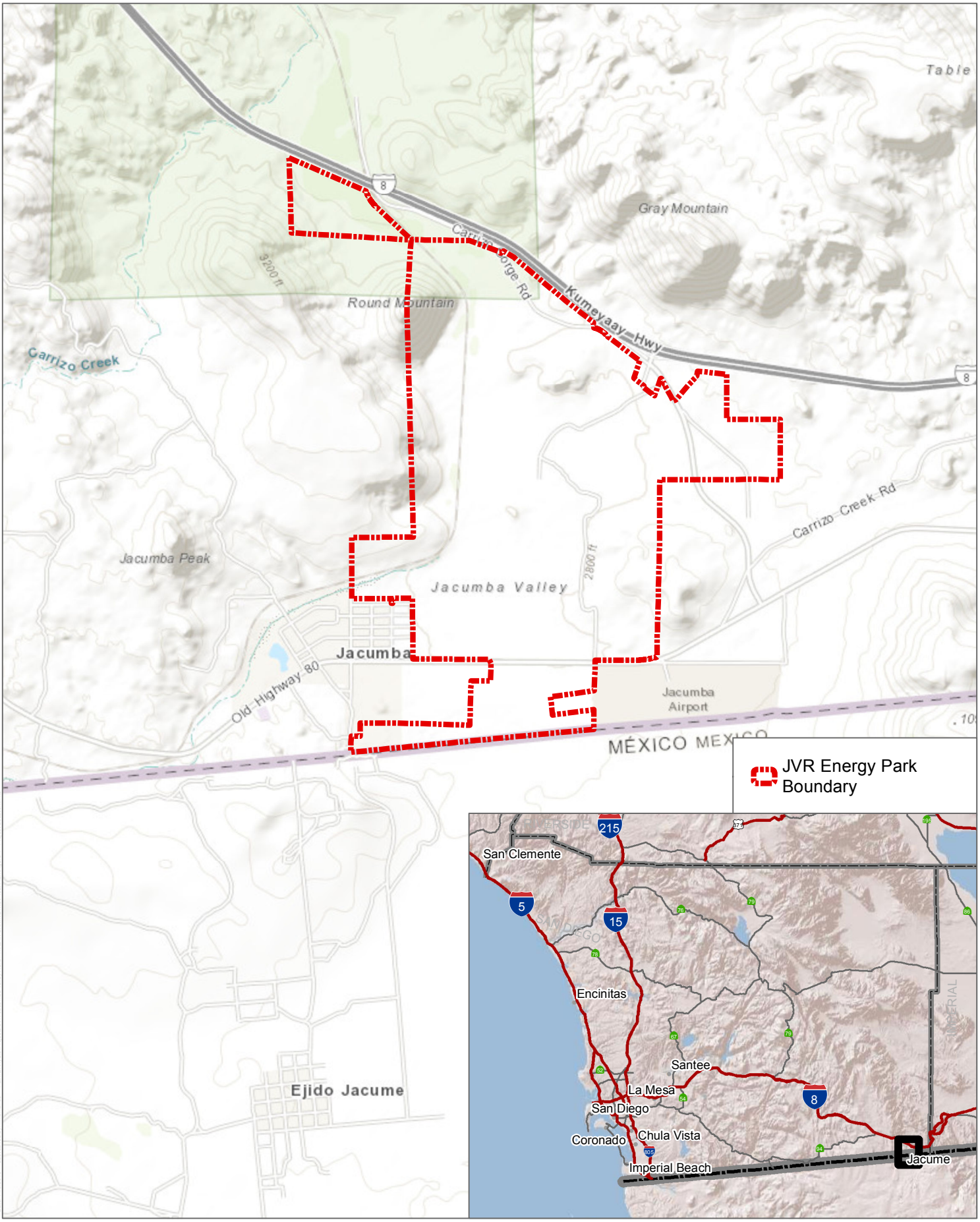

SOURCE: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

DUDEK

0 1,500 3,000 Feet

FIGURE 1

Project Location

Well Test Plan - JVR Energy Park

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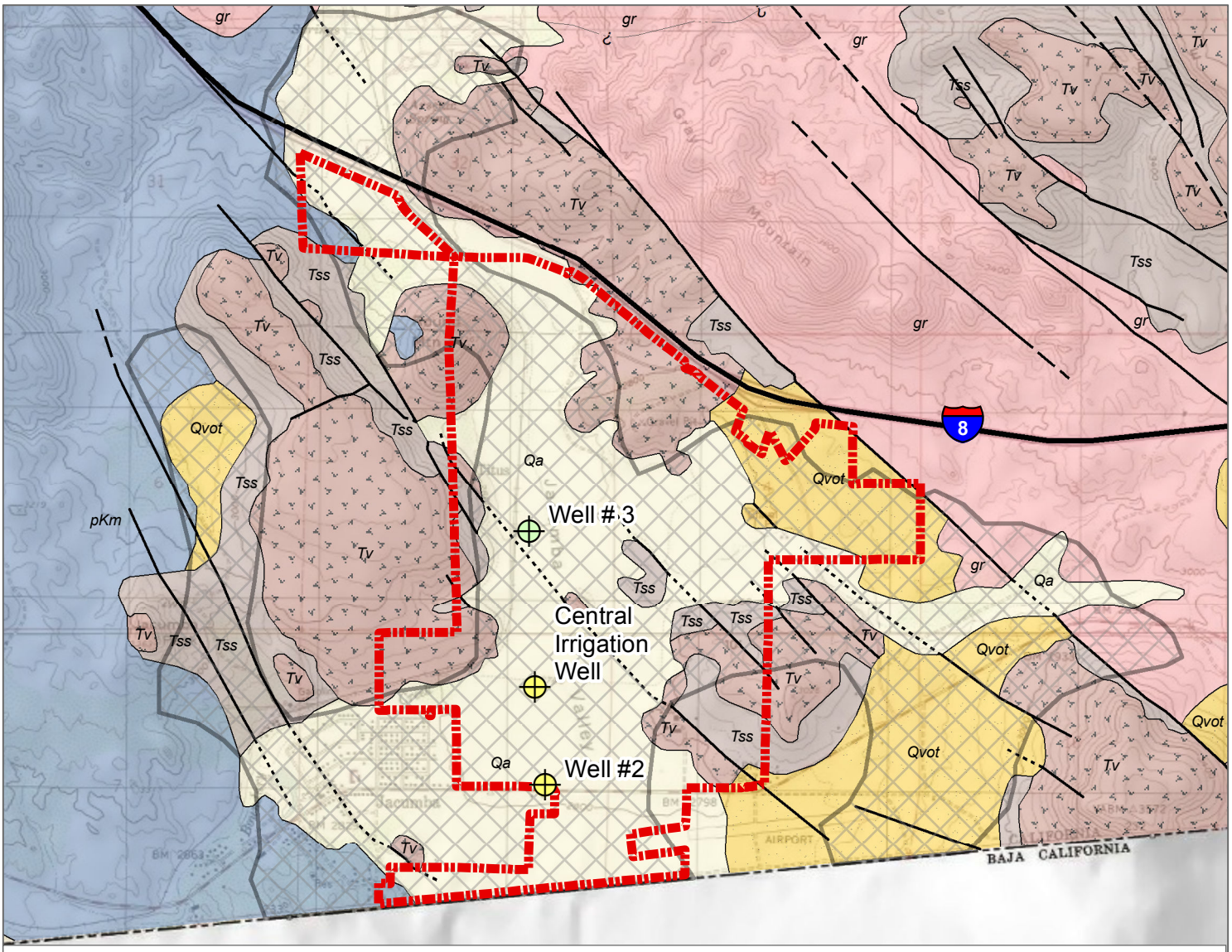

JVR Energy Park Boundary

Jacumba Valley Groundwater Basin (Bulletin-118)

Aquifer Test Wells

Proposed 24-hour Constant Rate Aquifer Test Wells

Aquifer Tested Well

Faults and Geologic Contacts (CGS 2012)

Faults and Geologic Contacts (CGS 2012)

contact, identity and existence certain, location accurate

contact, identity and existence certain, location approximate

reference contact, identity and existence certain, location concealed

reference contact, identity or existence questionable, location accurate

fault, identity and existence certain, location accurate

fault, identity and existence certain, location approximate

fault, identity and existence certain, location concealed

fault, identity and existence certain, location inferred

Geologic Units (CGS 2012)

Late Holocene (Surficial Deposits)

Qa, Alluvial Valley Deposits

Middle to Early Pleistocene

Qvot, Very Old Terrace Deposits

Tertiary Units (Bedrock)

Tss, Coarse-Grained Tertiary Age Formations

Tv, Tertiary Age Formations of Volcanic Origin

Mesozoic and Older Units (Bedrock)

Kss, Coarse-Grained Cretaceous age Formations of Sedimentary Origin

pKm, Cretaceous and Pre-Cretaceous Metamorphic Formations of Sedimentary and Volcanic Origin

gr, Granitic and Other Intrusive Crystalline Rocks

SOURCE: California Geological Survey 2012; Bulletin 118 2004.

DUDEK

0 1,375 2,750 Feet

FIGURE 2

Geologic Map

Well Test Plan - JVR Energy Park

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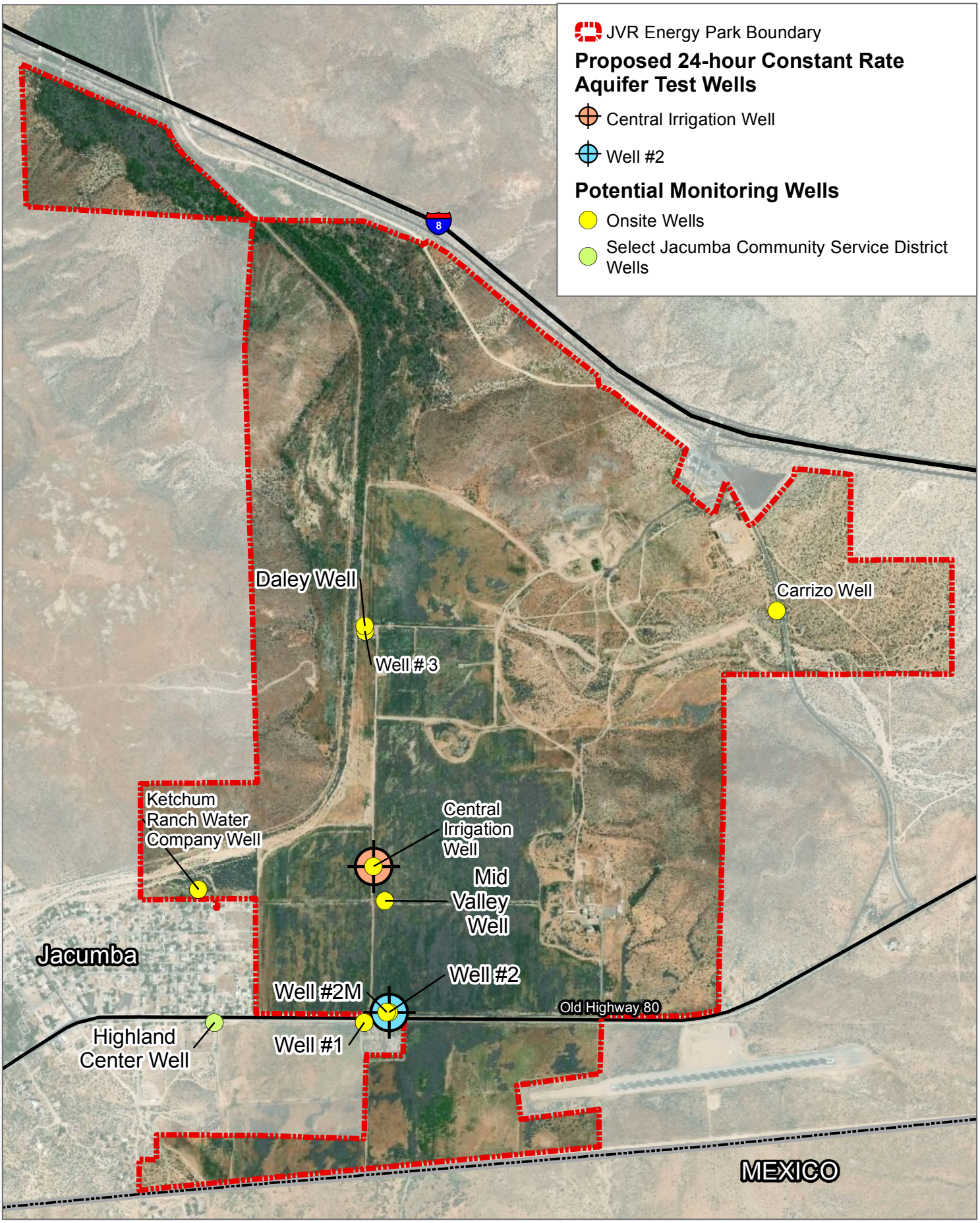

SOURCE: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

DUDEK

0 1,000 2,000 Feet

FIGURE 3

Well Locations

Well Test Plan - JVR Energy Park

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JVR Energy Park Boundary

DWR Bulletin 118 Jacumba Valley Groundwater Basin 7-047

Proposed 24-hour Constant Rate Aquifer Test Wells

Well #2

Central Irrigation Well

Natural Communities Commonly Associated with Groundwater (NCCAG)

Vegetation

Wetlands

Potential Groundwater Dependent Vegetation (SanGIS 2018)

Grasslands, Vernal Pools, Meadows, and Other Herbs

Riparian and Bottomland Habitat

Potential Groundwater-Dependent Habitat

Central Irrigation Well

0.5 Mile

Well #2

0.5 Mile

Jacumba

Old Highway 80

MEXICO

8

SOURCE: California Department of Water Resources California Department of Fish and Wildlife The Nature Conservancy, California; SANGIS 2018.

DUDEK

0 1,050 2,100 Feet

FIGURE 4

Potential Groundwater-Dependent Vegetation

Well Test Plan - JVR Energy Park

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APPENDIX A
Well Completion Report for Well #2

ORIGINAL
File with DWR

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet
No. 1089727

DWR USE ONLY — DO NOT FILL IN
STATE WELL NO./STATION NO.
LATITUDE LONGITUDE
APN/TRS/OTHER

Page 1 of 1
Owner's Well No. One - 2007
Date Work Began 7/18/07, Ended 7/23/07
Local Permit Agency DEH
Permit No. LWEL 18415 Permit Date 7/13/07

GEOLOGIC LOG

ORIENTATION (✓) X VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)
DRILLING METHOD Rotary FLUID Gel

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*
		ALLUVIAL FILL AS FOLLOWS:
0	9	Sand, fine grained - brown color
9	24	Clay - Dark color
24	70	Sand, fine grained
70	113	Sand, medium to coarse grained with some boulders

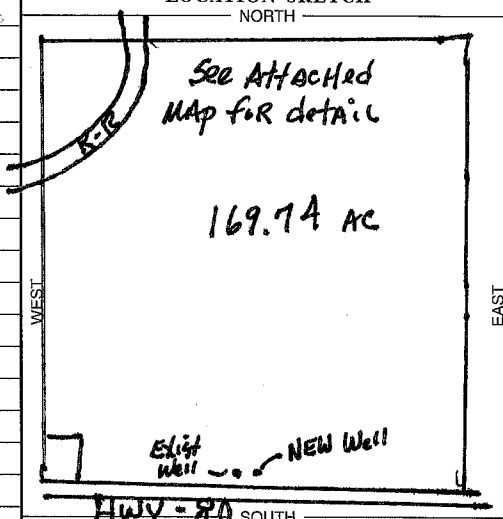
TOTAL DEPTH OF BORING 113 (Feet)
TOTAL DEPTH OF COMPLETED WELL 114 (Feet)

WELL OWNER

WELL LOCATION

Address Old Hwy 80
City Jacumba
County San Diego
APN Book 660 Page 150 Parcel 18
Township 18 S Range 8 E Section 8
Lat ___ DEG. ___ MIN. ___ SEC. N
Long ___ DEG. ___ MIN. ___ SEC. W

LOCATION SKETCH



*Illustrate or Describe Distance of Well from Roads, Buildings, Fences, Rivers, etc. and attach a map. Use additional paper if necessary. **PLEASE BE ACCURATE & COMPLETE.***

ACTIVITY (✓)

X NEW WELL
MODIFICATION/REPAIR
___ Deepen
___ Other (Specify)
___ DESTROY *(Describe Procedures and Materials Under "GEOLOGIC LOG")*

USES (✓)

WATER SUPPLY
___ Domestic ___ Public
X Irrigation ___ Industrial
MONITORING ___
TEST WELL ___
CATHODIC PROTECTION ___
HEAT EXCHANGE ___
DIRECT PUSH ___
INJECTION ___
VAPOR EXTRACTION ___
SPARGING ___
REMEDIATION ___
OTHER (SPECIFY) ___

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER 50+ (Ft.) BELOW SURFACE
DEPTH OF STATIC WATER LEVEL 40 (Ft.) & DATE MEASURED 7/23/07
ESTIMATED YIELD * 2000 (GPM) & TEST TYPE airlift
TEST LENGTH 6 (Hrs.) TOTAL DRAWDOWN 60 (Ft.)
** May not be representative of a well's long-term yield.*

CASING (S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CON-DUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	20	32	X				Steel	23.5	.250	
0	73	24	X				Steel	13.5	.250	
73	113	24		x			Steel S.S. 304	13.5	.250	.080

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CE-MENT (✓)	BEN-TONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	20	X			
20	113		pea	gravel	5/16x7

ATTACHMENTS (✓)

___ Geologic Log
X Well Construction Diagram
___ Geophysical Log(s)
___ Soil/Water Chemical Analyses
✓ Other Site Map

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.

NAME FAIN DRILLING & PUMP CO INC (PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
ADDRESS 12029 Old Castle Rd. Valley Center, Ca 92082 CITY STATE ZIP
Signed Joe R. Fain C-57 LICENSED WATER WELL CONTRACTOR
DATE SIGNED 7-30-07
C-57 LICENSE NUMBER 328287

DWR 188 REV. 05-03
IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM
OSP 03 78836

APPENDIX B
Down-Hole Video Survey for the Well #2 and the Central Irrigation Well

VIDEO REPORT

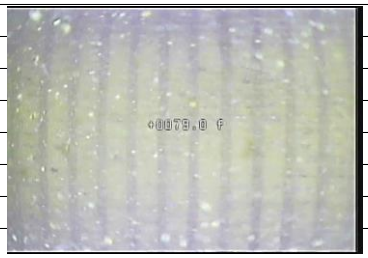
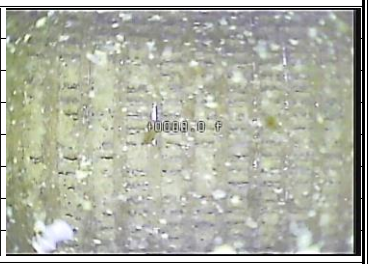
Company:	Dudek	**Date:**	October 23, 2018
Well Name:	Well #2	**Run Number:**	One
Location:	Jacumba Valley Ranch	**Job Number:**	001530
		Depth:	113.9 ft
City:	Jacumba Hot Springs	**Water Level:**	57.8 ft **Oil?** No
State:	CA	**Operator:**	LaPorte **Truck:** Two
Measured		**Tool Zero:**	Side View Lens
From:	Top of Casing (17" above Ground Level)	**Reason for Video:**	General Inspection

Depth	Video Findings
0.0 ft	Begin recording at top of casing
9.7-11 ft	Appears to be vertical scratch on casing
42.5 ft	Scale evident
57.8 ft	Static water level
63.3 ft	Heavy scale
77.2 ft	Top of perforations
	Appears mostly plugged
85.0 ft	Perforations less plugged
113.9 ft	Soft fill material in well
	End survey

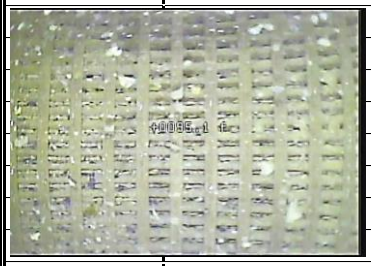
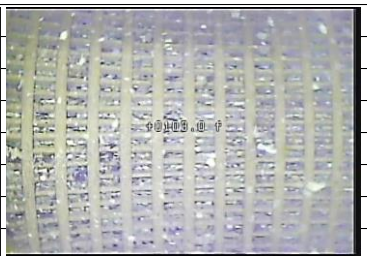
Casing Size:	Depth
13.50 in	0.0 ft to T.D.
I.D.	
Perforation:	
Wire Wrap	77.2 ft to N/A
Screen	

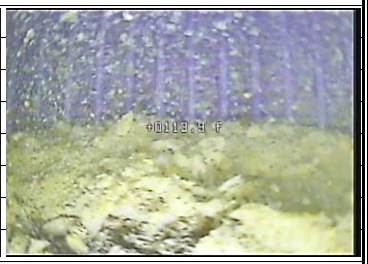
63.3 ft **77.2 ft** **79.0 ft** **88.0 ft**



95.1 ft **103.0 ft** **113.0 ft** **113.9 ft**



Client Notes:

Operator Notes: **Depth is referenced at side view lens. Bottom lens is 5" below side view lens.**

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VIDEO REPORT

Company:	Dudek	**Date:**	October 23, 2018
Well Name:	Central Irrigation Well	**Run Number:**	One
Location:	Jacumba Valley Ranch	**Job Number:**	001530
		Depth:	100.8 ft
City:	Jacumba Hot Springs	**Water Level:**	46.7 ft **Oil?** No
State:	CA	**Operator:**	LaPorte **Truck:** Two
Measured		**Tool Zero:**	Side View Lens
From:	Top of Steel Casing (27" above Ground Level)	**Reason for Video:**	General Inspection

Depth	Video Findings
0.0 ft	Begin recording at top of steel casing
0.4 ft	Top of PVC
13.6 ft	Top of perforations
34.0 ft	Increase material on PVC
43.0 ft	PVC appears pressed in. Out of round.
46.7 ft	Static water level
	Perforations appear mostly open
47.0 ft	Water becomes cloudy
49.0 ft	Water clears. Well appears round
54.8 ft	Roots entering through perforations
59.0 ft	Perforations become more plugged
64.0 ft	Nodules evident
68.5 ft	Perforation appears pressed in
70.3 ft	Perforation appears pressed in
76.0 ft	Water becomes partially cloudy
100.8 ft	Soft fill material in well
	End Survey

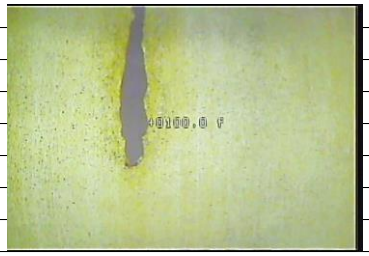
Casing / Perforation Information		
Casing Size:	**Depth**	
13.25 in	0.0 ft to	N/A
I.D. Steel		
10.13 in	0.5 ft to	T.D.
I.D. PVC		
Perforation:		
Vertical Slots	13.6 ft to	N/A

44.0 ft **54.9 ft** **60.0 ft** **67.5 ft**




80.0 ft **97.0 ft** **100.0 ft** **100.8 ft**



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