# Final Report Hydrogeologic Investigation of Camp Cady Wildlife Area Newberry Springs, CA

January 2013

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#### 1 INTRODUCTION

#### 1.1 Background

Camp Cady Wildlife Area (Camp Cady) is a 1,866-acre protected wildlife area located 20 miles east of Barstow in San Bernardino County (**Figure 1**). Situated on a former military post established in 1860 on the Old Government Road to Fort Mojave, Camp Cady lies along one of the few reaches of the Mojave River where perennial flows have occurred. These perennial flows (and local shallow groundwater) have historically supported riparian vegetation, including native cottonwood and willow trees, screwbean mesquite, saltgrass, and saltbush, vital to the survival of many desert wildlife species.

In 1979, the California Department of Fish and Game (CDFG) purchased most of the land comprising Camp Cady to protect, preserve, and enhance its unique ecology (additional property west of Harvard Road was purchased in 2001). Over the past 30 years, declining groundwater levels have threatened native riparian habitat at Camp Cady. Historical aerial photographs reveal a dramatic transition from dense riparian stands to increasingly barren swaths and the replacement of diverse native communities by invasive tamarisk (salt cedar) starting in the early 1980s. Perennial flows are reported to have ceased by the mid-1980s. These changes have been generally attributed to local groundwater level declines. However, the timing, location, and degree of riparian habitat loss points to a dynamic and complex relationship between the biological, surface water, and groundwater systems at Camp Cady and the impacts from basin-wide land use changes, recent flooding, and wildfires.

CDFG has engaged in numerous activities to protect and enhance native riparian habitat at Camp Cady, including the removal of salt cedar in the main channel, re-establishment of native vegetation, and operation of two onsite ponds for habitat restoration near the main Ranch house. CDFG has commissioned this study to document how varying climatic, hydrogeologic, and land use conditions have impacted native riparian habitat over time and to evaluate the feasibility of restoring lost habitat in the main channel through an engineered solution involving re-planting and irrigation with local groundwater. This study is being conducted in cooperation with the Mojave Water Agency (MWA) and is funded through the Biological Resources Trust Fund established by the 1996 Mojave River Basin Adjudication.

#### 1.2 Institutional Background

As mandated in the Final Judgment on the Mojave Basin Area Adjudication (Judgment) (Mojave Basin Area Judgment, 1996), MWA was appointed as the Mojave Basin Area Watermaster (Watermaster) and tasked with the responsibility to secure and deliver supplemental water to ensure sustainable and equitable use of water supplies in the Basin. Additionally, MWA is required by the Judgment to collect a Biological Resources Assessment, establish a Biological Resources Trust Fund, and make the Trust Fund money available to the CDFG for the benefit of the riparian habitat areas and species identified in the Judgment. The Trust Fund is derived from a levy of \$0.50 (in 1993 dollars) per acre-foot (AF) of groundwater pumped. The Biological Resources Assessment is not levied when the Biological Trust Fund

exceeds \$1,000,000 (CDFG, 2004). Exhibit H of the Judgment defines the protected riparian areas to be maintained in the Mojave River floodplain, which includes the Camp Cady Wildlife Area.

# 1.3 Hydrogeologic Setting

Camp Cady is located in the lower portion of the Mojave River Groundwater Basin and is included within the Baja Subarea (Mojave Basin Area Judgment, 1996) (Figure 1). The area is surrounded by the Cady Mountains to the east, Calico Mountains and Alvord mountains to the north/northwest, and Newberry Mountains to the south. As shown on Figure 2, the region is tectonically active and characterized by numerous geologic faults, many of which represent partial barriers to groundwater flow. Key faults include the Camp Rock-Harper Lake (Waterman) Fault, which represents the boundary between the Centro Subarea and Baja subareas, and the Calico Fault, Manix Fault, and Newberry Fracture Zone within the Baja Subarea.

Consolidated, pre-Tertiary rocks, consisting primarily of Mesozoic granitic rocks and Tertiary unmetamorphosed volcanic rocks, comprise the bedrock underlying the basin fill deposits in the Baja Subarea. Available geologic and geophysical logs indicate that depth to bedrock beneath Camp Cady varies considerably, ranging from less than 200 feet along the eastern property boundary (near the outcropping bedrock that forms the Cady Mountains) to at least 700 feet along the western property boundary. Basin fill deposits are comprised of Tertiary and Quaternary alluvial, fluvial, and lacustrine deposits, including interbedded layers of unconsolidated sand, silt, and clay. Unconsolidated basin fill deposits have been delineated into two aquifer systems by the U.S. Geological Survey (USGS): the Regional Aquifer and the Floodplain Aquifer (Stamos et al., 2001). Alluvial deposits of Holocene to late Piocene age form the Regional Aquifer, which uncomformably underlies and surrounds Holocene to Pleistocene fluvial/alluvial deposits of the Floodplain Aquifer throughout the Mojave River Basin (Stamos et al., 2001).

Figure 3 shows a schematic hydrogeologic cross section of the Baja Subarea oriented along the Mojave River extending from the Camp Rock-Harper Lake (Waterman) Fault in the west through Camp Cady to the east (the cross section location is shown on Figure 2). The figure illustrates the hydraulic relationship between the Mojave River and the groundwater system in the Baja Subarea, key aspects of which are described below.

Streamflow losses from the Mojave River represent the primary source of groundwater recharge in the Baja Subarea. Evaluation of gaged flows from 1931 to 2009 at Barstow and Afton indicates that stormflow has reached Camp Cady on average one in every four years, with average annual recharge from streamflow losses in the Baja Subarea estimated at about 7,000 AFY. Other sources of recharge include subsurface inflow from the Centro Subarea across the Waterman Fault and local mountain runoff (Mojave Basin Area Watermaster, 2011 and Stamos et al., 2001).

In the Camp Cady area, the groundwater system is separated into a shallow unconfined aquifer and deeper confined aquifers by the Manix (Clay) Beds. The Manix Beds are Pleistocene lacustrine deposits associated with the ancestral Lake Manix and are comprised of light blue to grey well-bedded clays, silts, and fine sands. The Manix Beds extend from the eastern edge of the Baja Subarea to within three to

four miles of the Calico Fault and have a thickness of more than 120 feet beneath Camp Cady. Due to the presence of the Manix Beds, recharge to the deeper aquifer system east of the Calico Fault is limited to the 3- to 4-mile stretch of river west of Harvard Hill.

Groundwater flows east-northeast across the Baja Subarea and exits as baseflow through Afton Canyon. As shown on Figure 3, both the Waterman and Calico faults represent partial barriers to groundwater flow. Groundwater elevations have historically been 40 and 60 feet higher on the western (upgradient) side of the Waterman and Calico faults, respectively. The figure also shows that the slope of the river channel increases east of Mile 15 of the cross section across Camp Cady. This change in slope is physically manifested in the increasing height (relative to the channel) of the northern terraces comprised of exposed Manix Lake Beds from Harvard Hill through Camp Cady into Afton Canyon. The break in channel grade generally coincides with the western extent of the Manix Beds indicating that the main channel was eroded during the drainage of Lake Manix through Afton Canyon. The increase in topographic slope has historically provided flowing artesian conditions in the main channel near Harvard Hill. However, regional groundwater level declines have gradually dewatered the shallow aquifer in the western portion of Camp Cady and shifted the point at which the water table rises to the ground surface in the main channel to the east. Currently, the only areas where depth to water is less than 5 feet below ground surface (feet-bgs) beneath the main channel occurs east of the main Ranch house. As summarized in Section 2 of this report, the timing of groundwater level declines correlates strongly with historical increases in groundwater production in the Baja Subarea as well as with decreased stormflows reaching the Baja Subarea as a result of varying climatic conditions and overproduction in upgradient management subareas.

# 1.4 Previous Work

This investigation builds on previous work completed by CDFG, MWA, USGS, and others over the past several decades. A landmark study of Camp Cady is the 1989 hydrologic investigation and water use planning study of Camp Cady (Bilhorn, 1989). For that study, detailed topographic surveying and vegetation mapping of the Camp Cady area was performed, and twelve temporary shallow piezometers were installed in the main channel. The temporary shallow piezometers, along with four existing monitoring wells, were monitored over a 14-month period to characterize groundwater levels beneath the main channel and identify potential solutions and physical constraints to restoring riparian habitat in this area. In 1995, average annual ET was estimated to be about 2,000 AFY in the Baja Subarea (Lines and Bilhorn, 1996). The estimate was based on mapping aided by false-color infrared and low-level oblique photographs, vegetation and areal-density classification, and application of representative water-use rates based on selected studies in the southwestern United States. More recently, a study by the U.S. Bureau of Reclamation (USBR) and Utah State University (2011) estimated riparian ET for 2007 and 2010 conditions in the Baja Subarea. The study relied on mapping aided by airborne lidar, multispectral and thermal infrared data, vegetation and surface classification using multispectral imagery, and application of a two-source ET model that considers independent energy fluxes for soil and canopy components. For the Baja Subarea, riparian ET was estimated to be about 2,000 AFY in 2007 and 2,500 AFY 2010 (USBR and USU, 2011). Invasive salt cedar accounted for approximately 35 to 45 percent of total ET in the Baja Subarea. ET estimates cited in the USBR and USU report do not include ET by

desert scrub species, which are shallow-rooted and rely on precipitation. The extent of riparian areas along the Mojave River evaluated by Lines and Bilhorn in 1995 and USBR/USU in 2007 and 2010 are relatively similar. However, because of the different methodologies applied, results from the two studies cannot be easily compared to identify changes in riparian ET demand since 1995. Historical aerial photographs were reviewed for this hydrogeologic investigation to evaluate changes in the density and distribution of riparian habitat at Camp Cady over time.

Prior to this study, CDFG and MWA drilled a monitoring well cluster (10N04E19N02-N04) on the north side of the river channel opposite the main Ranch house (see Figure 4 for well location). MWA actively monitors this well cluster and other wells on the north bank of the river. The USGS also monitors water levels in a well cluster on Harvard Road (10N03E27J01-J05) and the domestic supply well at Camp Cady (10N03E25A02). These and other data were incorporated into this study.

# 1.5 Study Objectives

The primary purpose of this study was to 1) develop a comprehensive understanding of surface water and groundwater dynamics and determine their relationship to the health of riparian vegetation and 2) evaluate the feasibility of developing groundwater resources to re-establish native riparian habitat at Camp Cady. To achieve these objectives, the investigation focused on the following hydrologic and hydrogeologic issues:

- 1. History of riparian habitat changes at Camp Cady
- 2. Hydrologic and hydrogeologic conditions at Camp Cady and within the greater Baja Subarea (including the magnitude and duration of intermittent flows in the Mojave River, groundwater production, and groundwater level trends)
- Current groundwater level conditions and seasonal groundwater level fluctuations beneath and along the banks of the Mojave River
- 4. Hydraulic connectivity between the shallow and deeper aguifers
- 5. Hydraulic properties of viable production zone aquifers

# 1.6 Scope of Work

The scope of work developed for this investigation included the following tasks:

- Chronicle riparian conditions at Camp Cady through available historical aerial photographs dating back to the 1920s
- 2. Evaluate the relationship between historical groundwater level trends, groundwater production, and streamflow to identify the key factor(s) controlling riparian health
- 3. Design and conduct a field investigation program involving a) the drilling and installation of shallow, in-channel piezometers and variable-depth, off-channel monitoring well clusters and b) a formal aquifer pumping test in an onsite production well
- 4. Incorporate results of the field investigation to refine the conceptual hydrogeologic model of Camp Cady within the context of the greater Baja Subarea

5. Evaluate the feasibility of implementing a riparian restoration program at Camp Cady through an engineered solution involving irrigation with local groundwater

The field investigation task was comprised of the following components:

- 1. Drill and install eleven shallow piezometers in the main channel of the Mojave River using the hollow-stem auger (HSA) drilling method to characterize groundwater conditions in the shallow aquifer system.
- Drill and install variable-depth monitoring wells at four locations along the south bank of the Mojave River using the sonic drilling method to characterize groundwater conditions in the shallow and deep aquifer systems.
- Perform an aquifer pumping test on the existing Camp Cady Pond Production Well
   (10N03E25A03) to confirm aquifer hydraulic properties and hydraulic connection between the
   shallow water table aquifer and deeper aquifer units.
- 4. Professionally survey all monitoring wells installed during the field investigation, the marker at the south end of the Camp Cady bunkhouse, and the 2006 monitoring well cluster (10N04E19N02-N04).

Figure 4 shows the location of the installed shallow piezometers and monitoring well clusters as well as other key wells at Camp Cady. Additional documentation of the field program and new piezometers and cluster wells are provided in appendices to this report. Copies of well drilling permits are provided in Appendix A. Department of Water Resources (DWR) well completion reports for each of the shallow piezometers and cluster monitoring wells are provided in Appendix B. Well logs for shallow piezometers are provided in Appendix C. Selected photographs taken during the field program, as well as historical photographs of Camp Cady during the 2005 flood, are included in Appendix D. The professional as-built survey report showing surveyed elevations of monitoring and production well casings, concrete pads, and ground surfaces are provided in Appendix E.

#### 1.7 Acknowledgements

This report was prepared by Edwin Lin, PG, CH, Phyllis Stanin, PG, CH, CEG, and Daniel Craig, PG, CH of Todd Engineers. Selected graphics were prepared by Alain Boutefeu of Todd Engineers. We would like to thank Troy Kelly (CDFG), Tom Bilhorn (consultant to CDFG), Lance Eckhart, Anna Garcia, and Tony Winkel (Mojave Water Agency) for their technical guidance, field and data collection support, and review of the draft report. Special thanks go to Bruce Kenyon (Quail Unlimited) for his daily assistance onsite, major contributions through the duration of the field program, and providing historical photographs of flood conditions at Camp Cady. Finally, we would like to acknowledge Walt Brock (Fundamental Christian Endeavors) for taking time to provide photographs and personal accounts of historical conditions at Camp Cady.

# **2 EVALUATION OF EXISTING DATA**

Prior to the field investigation, available groundwater level, production, and streamflow data were evaluated in combination with historical aerial photographs to determine the influence of varying land use and hydrologic conditions on the health of riparian habitat at Camp Cady. This section describes key findings from the evaluation of these existing datasets.

#### 2.1 Groundwater Occurrence and Flow

Current (2010) groundwater elevations in the Baja Subarea range from 2,000 feet above mean sea level (feet msl) at the Centro/Baja subarea boundary to less than 1,600 feet msl one mile east of Camp Cady (Figure 5). In the central portion of the Baja Subarea between Interstate Highways 15 and 40, groundwater levels upgradient (west) of the Calico Fault are at or above 1,770 feet msl, while the groundwater levels over the roughly 5-mile by 5-mile area east (downgradient) of the Calico Fault range from 1,710 to 1,700 feet msl. Groundwater level depressions associated with concentrated pumping are visible at several locations, including the area between Interstate Highways 15 and 40 at Minneola Road, at Harvard Road near the Newberry Fracture Zone, and near Interstate Highway 15 at Harvard Road.

Figure 6 shows groundwater level conditions in the Baja Subarea in 1959. Together, Figures 5 and 6 reveal that groundwater levels in the central portion of the basin from 5 miles west of Minneola Road to Harvard Hill have declined by as much as 80 feet. Along the western boundary of Camp Cady, groundwater levels have dropped by about 60 feet over the past 50 years. The groundwater level contours between the Calico Fault and Camp Cady show that the hydraulic gradient towards Camp Cady has decreased dramatically resulting in a reduction in regional groundwater flow towards Camp Cady.

Figure 7 shows water level hydrographs of selected wells east of the Calico Fault in the vicinity of Camp Cady. Long-term hydrographs are shown from 1930 to present, while more recent data (1990 to present) are highlighted in yellow. This figure shows an average rate of groundwater level decline of about 1.5 feet per year in areas upgradient and south of Camp Cady beginning in the early 1950s. Water levels to the northeast of Camp Cady are more stable as illustrated by the four hydrographs highlighted in yellow on the right side of Figure 7. Additionally, two hydrographs provide information on the vertical hydraulic gradients at Camp Cady. The hydrograph for a USGS monitoring well cluster on Harvard Road (10N03E27J01-05 [highlighted in yellow at the top of Figure 7]) shows that the upward vertical hydraulic gradient at this location in 1992 has gradually shifted to a flat to slightly downward gradient with current depth to groundwater at approximately 50 feet-bgs. Water level measurements at a monitoring well cluster installed by MWA and CDFG in 2006 (10N04E19N02-N04 [highlighted in yellow on the rights side of Figure 7]) indicate relatively stable groundwater levels with a slightly upward vertical gradient. Hydraulic pressure in the deep aquifer zone causes groundwater level to rise just below the ground surface in 10N04E19N02.

#### 2.2 Streamflow

Stream losses from intermittent flow in the Mojave River represent the primary source of groundwater recharge in the Baja Subarea. Stream discharge is controlled by runoff generated from the Mojave River

headwaters in the San Bernardino Mountains near Lake Arrowhead (see Figure 1), where annual rainfall averages 41 inches. In contrast, average annual rainfall on the desert floor in the Baja Subarea is less than 5 inches and is subject to high evapotranspiration rates throughout the year. A portion of the runoff generated in the San Bernardino Mountains infiltrates through the floor of the Mojave River recharging the floodplain aquifer prior to reaching the Baja Subarea. Increases in upstream production since the 1950s have further reduced the frequency of low-magnitude stormflows reaching the lower portion of the basin (Lines, 1996).

During wet years with high runoff (i.e., flood years), the Mojave River flows through Barstow and Camp Cady and exits Afton Canyon. The USGS currently monitors streamflow in the main channel at five locations in the basin. Stream gage locations are shown on Figure 1. Figure 8 shows the annual streamflow in the Mojave River measured at the Barstow gage from 1930 to 2009. The figure shows that since 1930 annual discharge at the Barstow gage has averaged 16,377 AFY, of which 14,000 AFY is estimated to enter the Baja Subarea (MWA, 2011). Stormflows have reached Barstow in 23 years of the 80 years on record and have exceeded 90,000 AFY in nine years (corresponding to the flood years of 1937, 1938, 1941, 1943, 1969, 1980, 1983, 1993, and 2005). While the Mojave River Dam in 1971 was constructed to reduce peak flows in the Mojave River downstream of the confluence of its two major tributaries (Deep Creek and West Fork), some of the largest historical mean daily flows at the Barstow gage have been recorded after the dam's construction. As shown below, in each of the nine flood years, the highest recorded mean daily flow rate at the Barstow gage ranged from 2,460 to 18,100 cubic feet per second (cfs), with an average maximum flow rate above 10,000 cfs (photographs of the Camp Cady area taken during the 2005 flood are provided in Appendix D).

Flood Year	Barstow Maximum Mean Daily Flow (cfs)
1937	3,030
1938	18,100
1941	2,460
1943	7,380
1969	14,800
1980	8,280
1983	7,520
1993	12,500
2005	16,300
Ave	10,041

Also depicted on Figure 8 is the cumulative mean departure (CMD) curve for stream discharge at the Barstow gage (solid red line). The CMD curve represents the cumulative difference (departure) in annual

discharge relative to mean annual stream discharge for the period of record from 1930 to 2009 (16,377 AFY) and is a useful method for identifying trends. Positively-sloped sections of the CMD curve represent periods of above-average stream discharge, while negatively-sloped sections of the curve represent periods of below-average stream discharge. The dashed straight red line represents zero departure from the mean, a condition that would result if annual discharge for every year was equal to the mean discharge. The area above the dashed red line represents surplus discharge, while the area below the dashed red line represents deficit discharge. Because the CMD curve is a measure of cumulative conditions relative to the long-term average, the CMD curve begins and ends at zero.

The CMD curve for annual discharge at Barstow indicates that climatic conditions were very wet from 1936 to 1945, resulting in a large surplus in stream discharge. This was followed by an extended dry period that lasted over 20 years until the record flood of 1969. By the end of the dry period, gains in discharge from 1936 to 1945 were effectively erased. Since 1969, four flood years (1980, 1983, 1993, and 2005) have separated periods of little to no discharge. Over the period of record, the frequency and duration of deficit discharge (when the CMD curve is below the zero line) has been low and short, due to the large surplus developed through the mid-1940s (+280,000 AF) and large single-year discharges in more recent times. Overall, it is evident that since the wet period from 1936 to 1945, streamflows reaching the lower portions of the basin have declined.

To assess the influence of historical groundwater production in the upper portions of the basin on the frequency and magnitude of intermittent Mojave River flows and groundwater level declines in the Baja Subarea, the USGS simulated historical conditions with no pumping in the upper region of the basin (Alto, Transition Zone, Este, and Oeste subarea) using the Mojave River Basin groundwater model. Simulation results showed that groundwater recharge from the Mojave River in the Baja Subarea increased on average 3,860 AFY over the Base Period (1931 to 1990), but groundwater discharge also increased by 630 AFY. The net effect of the "no upper Basin pumping" scenario was a net decrease in Baja groundwater storage loss amounting to 3,230 AFY. Applying this annual effect to the simulation period from 1931 to 1990 amounts to 193,800 AF of groundwater storage loss in the Baja Subarea due to upper Basin pumping (i.e., in Transition Zone, Alto, Este, Oeste subareas), a significant portion of total groundwater storage losses in the Baja Subarea during the simulation period (Stamos et al., 2001). Changes are attributable to simulated hydraulic heads in the Alto and Transition Zone subareas being near the altitude of the streambed throughout the upper region, which causes potential recharge from the Mojave River to be rejected in the upper region thereby allowing more streamflow to reach and recharge the lower region. The USGS did not simulate the effect of upstream pumping in Centro on stream discharge and recharge in Baja.

#### 2.3 Groundwater Production

Since the early 1950s, the Baja Subarea has been in a state of overdraft as a result of significant increases in groundwater production to support primarily agricultural irrigation in the region. For this study, historical production in the vicinity of Camp Cady and for the greater Baja Subarea was compiled from two sources: 1) estimates of production from 1931 to 1999 incorporated in the USGS Mojave River Basin groundwater model (Stamos et al., 2001), and 2) Mojave Basin Watermaster production records

from 1994 to 2009. MWA Wastermater records were determined to be more reliable and used for the six years of data overlap from 1994 to 1999. Figure 9 shows the distribution of groundwater production in the Baja Subarea for selected time periods. Figure 10 shows charts of annual groundwater production within a 2-mile radius of Camp Cady (upper chart), the 0- to 1-mile and 1- to 2-mile radius of Camp Cady (middle chart), and within the greater Baja Subarea (lower chart). As illustrated by the lower chart in the figure, total production in the Baja Subarea exceeds the long-term natural water supply for the Baja Subarea, estimated at 7,400 AFY, starting in the late 1940s (Mojave Basin Area Watermaster, 2011). Subarea production increases dramatically beginning in the mid-1950s and peaks in 1985 at about 59,000 AFY. In the vicinity of Camp Cady, production similarly increased beginning in 1950s through the mid-1960s (upper chart). However, production peaked in 1969 and held relatively constant through 1988, during which average annual production within a 2 mile radius of Camp Cady was 7,730 AFY (upper chart). Separation of pumping into 0- to 1-mile and 1- to 2-mile buffer zones shows that production for the 1- to 2-mile buffer zone surrounding Camp Cady peaked in 1970, while production within a 1 mile radius of Camp Cady did not peak until 1986 (middle chart). With the exception of areas adjacent to the Mojave River that respond directly to intermittent recharge from stream losses, the onset and rate of water level declines across Baja strongly correlate with the timing of increases in groundwater production in the Baja Subarea.

## 2.4 Historical Land Use and Changes in Riparian Habitat

To document changes in historical land use and distribution of riparian habitat at Camp Cady, aerial photographs dating back to 1929 were obtained from various sources, including the San Bernardino County Flood Control District (SBCFCD) archives, CDFG, Fairchild Aerial Photography Collection, and available public GIS servers. Raw aerial images from the SBCFCD archives were georeferenced in ArcGIS and, together with the other aerial photographs, were used to create a series of maps to chronicle changes in land use and riparian habitat at Camp Cady, as shown on Figures 11 through 24. The dates for which aerial photographs of Camp Cady were available are listed in Table 1 along with the corresponding report figure number.

On each of the figures, locations of key wells, including monitoring wells installed for this investigation, are shown for spatial reference and to aid in describing physical changes observed over time. Based on available historical aerial photographs combined with groundwater level, streamflow, and production data, the following conclusions can be made concerning changes in land use and riparian habitat over time:

• 1929 to 1969. Perennial flows supporting dense riparian vegetation starting west of Harvard Road and across the entire Camp Cady property is evident in each of the six aerial photographs available for this period. The density of riparian vegetation in the main channel is visibly higher in 1929 and 1955 compared to 1939. It is suspected that the some riparian vegetation was removed by relatively high stream discharge that occurred in 1937 and 1938. Initial clearing for agricultural fields (row crops) north of the main channel near Harvard Road occurs sometime between 1955 and 1962 and south of the river sometime between 1955 and 1964.

- 1969 to 1984. Over this 15-year period, the western extent of perennial conditions at Camp Cady shifts approximately 3 miles from west of Harvard Road to the location of recently installed piezometer P5. Berms to detain perennial flows and create ponded conditions in the main channel are constructed in the vicinity of P6 and P7 (Figure 17). According to personal accounts, from 1975 to 1985 manual work including digging in the main channel (presumably at the western extent of perennial conditions observed in 1984) and constructed berms provide for perennial conditions in the main channel (personal communication Walt Brock, 2010). Such conditions correlate well with the dewatering of the shallow aquifer and movement of shallow groundwater conditions (less than 5 feet-bgs) to the east. Dense vegetation in the main channel from west of Harvard Road to P3 no longer exists. Local agricultural production increases with four new center-pivot fields on the terrace north of the river and east of Harvard road and additional row-crop fields in the northern floodplain west of Harvard Road.
- **1984 to 1989.** There is no evidence of density contrasts in riparian habitat during this period. However, two new center-pivot fields to the south of Camp Cady east of Harvard Road are evident. In addition, row crops have been converted to a center-pivot field just west of Harvard Road.
- **1989 to 1992.** Some re-establishment of riparian vegetation in the main channel is evident, particularly in barren land near Harvard Road. The type of riparian vegetation cannot be confirmed but is likely salt cedar.
- 1992 to 1993. A major transition in the main channel from Harvard Road to P5 is evident. Reestablished areas from Harvard Road to P4 are now barren. The course of the main channel has turned north between P3 and P4 creating new barren land. Some riparian habitat in the main channel between recently installed piezometers P3 and P5, between P7 and P8, and near P11 has completely disappeared. Water in main channel east of P4 in 1993 (Figure 20) is likely remaining stormflow. Changes over this short period confirm the destructive power of large discharges that occurred in the main channel during the winter floods of 1993.
- 1993 to 2005. By 2005, center-pivot fields to north are inactive; no more row-crop fields occur north of the river east of Harvard Road. A contiguous area of barren land in the main channel is now visible across the length of Camp Cady. The area is very wide from Harvard Road to P6, narrower from P6 through P8, and widens east of P8. Sand has encroached on the southern portion of the former Hilarides center-pivot field. There is no remaining riparian vegetation along southern margins of the river near Harvard Road. Riparian changes confirm the destructive power of large discharges that occurred in the main channel during the winter floods of 2005. Based on groundwater water level data, the estimated western extent of shallow groundwater has shifted to the vicinity of P4/P5 by 2005.

- **2005 to 2008.** There is no major change in agricultural land use over this period. The impact of two wildfires in August 2005, which burned a total of 670 acres in northern section of river from the area between P4/P5 to Ironwood, is evident. Riparian habitat along southern margins of the river between P9 and P10 has also disappeared. Some speckled regrowth is evident in the main channel (likely salt cedar) between Harvard Road and P4.
- **2008 to 2010.** There are no major changes in land use or riparian conditions over this period. More sand has encroached on the former Hilarides center-pivot field and adjacent lands east of Harvard road. Based on groundwater water level data, the estimated western extent of shallow groundwater has shifted to the vicinity of P6 (Figure 24).

# 2.5 Conclusions from Evaluation of Existing Data

The evaluation of existing data provides a timeline of biological and land use changes at Camp Cady and reveals the historical sensitivity of riparian health to the gradual dewatering of the shallow aquifer in the western portion of Camp Cady, flooding events, and the 2005 wildfires. Furthermore, the evaluation confirms that riparian habitat was largely unaffected by the extended drought from 1946 to 1968 and flooding prior to the early 1980s due to the protection and re-generative potential afforded by local perennial flows.

These findings provide insight into the future of riparian conditions at Camp Cady should current land use, production, groundwater level, and climatic trends continue. However, in order to evaluate the feasibility of actively restoring and enhancing the existing riparian habitat at Camp Cady, additional data collection was still needed to address the following questions:

- 1. What are the current groundwater elevations in the shallow and deeper aquifers across Camp Cady?
- 2. Do flowing artesian conditions still exist at Camp Cady in deeper aquifers underlying the central and eastern portions of the property? If not, is there an upward, flat or downward vertical hydraulic gradient?
- 3. What is the range of seasonal fluctuations for the water table at Camp Cady?
- 4. To what extent are the shallow and deep aguifers hydraulically connected/separated?
- 5. At what scale can deeper aquifers underlying Camp Cady support future riparian restoration projects?

These questions and others helped to focus the scope of the field investigation conducted for this study, details of which are described in the following section.

# 3 WELL DRILLING, CONSTRUCTION AND DEVELOPMENT

A field program was conducted consisting of 19 exploratory soil borings drilled to depths ranging from 18 to 205 feet-bgs and completed as 2-inch or 2.5-inch diameter PVC groundwater monitoring wells. Monitoring well locations were selected to supplement the existing network of onsite wells and allow for construction of hydrogeologic cross sections along the length of the Camp Cady property. Exploratory drilling and well construction activities, as well as subsurface conditions encountered, are described in this section.

#### 3.1 Pre-Drilling Activities

Prior to field mobilization, a kickoff meeting was held on March 29, 2011 at Camp Cady. Participants included representatives from Todd Engineers (Phyllis Stanin and Edwin Lin), MWA (Lance Eckhart and Anna Garcia), CDFG (Troy Kelly), Tom Bilhorn (consultant to CDFG), Quail Unlimited (Bruce Kenyon), Gregg Drilling and Testing (Don Kirsnis), and Boart Longyear (Mario Romero). During the kickoff meeting, project objectives were discussed, and locations for shallow piezometers and well clusters were selected following visual inspection of primary access ways. During the site visit, it was determined that a formal pumping test of the Camp Cady Pond Production Well (10N03E25A03) would provide aquifer hydraulic data important for identifying potential production zone aquifers. To provide observation wells during the pumping test, one monitoring well cluster (Well Cluster B) was located next to the Pond Production Well.

Following the kickoff meeting, well drilling permits for eleven shallow piezometers and twelve cluster wells were obtained from San Bernardino County Department of Public Health Division of Environmental Health (SBCDPH) on April 5, 2011 (see Appendix A). In addition, Underground Service Alert (USA) was notified, and utilities clearance tickets were obtained on April 7, 2011.

#### 3.2 Technical Approach

#### 3.2.1 Shallow Piezometers

For the shallow piezometers installed in the main channel of the Mojave River, the hollow-stem auger (HSA) drilling method was selected. The HSA method provided a relatively low cost (for shallow drilling and well installation 50 feet or less), clean operation (no drilling fluids used other than water), and ease of transport (light, track-mounted rig and support vehicle).

A linear transect of eleven shallow piezometers in the main channel of the Mojave River was selected to allow for characterization of groundwater conditions along the length of the Camp Cady property to identify favorable reaches for future biological habitat restoration (see Figure 4 for shallow piezometer locations). Shallow piezometers were located along the southern bank of the main channel, as previous studies (Bilhorn, 1989) found no differences in shallow groundwater elevations from north to south within the river bed, and potential locations for habitat restoration on the south bank were identified during the initial site visit. Drilling at each shallow piezometer location was conducted to accommodate the installation of a piezometer in order to 1) monitor the shallow (water table) aguifer, accommodating

seasonal and annual groundwater level fluctuations, and 2) identify the vertical thickness of the main channel sand deposits beneath the Mojave River.

#### 3.2.2 Well Clusters

For the cluster monitoring wells, the sonic drilling method was selected. The sonic drilling method is known by several names including Rotasonic, Rotosonic, Sonicore, Vibratory, or Resonant Sonic drilling. Sonic drilling is a dual-cased drilling system that uses high frequency mechanical vibrations to advance flush-threaded steel casing while collecting continuous, relatively undisturbed core samples. Because it does not require the use of downhole drilling muds or other additives, the sonic method also minimizes the time needed for well development.

Similar to the approach used for the shallow piezometer work, a linear transect comprised of four monitoring well clusters along the south bank of the Mojave River was selected to optimize the collection of groundwater level data in shallow and deeper aquifers along the length of the Camp Cady property near areas of historical and existing riparian habitat (see Figure 4 for cluster well locations). Well Cluster B was located adjacent to the Camp Cady Pond Production Well (10N03E25A03) to aid in the collection of hydraulic data during formal pumping tests on this well. Due to the long screen interval in the Pond Production Well (42 to 202 feet-bgs), three wells (shallow, intermediate, and deep) were installed at Well Cluster B. At Well Clusters A and C, no intermediate well was installed to allow for a deeper depth of investigation necessary to penetrate through the Manix Clay Beds and confirm the presence of deeper coarse-grained sediments. No coarse-grained sediments were encountered below the Manix Beds at the Cluster D site, and thus only a shallow monitoring well was installed. Each of the cluster wells is constructed in an independent borehole (i.e., wells are not completed/nested in one borehole).

#### 3.3 Drilling

# 3.3.1 Shallow Piezometers

On Monday, April 18, 2011, Gregg Drilling and Testing Inc. (Signal Hill, CA) mobilized a track-mounted Marl M5-T (Rhino) limited access hollow stem auger drilling rig and track-mounted (Morooka) support vehicle to the site. Due to extremely high winds and blowing sands on April 18, 2011, exploratory drilling began at Piezometer 6 (P6), the closest location to the ranch house, and proceeded downwind towards P11 (see Figure 4). Upon completion of P11, drilling was continued at P5 and proceeded westerly towards P1. Drilling and well installation time ranged from 1 to 3 hours per well.

All eleven boreholes were drilled using a 6-inch diameter drill bit to accommodate well casing, screen, and artificial filter pack installation. Photographs showing the HSA drilling rig setup and selected samples are provided in Appendix D. During drilling, formation samples collected off the auger flights were examined, described, and archived with the boring designation and depth. No discrete (driven) formation samples were collected during drilling. The depth of the fine-grained deposits encountered near the bottom of each borehole was confirmed based on the combination of clay-rich cuttings brought to the surface on the auger flights, the driller's observation of the penetration rate, and visual

inspection of the deepest auger(s) once removed from the borehole. Well logs for the shallow piezometers are included in Appendix C.

#### 3.3.2 Cluster Wells

On May 22, 2011, Boart-Longyear Drilling Company, Inc. (Upland, CA) mobilized a truck-mounted sonic drill rig and two support vehicles to the site. Initial drilling was conducted on May 23, 2011 at the Cluster B Deep Well, followed by the Cluster B Intermediate Well and Cluster B Shallow Well (see Figure 4). At each well cluster site, geologic cores obtained from the deep exploratory borehole were examined and logged to determine the appropriate design for each well in a cluster. Upon completion of the Cluster B wells, drilling continued in the following order: Cluster A, Cluster C, and Cluster D. Drilling and well installation time to total depth ranged from 2.75 to 3 days for the deep cluster wells, 1.25 days for the intermediate well at Well Cluster B, and 0.5 to 0.75 days for the shallow cluster wells.

All eight exploratory boreholes were drilled by vibrating an 8-inch diameter casing (drill string) into the ground using a sonic drill head to stabilize and hold open the borehole to accommodate well casing, screen, and artificial filter pack installation. During drilling, an inner casing (i.e., 7-inch core casing) was vibrated ahead of the outer casing to collect relatively undisturbed formation cores. At 10-foot intervals, the core barrel was brought up to the surface to retrieve the core sample, which was extruded into Visqueen plastic sleeves. Upon reaching the water table, water was added to the borehole during drilling to minimize heaving of loose, coarse-grained aquifer materials inside the drill casing. During drilling, core samples were examined, described, and archived with the boring designation and depth. Photographs of the sonic drilling rig setup and selected core samples are shown in Appendix D. Hydrogeologic conditions encountered at each of the four well cluster locations are summarized in Section 3.6.

#### 3.4 Well Construction

# 3.4.1 Shallow Piezometers

Table 2 summarizes the well construction details of the eleven shallow piezometers. Exploratory boreholes ranged from 18 to 50 feet in depth with drilling depths generally increasing from east to west. In each borehole, sediments were comprised primarily of fine to coarse sands with some gravel/cobbles. A stiff silt/clay, representing the top of the eroded Manix Beds, was encountered between 16 and 46 feet-bgs with depths increasing from east to west. All piezometers were constructed to monitor groundwater levels above the top of the silt/clay deposit. Final completion depths ranged from 18 to 43 feet with depths increasing from east to west.

Each well was constructed using 2-inch diameter, flush-threaded, Schedule 40 PVC (2.375-inch outside diameter with wall thickness of 0.154-inch) well casing and 0.020-inch slotted screen. The well screen interval was generally placed just above the contact between the channel sands and clay deposit to maximize the utility of each piezometer should groundwater levels decline in the future and to minimize the potential for vegetative root intrusion. All well screens were wrapped with fiberglass window screen secured with double-locking plastic cable ties prior to installation to minimize the potential of root

intrusion. Artificial filter pack material consisted of #2/12 Lupus Lustre Monterey Beach sand. A well seal, consisting of hydrated bentonite pellets, was installed from 5 feet-bgs to the ground surface. The casing for each piezometer was extended to approximately 3 feet above the ground surface and was secured with a threaded brass locking cap (casing stick-up values in Table 2 represent measurements taken in June 2011 after shifting sands raised the elevation of the main channel in some areas). Following the installation of the shallow piezometers DWR well completion reports for the eleven shallow piezometers were filed with SBCDPH and are included in Appendix B.

#### 3.4.2 Cluster Wells

Table 2 summarizes the well construction details of the eight cluster wells. Well profiles are provided on Figures 25 through 28. Final completion depths ranged from 37 to 52 feet for the shallow cluster wells, 109 feet for the Cluster B Intermediate Well, and 184 and 200 feet for the deep cluster wells. Each cluster well was constructed using 2.5-inch diameter, Schedule 80 PVC (2.75-inch outside diameter with wall thickness of 0.276-inch) well casing and 0.020-inch slot screen. The well screen interval was generally placed opposite coarse-grained units. Similar to the shallow piezometers, the well screens in the shallow cluster wells were placed to maximize the utility of each well should groundwater levels decline in the future. Artificial filter pack material consisted of #2/12 graded Monterey Beach sand. In each cluster well, the filter pack extends from the bottom of the borehole to 5 feet above the top of the well screen in all cluster wells. The well seal, consisting of a combination of hydrated bentonite pellets and cement-bentonite grout, was placed above the filter pack in each cluster well. Adequate time for hydration of the pellets was allowed prior to sealing the annulus with cement-bentonite grout to within 2 feet-bgs. A tremie pipe was used to slowly emplace the cement-bentonite grout seal in 20-foot lifts while the drive casing was removed. The riser for each cluster well extends approximately 2.5 feet above ground. Each cluster well was completed at the surface with an 8-inch diameter by 5-foot tall stovepipe well vault with locking lid seated in a 2-foot square by 2-foot thick concrete well pad. DWR well completion reports for the eight cluster wells were filed with SBCDPH and are included in Appendix B.

# 3.5 Cluster Well Development

Cluster wells were developed from June 7 to June 11, 2011 using a combination of bailing, swabbing, and pumping. Water bailed and pumped from the wells was discharged onsite. A Smeal Rig with a wireline winch was used to swab the wells using a 2.5-inch diameter surge block. Development water was removed from each well using a 2-inch diameter by 5-foot long PVC bailer. For each well, multiple cycles of swabbing and bailing were performed prior to pumping with a submersible pump. An average of 250-350 gallons of groundwater was removed from each well during well development.

# 3.6 Hydrogeologic Conditions

Figure 29 shows a hydrogeologic cross section (B-B') oriented along the Mojave River crossing Camp Cady (cross section location is shown on Figure 4). The cross section includes the well profiles, geologic log, and water levels for each of the shallow piezometers and monitoring well clusters installed for this study and other production and monitoring wells.

The figure indicates that groundwater beneath Camp Cady is hydraulically separated into a shallow unconfined and deep confined aquifer system by the Manix Beds, which consist of clay deposits interbedded with thinner silt/sand lenses. The total thickness of the Manix Beds underlying Camp Cady ranges from approximately 120 to 140 feet. Coarse-grained sand deposits intebedded with thin silt/clay lenses occur below the Manix Beds at the Cluster A, B, and C sites. At the Cluster D site, sediments encountered below the Manix Beds consist of cemented, friable, and foliated silts/clays mixed with claystone, siltstone, and conglomerate. The cemented and lithified nature of the sediments and the proximity of the Cluster D site to the margins of the basin suggest the presence of a previously unidentified geologic fault.

The lithologies encountered during drilling of the monitoring well clusters along the south bank indicate that clay content in the Manix Beds consistently increases from west to east. As shown on the figure, the color of sedimentary deposits also consistently changes to a dark greenish-gray ("GLEY1" Munsell color code) below an elevation of about 1,620 to 1,640 feet msl at the location of each of the recently installed monitoring well clusters and the 2006 monitoring well cluster on the north bank (10N04E19N02-N04). The dark greenish gray color is indicative of reducing (anaerobic) conditions, suggesting a high degree of aquifer confinement and poor hydraulic connection with the shallow aquifer system. In contrast, the yellowish brown and brownish gray colors generally observed above this elevation indicate oxidizing (aerobic) conditions suggesting relatively good hydraulic communication with the local source of groundwater recharge (Mojave River streamflow). Below the Manix Beds, alluvium (possibly ancestral Mojave River deposits) comprised of fine to coarse sand interbedded with thin silt/clay were encountered at the Cluster A, B, and C locations. The total thickness of coarse-grained deposits beneath the Manix Beds is unknown at each location but, based on estimated bedrock elevations in the region and lithologic distribution in the upper 20 to 30 feet of the formation, is likely to exceed 100 feet. Within the main channel, the thickness of recent coarse-grained Mojave River alluvium ranges from 16 to 46 feet with thicknesses generally decreasing from west to east. The recent alluvium uncomformably overlies the eroded top of the Manix Clay Beds.

Shallow groundwater levels range from approximately 5 to 35 feet-bgs in the main channel from shallow piezometers P1 to P11 with depth to water decreasing from west to east. The saturated thickness of recent Mojave River alluvium in the main channel between P1 and P11 ranges from 10 to 20 feet with an average of about 14 feet. The average depth to groundwater is approximately 6 feet-bgs between P5 and P11. The vertical hydraulic gradient between the shallow unconfined aquifer and deeper confined aquifers is flat to slightly downward along the south bank of the river (from Cluster A in the west to Cluster C in the east) with hydraulic pressures in the deeper aquifer ranging from 17 to 21 feet-bgs. The vertical gradient is slightly upward in the north bank at monitoring well cluster 10N04E19N02-N04, where the potentiometric surface in the deep aquifer zone is just below the ground surface.

# 3.7 Groundwater Level Fluctuations

Following the completion of the field program in July 2011, MWA staff installed Level TROLL 700, 30 psi gauge pressure transducers and data loggers in each of the eleven shallow piezometers (P1 through P11) and eight cluster wells (A through D) to monitor long-term groundwater levels. Each data logger

was set to record water level measurements in 6-hour intervals. Water levels in each piezometer/well from July 2011 through March 2012 are shown on Figure 30. Also shown on the figure are water levels in 10N04E19N02-N04 on the north side of the river channel opposite the main Ranch house. It is noted that the 2010-2011 water year was relatively dry, and winter stormflows generated in the San Bernardino Mountains did not reach Camp Cady during the monitoring period shown on the hydrographs.

The figure shows that water levels in the shallow aquifer of the main channel respond variably from east to west across Camp Cady. From P1 to P5, water levels declined between 2.6 and 4.2 feet over the eightmonth monitoring period. The rate of water level decline was less during the winter and spring months presumably due to a decrease in local ET rates of riparian vegetation. Water levels in the shallow aquifer between P6 and P11 declined at a rate similar to those observed in P1 to P5 from July to October 2011 but recovered between 1 and 2 feet from October lows in most wells, with the exception of P6 and P10, which remained relatively stable from October through March. Water level recoveries reflect significant decreases in ET rates of riparian vegetation within and along the main channel east of the main Ranch house.

Water levels in cluster wells A though D responded variably from July 2011 through March 2012. At the Cluster A site, water levels in the shallow aquifer (A-Shallow) declined in a similar fashion as the nearest in-channel piezometer (P4); however static water levels in the deeper confined aquifer (A-Deep) declined more than 5 feet from July through August 2011 and gradually recovered about 4 feet through March 2012. Daily fluctuations indicate that the water levels in the deeper aquifer (A-Deep) respond to pumping of the Camp Cady pond production and domestic supply wells (located near Cluster B on the figure). Over the eight-month monitoring period, the vertical hydraulic gradient at the Cluster A site shifted from a slight downward to slight upward direction.

In the three Cluster B wells, water levels are clearly influenced by pumping of the Camp Cady pond production and domestic supply wells. Static water levels in the shallow aquifer (B-Shallow) declined by about 1 foot over the eight-month period. In contrast, static water levels declined by about 4 feet in B-Intermediate and B-Deep from July through August but mostly recovered by March 2012. The vertical hydraulic gradient varied from slightly upward in July, to downward in August, and back to upward from September 2011 through March 2012.

At the Cluster C site, water levels in the shallow aquifer (C-Shallow) declined by about 2 feet from July to October 2011 and recovered by about 1 foot through March 2012. In contrast, water levels in the deeper aquifer (C-Deep) are more sporadic and appear to respond to local pumping. Static groundwater levels declined by about 1 foot over the eight-month monitoring period. The vertical hydraulic gradient at the Cluster C site was downward throughout the monitoring period.

At the Cluster D site, water levels in the shallow aquifer (D-Shallow) are relatively stable, fluctuating less than 1 foot over the monitoring period.

Overall, seasonal water level trends in shallow piezometers and shallow cluster wells during the 2011-12 monitoring period resembled seasonal fluctuations measured in temporary "in channel" piezometers over a 14-month period for the 1989 Camp Cady Study (Bilhorn, 1989). It is noted that no stormflows

from the San Bernardino Mountains reached Camp Cady during the 1988-89 monitoring period. However, water levels rose by 3 to 4 feet from summertime lows in shallow piezometers installed in the main channel west of the main Ranch house during the 1988-89 winter and spring seasons.

# 4 AQUIFER TESTING

A constant-discharge pumping test was performed on the Camp Cady Pond Production Well (10N03E25A03) to confirm local aquifer hydraulic parameters. This is fundamental to evaluation of the feasibility of developing groundwater resources in deeper aquifers to supply water for future biological restoration projects at Camp Cady. Prior to this investigation, no formal pumping tests have ever been performed on wells in the vicinity of Camp Cady.

The installation of the three Cluster B wells close to the Pond Production Well and subsequent observation of water level drawdown in these wells and other nearby wells (including the inactive Tower Well [10N03E25A01] and the Camp Cady Domestic Production Well [10N03E25A02]) provided the data needed to reliably estimate the transmission and storage capacity of the aquifer, which is a determined by the aquifer transmissivity, horizontal and vertical hydraulic conductivity, and storativity (Figure 4). These parameters were subsequently used to predict the yield and water level drawdown in a future production well tapping the deep aquifer underlying Camp Cady. A three-dimensional numerical groundwater model was developed to evaluate the pumping test results and predict water level response in the shallow aquifer during planned operation of the deep water supply well.

#### 4.1 Technical Approach

The constant-discharge pumping test was conducted on the Pond Production Well using the existing well pump, wellhead appurtenances, and water conveyance system features. The water generated during the pumping tests was discharged through a 4-inch diameter pipe to the fish pond (located nearest to and east of the Ranch house). Discharge rates were controlled with an in-line gate valve, while discharge measurements were recorded with an in-line totalizing flow meter down-stream from the gate value. A newly installed flow meter (McCrometer model M0304) provided both an odometer (cumulative volume) and instantaneous discharge reading from 0 to 800 gpm in 50 gpm increments.

Water levels could not be measured in the Pond Production Well due to insufficient annular space between the 8-inch diameter production well casing and joint fittings on the pump column. Water levels in the three Cluster B wells were monitored at 15 second intervals using a Level TROLL 700, 30 psi gauge pressure transducer and data logger and confirmed with an electric sounder. Water levels in the Tower Well and Domestic Well were measured manually with an electric sounder. The Domestic and Pond Production wells were turned off more than 12 hours prior to testing.

#### 4.2 Well Construction Details

Well 10N03E25A03 (Pond Production Well): This well was installed for CDFG in 1983 by Wallis Water Systems, Inc. (Barstow, CA) using the rotary drilling method. A 15.5-inch diameter exploratory borehole was drilled to a total depth of 210 ft-bgs. The well was constructed with 8-inch diameter steel casing to 202 ft-bgs, and perforated (3/32-inch x 2.5-inch slot size) from 42 to 202 ft-bgs. The well is constructed with artificial filter pack from 20 to 202 ft-bgs and a concrete sanitary seal from 0 to 20 ft-bgs. The depth to water in the well at the time of construction was 28 ft-bgs. In 2005, Eagle Drilling removed the original vertical turbine pump and installed a submersible pump; the intake depth of the submersible

pump was set as 110 ft-bgs. This well currently supplies water to the Camp Cady ponds located east of the Ranch house (Figure 4).

Well 10N03E25A02 (Domestic Production Well): This well was installed for Mr. Max Ruderian in 1977 by Howard Pump, Inc. (Barstow, CA) using rotary drilling methods. The 9 7/8-inch diameter exploratory borehole was drilled to a total depth of 80 ft-bgs. The well was constructed with 6-inch diameter steel casing to 80 ft-bgs, and perforated (1/8-inch x 2.5-inch slot size) from 20 to 80 ft-bgs. The well is constructed with artificial filter pack from 20 to 80 ft-bgs and a (concrete?) sanitary seal from 0 to 20 ft-bgs. The depth to water in the well at the time of construction was unknown. This well is located approximately 20 feet southwest of the water tower and serves as the domestic water supply source for Camp Cady.

<u>Well 10N03E25A01 (inactive Tower Well):</u> This well was installed for Mr. Sidney Smith in 1932 for domestic and agricultural uses. The well is located in the water tower and is currently sealed off by a circular steel plate welded onto the top of the casing. The well was constructed with 10-inch diameter steel casing to a depth of 160 ft-bgs. No information on the driller, drilling method, borehole size or depth, and screen interval and screen slot size is available for this well. The depth to water in the well in 1955 was 4.0 ft-bgs, or 0.85 feet above the concrete floor.

<u>Well Cluster B – Deep, Intermediate, and Shallow:</u> Well construction details for the three recently installed monitoring wells are provided in Table 2, and well profiles are shown on **Figure 26**.

#### 4.3 Pumping Test Results and Analysis

On July 13, 2011, an 8-hour, constant-discharge pumping test was conducted on the Pond Production Well. Static water levels for the observation wells, including the three Cluster B monitoring wells, Domestic Well, and Tower Well, were recorded prior to pumping and are provided in Table 3. The Pond Production Well pump was turned on at 6:17 am and turned off at 2:17 pm after 8 hours of uninterrupted discharge. The discharge rate was maintained at 300 gpm for the duration of the pumping test.

Drawdown data for the three Cluster B wells, Domestic Well, and Tower Well are shown on Figure 31. Recovery data are shown on Figures 32 and 33. Water level drawdown and recovery over time were analyzed to estimate aquifer hydraulic parameters including horizontal and vertical hydraulic conductivity and aquifer storage properties in each of the three hydrostratigraphic zones (shallow, intermediate, and deep zones). A combination of classical well hydraulic analytical methods and three-dimensional numerical modeling methods were used to evaluate the data.

## 4.3.1 Analytical Methods

For the analytical aquifer test evaluation method, drawdown and recovery data for each observation well were plotted on semi-logarithmic charts, and traditional well hydraulic equations (associated with the Cooper-Jacob method) were used to estimate aquifer transmissivity, horizontal hydraulic conductivity, and aquifer storage properties in each of the three hydrostratigraphic zones (Driscoll, 1986). Key details and observations are summarized below.

The measurable drawdown in each of the Cluster B monitoring wells indicates that each of monitored zones contributes water to the Pond Production Well. The relatively straight drawdown curves in each monitoring well also indicate that any vertical leakage between aquifers was minimized by the presence of the Manix Beds, and no firm recharge or discharge boundaries were reached during the test. A slight departure from the straight line curve observed in B-Shallow is likely caused by a combination of local dewatering of the shallow aquifer and/or heterogeneity of shallow deposits. Such uncertainty was addressed by numerical methods. Drawdown and recovery curves have similar straight line slopes and zero-drawdown time intercepts.

In order to estimate aquifer parameters, a method was developed to determine whether the steeper drawdown curves associated with the B-Intermediate and B-Deep wells represented decreasing permeability or increasing water contribution with depth, or a combination of both. The method is summarized in Table 3 and described below. To estimate the relative contribution from the upper, intermediate, and shallow zones during the pumping test, the total thickness of sand deposits opposite the artificial filter pack in each well (20.0 feet for B-Shallow; 12.9 feet for B-Intermediate; and 23.0 feet for B-Deep) was summed (55.9 feet) and divided by the total thickness of sand layers opposite the Pond Production Well screen (98.7 feet) resulting in a ratio of 0.566. Applying this ratio to the discharge rate for the aquifer test (300 gpm) provided a preliminary estimate of 170 gpm that is contributed from the three zones (61 gpm from B-Shallow, 39 gpm from B-Intermediate, and 70 gpm from B-Deep), and 130 gpm that is contributed from unmonitored zones during the pumping test. Respective discharges were applied in the Cooper-Jacob analysis to estimate the aquifer parameters of each zone. The analytical results are summarized in Table 3. The table shows that the estimated transmissivity of the shallow zone is highest (1,262 feet<sup>2</sup>/day) followed by the deep zone (536 feet<sup>2</sup>/day) and intermediate zone (315 feet<sup>2</sup>/day). The estimated transmissivity of the Pond Production Well (3,730 ft<sup>2</sup>/day) was calculated by summing the transmissivity values of the three monitored zones and dividing by 0.566. This approach assumes the weighted-average hydraulic conductivity of sand deposits in the monitored versus unmonitored zones is equivalent. The estimated hydraulic conductivity of the shallow zone is highest (63 feet/day) with lower but similar values for the intermediate and deep zones (24 and 23 feet/day, respectively). The aquifer storativitity of the shallow zone was highest (1.09 x 10<sup>-3</sup>), followed by B-Intermediate 9.94 x 10<sup>-5</sup>, and B-Deep (1.79 x 10<sup>-5</sup>), which indicate unconfined conditions in the upper aquifer and increasing aquifer confinement with depth.

## 4.3.2 Numerical Methods

A three-dimensional transient MODFLOW model was also constructed and used to estimate aquifer hydraulic properties, including vertical hydraulic conductivities and associated leakage between aquifer zones. The model area encompasses an area of 4,000,000 square feet centered around the Pond Production Well. The MODFLOW model comprises 132 rows, 132 columns, and 3 layers representing the shallow, intermediate, and deep aquifer zones. A telescoping finite-difference grid was constructed with small (2-foot) grid cells around the pumping well telescoping to 20-foot cell dimensions for most of the model grid. The transient model simulated the 8-hour constant rate pumping test and a 16-hour recovery period. A total of 72 time steps were used over the 24-hour simulation period. The model was calibrated to the water-level drawdown and recovery in each piezometer and the domestic monitoring

well during the pumping test. Both manual and Parameter Estimation (PEST) code calibration simulations were performed. This inverse approach yielded aquifer hydraulic property values for each aquifer zone. The three aquifer zones were modeled as uniform layers with thicknesses based on the total sand thickness opposite each of the Cluster B monitoring wells (20.0 feet for Layer 1, 12.9 feet for Layer 2, and 23.0 feet thick for Layer 3). Inter-lying clay and sand layers between these zones were modeled implicitly using representative (low) vertical hydraulic conductivities. Uniform aquifer hydraulic property values were used for each aquifer zone.

The same flow rate allocations used in the analytical methods for the drawdown and recovery data were used in the MODFLOW model. However, several simulations were performed using different flow allocations based on the results of previous simulations. The final flow allocations are listed in Table 3. The final model calibration indicated that the contribution from the three zones was 40 gpm higher (210 gpm) than estimated using the sand-thickness approach (170 gpm), and that the water pumped from the Pond Production Well was primarily derived from the shallow and deep zones. Several boundary condition configurations were also tested to evaluate model sensitivity to these parameters. Both constant heads and specified (no-flow) flux conditions were simulated. Specified (no-flow) flux conditions resulted in some dewatering of the model domain and incomplete water level recovery during the transient simulations. Constant-head boundary conditions provided better calibration with the observed water level responses to pumping and recovery; therefore constant head boundaries were used in the final calibration runs. Additionally, attempts to simulate leakage from the local ponds indicated that the departure from straight line curve of B-Shallow (Figure 31) is likely caused by local dewatering of the shallow aquifer and due to recharge from the local ponds.

For the MODFLOW model, trial and error calibration simulations were performed initially, followed by PEST autocalibration simulations. For the PEST simulations, horizontal and vertical hydraulic conductivity and specific storage for each of the 3 layers were inverted (allowed to vary during the autocalibration runs) in each of the three model layers. Very good agreement was achieved between observed and simulated water level drawdown and recovery. Figure 34 shows the observed and simulated water level and drawdown results for the three piezometers and the domestic well. As shown in the figure, good agreement was obtained with the calibrated model. Final aquifer hydraulic property values obtained using the calibrated model are listed in Table 3 and summarized on Figure 35. The highest horizontal hydraulic conductivity was estimated for the shallow zone (103 feet/day), with lower but similar values estimated for the intermediate and deep zones (13 and 23 feet/day, respectively). Much lower vertical hydraulic conductivities (less than 0.006 feet/day) were simulated for Layers 1 and 2, consistent with the presence of silt and clay layers logged between the main aquifer zones. Simulated aquifer storage properties indicate semi-confined conditions in the upper aquifer and confined conditions in the intermediate and lower zones. Similar to the approach used in the analytical method, the estimated transmissivity of the Pond Production Well (4,870 feet<sup>2</sup>/day) was calculated by summing the individual transmissivity values of the three model sand layers and dividing by 0.566. The estimated transmissivity value is similar to the aquifer transmissivity applied in the USGS groundwater model for the floodplain aquifer outside of the main channel at Camp Cady (1,000 to 2,500 feet<sup>2</sup>/day) (Stamos et al., 2001).

#### 5 FEASIBILITY OF RIPARIAN HABITAT RESTORATION

Based on the current understanding of relationships between biological, surface water, and groundwater systems at Camp Cady, it is evident that the successful design of a habitat restoration program involving irrigation with groundwater must consider several factors, including:

- Current and future groundwater levels in the shallow aquifer
- Current and future pathways of major stormflows in the main channel
- Location, well construction, and yield of existing wells
- Potential yield of the deep aquifer
- Distribution and density of existing native and invasive riparian communities

Criteria developed from these factors can be used to identify viable restoration sites, determine the appropriate scale of restoration, and design the facilities needed to pump, store, and convey groundwater to satisfy riparian water demands.

Results of the data review and field investigation indicate that current groundwater conditions in combination with additional pumping from the deep aquifer could support variable-scale riparian habitat restoration projects at Camp Cady. Favorable sites for restoration in the main channel include areas east of the main Ranch house, where the water table occurs within 3 to 8 feet of the ground surface, and along the northern and southern banks that are protected from high-velocity stormflows. Based on the current understanding of the groundwater system, existing infrastructure, and biological objectives, an engineered solution involving planting and irrigation with groundwater may be initially comprised of one or more of the following components:

- A large-scale irrigation project (50 to 200 gpm) requiring the drilling and installation of a new production well tapping the deep aquifer system
- A small-scale irrigation project (5 to 10 gpm) using existing wells on the north bank of the river (see inset on Figure 4)

Potential well yield, associated aquifer hydraulic response, scale of restoration, and preliminary cost estimates for both project types are described below.

# 5.1 Large-Scale Irrigation Project

Results of the aquifer pumping test on the Pond Production Well can be used to estimate the potential well yield and corresponding water level drawdown in a hypothetical production well tapping the deep aquifer system. Figure 36 shows the predicted water level drawdown for pumping rates ranging from 50 to 200 gpm. The chart shows that the new production well would be capable of providing up to 200 gpm with approximately 70 feet of water level drawdown after 100 days of continuous pumping, a reasonable maximum period of uninterrupted pumping considering downtime for routine well maintenance and variable water demand of native riparian vegetation throughout the year. Drawdown curves assume a 100 percent efficient well, aquifer transmissivity of 1,000 feet<sup>2</sup>/day and storativity of

 $1.7 \times 10^{-4}$  (equivalent to 50 feet of sand with a hydraulic conductivity and storativity similar to confined sand deposits encountered below the Manix Beds at the Cluster B site).<sup>1</sup>

A preliminary well design for a new production well is shown on Figure 37. The production well is 250 feet deep and is constructed with 8-inch diameter mild-steel casing and screen. Based on the lithology encountered in the deep aquifer system at Cluster Well Sites A, B, and C, a 0.060-inch slotted screen with artificial filter pack (Silica Resources International [SRI] #8 grade sand or similar) is recommended. Modifications to the screen aperture size, screened interval, and filter pack material may be warranted depending on the actual lithologies encountered during drilling.

A 200-gpm well operating 6 months per year produces 161 AF of water. This volume of water could theoretically support a 44-acre, medium-density (40 to 70 percent vegetative cover) community of native cottonwoods and willows, assuming a water usage rate of 3.7 AF/acre (Lines and Bilhorn, 1996). This would cover a square area one-quarter of a mile in length, or roughly the riparian area bounded by Piezometers P8 and P9 and Cluster C (see Figure 4).

Water level response in the shallow aquifer to continuous pumping of the deep aquifer at a rate of 200 gpm was simulated using the three-layer numerical groundwater model. Results indicate that water level drawdown in the shallow aquifer near the new well would likely be minimal (less than 0.3 feet after 100 days) due primarily to the large thickness and low vertical hydraulic conductivity of the Manix Clay Beds. It is noted that simulated water level responses in the shallow aquifer are preliminary and based on key assumptions inherent in the model. Additional evaluation of the influence of constant-head model boundaries and incorporation of intermittent streamflow recharge and varying pumping schedules on shallow aquifer response is needed but beyond the scope of this investigation. For planning purposes, a new production well tapping the deep aquifer would ideally be located close to targeted habitat restoration areas to minimize the cost of water conveyance. However, locating the well some distance away from already established native riparian habitat (e.g., greater than 200 feet) would further reduce the small risk of locally dewatering the shallow aquifer and stressing existing riparian habitat.

A preliminary cost estimate for a large-scale irrigation project is presented in Table 4. As shown in the table, the cost for the drilling, installation, and testing of a new 8-inch diameter production well is approximately \$70,000. Currently, because access to electricity across Camp Cady is limited, a solar-powered pump system is assumed for cost estimation purposes. A 50- to 70-gpm solar pump (the highest flowing solar pump on the market) and solar array would cost approximately \$16,700, resulting in an estimated total project cost of \$86,700. Assuming access to electricity can be provided in the future, we recommend a 4-inch standard electric submersible pump (Grundfos 75S or similar) to allow for a pumping rate up to 100 gpm. For a higher planned pumping rate up to 200 gpm, we recommend a 6-inch diameter standard electric submersible pump (Grundfos 230s or similar).

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<sup>&</sup>lt;sup>1</sup> The storativity (S) of an aquifer is the volume of water released from or taken into storage per unit surface area of aquifer per unit change in water level. For an unconfined aquifer, the S value is referred to as specific yield.

## 5.2 Small-Scale Irrigation Project

Discussions during the field investigation with Bruce Kenyon, volunteer caretaker at Camp Cady, identified possibilities for small-scale riparian restoration projects on the north side of the river channel. This type of project would involve pumping one or more existing wells on the north side of the main channel at a rate of 5 to 10 gpm, storing water in one or more 550-gallon plastic header tanks, and using either a drip irrigation system or channel lining to distribute the water along natural channels planted with native riparian vegetation.

The location and surface condition of existing inactive wells located along the north bank of Camp Cady were confirmed during the field program (well locations are shown in the inset of Figure 4). There are no records documenting the well construction details of these wells. The following summary is based on field observations and personal communication with Bruce Kenyon (2011). Existing North Well 1 is a former domestic well used historically by CDFG for groundwater level monitoring. The well and screen interval depths are currently unknown; the well is constructed of mild steel, and the top of casing is located at the ground surface. Existing North Well 2 is a former livestock well located adjacent to MWA Monitoring Well 10N04E23M06. The well is constructed with 8-inch diameter mild steel (well depth unknown). The casing stick-up is 1.3 feet, and the current depth to water is 9 feet-bgs. Existing North Well 3 is a 120-foot deep (screen interval is unknown) former domestic well. The well casing is currently covered by a wooden box buried a few feet below shifting sands. The well had been equipped with a solar pump and pumped at a rate of 7 gpm from 2003 to 2005 to irrigate native riparian habitat. The solar pump was destroyed during the August 2005 wildfires at Camp Cady.

A preliminary cost estimate for a small-scale irrigation project is presented in Table 5. As shown in the table, the \$5,000 cost estimate covers the costs for a solar pump and solar array system and assumes the use of an existing well on the north bank.

# 6 CONCLUSIONS AND RECOMMENDATIONS

#### 6.1 Conclusions

Based on the results of the field investigation, refinement of the conceptual hydrogeologic model for Camp Cady, and estimated irrigation demand to support potential riparian restoration projects, the following conclusions can be made:

# 6.1.1 Hydrogeologic and Biological Evolution at Camp Cady

 Under natural (pre-development) conditions, the shallow groundwater table intersected the ground surface of the Mojave River upstream (west) of Camp Cady in the vicinity of Harvard Hill. This topographically-controlled condition provided perennial flows in the main channel at Camp Cady, which supported native riparian vegetation (cottonwood, willow, and mesquite) within and along the banks of the river.

From the mid-1940s to mid-1970s, overpumping in the Baja Subarea and below-average stormflows in the Mojave River caused groundwater levels to decline at an average rate of approximately 1.5 feet per year across the Baja Subarea. Historical aerial photographs and groundwater level data confirm that stresses on riparian vegetation in the western portion of Camp Cady (near Harvard Road) correlated with local dewatering of the shallow aquifer and migration of the intersection between the shallow groundwater table and ground surface in an easterly direction beginning in the late 1970s.

- 2. Stressed native riparian vegetation in the main channel both upstream and in the western portion of Camp Cady was removed and transported downstream by stormflows during the 1982-83 flood (and also possibly during the 1979-80 flood). Large areas of previously dense riparian vegetation in the main channel were left barren as a result of flooding.
- 3. Since the 1982-83 flood, groundwater levels have continued to decline as a result of overproduction in the Baja Subarea. In combination with recent flooding events (e.g., 1994-95, 1997-98, 2004-05, and 2010-11), groundwater declines have further stressed and eliminated riparian vegetation within the main channel and along the banks of the river at Camp Cady in the direction of dewatering in the shallow aguifer system (from west to east).
- 4. The creation of barren land and migration of dune sands within the main channel upstream of and in the western portion of Camp Cady following the 1982-83 flood is related to declining groundwater levels and destruction of stressed riparian vegetation.
- 5. Until local and regional groundwater levels can be stabilized, the health of remaining stands of low-density native riparian vegetation within the main channel and along the banks of the river from the

main Ranch house to the eastern boundary of Camp Cady will continue to be at risk to continued dewatering of the shallow aquifer and future flooding.

# 6.1.2 Current Hydrogeologic Conditions Pertinent to Biological Restoration

- 1. The shallow groundwater system beneath Camp Cady is supported by the regional (off-river) groundwater elevation and local streamflow losses from the Mojave River.
- 2. The shallow groundwater system is hydraulically separated from a deep aquifer system by the Manix Clay Beds, an aquitard with an average vertical thickness between 120 and 140 feet.
- 3. The thickness of recent coarse-grained alluvium in the main channel ranges from 16 to 46 feet with thicknesses generally decreasing from west to east. The recent alluvium uncomformably overlies the eroded top of the Manix Cay Beds.
- 4. Beneath the Manix Lake Clay Beds exists a deeper aquifer system (>150 feet-bgs) comprised of fine-to coarse-grained sands interbedded with thin clay lenses. This deeper aquifer system does not occur at Cluster Well D (and presumably to the east of Cluster Site D) due to localized faulting. The thickness of the deeper aquifer is unknown; however, depth to bedrock beneath Camp Cady ranges from 200 feet-bgs in the southeast to more than 700 feet-bgs along its western boundary.
- 5. Historically flowing artesian conditions no longer occur at Camp Cady. Shallow groundwater levels range from approximately 5 to 35 feet-bgs in the main channel from shallow piezometers P1 to P11 with depth to water decreasing from west to east. Depth to groundwater is less than 10 feet-bgs between P5 and P11.
- 6. Seasonal water level fluctuations from July 2011 through March 2012 range from 2 to 5 feet in most shallow piezometers. Water level fluctuations associated with variable riparian ET demand are more pronounced east of the Camp Cady ranch house.
- 7. The vertical hydraulic gradient between the shallow unconfined aquifer and deeper confined aquifers is flat to slightly downward along the south bank of the river (from Cluster A in the west to Cluster C in the east) and slightly upward in the north bank at cluster well 10N04E19N02-N04. While the slightly upward vertical gradient may support groundwater levels in the shallow unconfined aquifer in the north bank (by preventing downward vertical leakage), hydraulic heads in the deeper aquifers are too low to provide flowing artesian conditions at Camp Cady.
- 8. An aquifer pumping test performed on the Camp Cady Pond Production Well confirmed that the deep aquifer system occurs under confined conditions (aquifer storativity = 1.7 x 10<sup>-4</sup>) where the Manix Clay Beds are present, and a well tapping deeper sand units similar to those encountered at Cluster Site B (sand hydraulic conducitivity = 23 feet/day) could probably yield 200 gpm with minimal impact to groundwater levels in the shallow aguifer.

9. A preliminary assessment of irrigation demand for native riparian vegetation indicates that an engineered solution involving irrigation with groundwater is feasible and capable of supporting one or more small-scale (5 to 10 gpm) and large-scale (100 to 200 gpm) riparian habitat restoration projects. The preliminary cost estiamte for a large-scale and small-scale irrigation project is about \$90,000 and \$5,000, respectively. The majority of the cost difference is the drilling and installation of a new 6-inch diameter production well for the large-scale irrigation project.

## 6.2 Recommendations

Findings from this investigation indicate that available groundwater resources can be developed to support native riparian restoration at Camp Cady involving irrigation with groundwater. We recommend that the following technical guidance be incorporated into a final habitat restoration program:

- Because riparian vegetation within the main channel will continue to be at risk to declining
  groundwater levels and future floods, it is recommended that future riparian restoration efforts
  focus on areas 1) along the margins of the main channel away from high-energy stormflows and 2)
  between Piezometers P5 and P11, where shallow groundwater occurs less than 10 feet-bgs,
  providing favorable conditions to successfully re-establish native riparian stands.
- 2. Of the four cluster sites (A through D) evaluated for this study, Site C appears to provide the most favorable hydrogeologic and biological conditions for habitat restoration. These conditions include 1) good hydraulic separation between the shallow and deep aquifer systems, 2) a shallow water table and flat vertical hydraulic gradient, 3) close proximity to areas in the main channel naturally protected from higher-energy stormflows.
- 3. For a large-scale riparian restoration project, we recommend the installation of a new production well tapping the deep aquifer system (below the Manix Clay Beds) near areas with historically dense native riparian vegetation (e.g., Cluster C site) but protected from floodwaters. We recommend drilling an exploratory borehole to a depth of at least 250 feet and constructing the well with 8-inch diameter mild steel casing and screen to allow for flexibility in future pumping rates. Based on the lithology encountered in the deep aquifer system at Cluster Well Sites A, B, and C, a 0.060-inch slotted screen with artificial filter pack (Silica Resources International [SRI] #8 grade sand or similar) is recommended. A preliminary 8-inch diameter well design is shown on Figure 37. Modifications to the screen aperture size, screened interval, and filter pack material may be warranted depending on the actual lithologies encountered during drilling.
- 4. For a planned pumping rate of 100 gpm or less, we recommend a solar submersible pump (Grundfos 4" SQFlex 60 SQF-3); however, the well yield may be limited by the required hydraulic lift to between 50 and 70 gpm. If access to electricity is provided in the future, we recommend a 4-inch diameter standard electric submersible pump (Grundfos 75S or similar) for a pumping rate up to 100

- gpm. For a higher pumping rate up to 200 gpm, we recommend a 6-inch diameter standard electric submersible pump (Grundfos 230S or similar).
- 5. For a small-scale riparian restoration project using one or more existing wells on the north bank, we recommend installing a submersible solar pump (Grunfos 3" 11 SQFlex-2) capable of providing 5-10 gpm. Because construction details (e.g., well and screen interval depths) are unknown for some of the existing north bank wells, we recommend that water level monitoring in all wells on the north bank be conducted at a frequency that ensures early detection of any water level declines in the shallow groundwater caused by pumping.
- 6. Water levels in the 19 shallow piezometer and cluster wells should continue to be measured with pressure transducers to monitor seasonal fluctuations, responses during storm events, and changes in vertical and horizontal hydraulic gradients.
- 7. A groundwater quality sample should be collected from one or more of the shallow piezometers (P5 to P11) and deep cluster well (C-Deep) and analyzed for constituents of concern relevant to habitat restoration (e.g., major cations and anions, trace metals, and pH).

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Table 1
Historical Aerial Photographs of Camp Cady

Report Figure No.	Date	Source	Flight #
11	1929	CDFG	
12	1939	MWA	
13	November 9, 1955	SBCFCD	F-36
14	December 6, 1962	SBCFCD	C-378
15	May 15, 1964	SBCFCD	C-13
16	February 26, 1969	SBCFCD	C-296
17	March 1, 1984	SBCFCD	C-444
18	August 2, 1989	SBCFCD	C-475
19	February 19, 1992	SBCFCD	C-490
20	April 7, 1993	SBCFCD	C-505
21	June 25, 2005	NAIP	
22	June, 2008	MWA	
23	April 15, 2009	ArcGIS	
24	Summer, 2010	NAIP	

CDFG = California Department of Fish and Game, California's Wildlife Action Plan (2007) prepared by University of California Davis Wildlife Health Center

MWA = Mojave Water Agency

SBCFCD = San Bernardino County Flood Control District

NAIP = USDA National Agriculture Imagery Program accessed through

CDFG web portal - http://www.dfg.ca.gov/biogeodata/gis/map\_services.asp

ArcGIS = ArcGIS World Imagery - http://goto.arcgisonline.com/maps/World\_Imagery

Table 2
Well Construction Summary

Well Type	Name	Longitude NAD83	Latitude NAD83	Northing	Easting	Reference Elevation <sup>1</sup>	Ground Elevation <sup>1</sup>	Completion Date	Drilling Method	Total Drilling Depth	Completed Depth <sup>2</sup>	Screen Interval <sup>2</sup>	Gravel Pack <sup>3</sup>	Well Seal <sup>4</sup>	Casing Stick-up	Depth to Groundwater (06-11)	Groundwater Elevation	Depth to Top of Clay	Top of Clay Elevation
						feet msl	feet msl			feet bgs	feet bgs	feet bgs	feet bgs	feet bgs	feet ags	feet TOC	feet msl	feet bgs	feet msl
Piezometer	P1	-116.638860	34.926421	2162293.01	6969652.05	1746.23	1744.09	20-Apr-11	HSA	50	43	33 - 43	5 - 50	0 - 5	2.14	35.27	1,710.96	46.0	1,698
Piezometer	P2	-116.633298	34.930191	2163687.44	6971300.31	1738.15	1735.59	20-Apr-11	HSA	40	38	28 - 38	5 - 40	0 - 5	2.56	27.39	1,710.76	38.0	1,698
Piezometer	P3	-116.628906	34.933492	2164906.57	6972600.40	1732.04	1728.71	20-Apr-11	HSA	50	37	27 - 37	5 - 50	0 - 5	3.33	23.54	1,708.50	40.0	1,689
Piezometer	P4	-116.622895	34.936179	2165909.24	6974388.48	1721.38	1718.46	19-Apr-11	HSA	30	27.5	17.5 - 27.5	5 - 30	0 - 5	2.91	14.52	1,706.86	27.5	1,691
Piezometer	P5	-116.616754	34.936500	2166051.17	6976227.10	1713.88	1711.39	19-Apr-11	HSA	20	18	13 - 18	5 - 20	0 - 5	2.49	10.24	1,703.64	19.5	1,692
Piezometer	P6	-116.612837	34.937095	2166283.72	6977398.07	1707.58	1704.97	18-Apr-11	HSA	25	25	20 - 25	5 - 25	0 - 5	2.61	7.39	1,700.19	24.0	1,681
Piezometer	P7	-116.607635	34.937780	2166554.66	6978953.46	1700.23	1697.89	18-Apr-11	HSA	18	18	13 - 18	5 - 18	0 - 5	2.34	5.74	1,694.49	16.5	1,681
Piezometer	P8	-116.602570	34.938452	2166820.45	6980467.94	1697.26	1695.15	18-Apr-11	HSA	18	18	13 - 18	5 - 18	0 - 5	2.11	8.19	1,689.07	16.0	1,679
Piezometer	P9	-116.596609	34.940096	2167443.36	6982245.94	1690.28	1688.41	19-Apr-11	HSA	18	18	8 - 18	5 - 18	0 - 5	1.86	8.69	1,681.59	17.5	1,671
Piezometer	P10	-116.591417	34.942564	2168363.46	6983789.36	1685.67	1683.12	19-Apr-11	HSA	18	18	8 - 18	5 - 18	0 - 5	2.55	9.70	1,675.97	17.5	1,666
Piezometer	P11	-116.586689	34.944764	2169183.85	6985194.69	1678.87	1676.34	19-Apr-11	HSA	20	18	13 - 18	5 - 20	0 - 5	2.53	9.10	1,669.77	18.5	1,658
Cluster Well	A-Shallow	-116.620178	34.934686	2165376.86	6975210.13	1726.25	1723.57	04-Jun-11	Sonic	38	37	17 - 32	12 - 38	0 - 12	2.68	20.70	1,705.55		-
Cluster Well	A-Deep	-116.620146	34.934695	2165380.19	6975219.76	1726.27	1723.31	04-Jun-11	Sonic	201	200	175 - 195	170 - 201	0 - 170	2.96	22.28	1,703.99		
Cluster Well	B-Shallow	-116.613325	34.934995	2165517.61	6977262.34	1726.51	1723.50	01-Jun-11	Sonic	53	52	37 - 47	32 - 53	0 - 32	3.01	24.62	1,701.89		
Cluster Well	B-Intermediate	-116.613333	34.935011	2165523.46	6977259.95	1726.47	1723.53	01-Jun-11	Sonic	110	109	94 - 104	89 - 110	0 - 89	2.94	23.37	1,703.10		
Cluster Well	B-Deep	-116.613340	34.935029	2165530.12	6977257.54	1726.43	1723.88	01-Jun-11	Sonic	185	184	159 - 179	154 - 185	0 - 154	2.55	23.60	1,702.83		
Cluster Well	C-Shallow	-116.599871	34.936211	2166016.10	6981288.15	1709.57	1706.72	07-Jun-11	Sonic	39	38	13 - 18 ; 28 - 33	8 - 39	0 - 8	2.85	16.60	1,692.97		
Cluster Well	C-Deep	-116.599838	34.936206	2166014.51	6981298.04	1709.55	1706.60	07-Jun-11	Sonic	205	200	175 - 195	170 - 200	0 - 170	2.95	20.15	1,689.40		
Cluster Well	D-Shallow	-116.589690	34.938804	2167002.49	6984326.15	1709.56	1706.53	10-Jun-11	Sonic	195	40	25 - 35	20 - 41	0 - 20	3.03	28.49	1,681.07		

## Notes:

feet msl = feet above mean sea level

feet TOC = feet below top of well casing

feet bgs = feet below ground surface

feet ags = feet above ground surface (vertical distance between top of PVC casing to concrete pad for cluster wells)

Coordinates projected in State Plane 0405 Feet (NAD 83 Datum)

Well screens for all piezometers wrapped with fiberglass window screen secured with 11-inch long plastic zipties

Cluster wells completed with 2.5-inch diameter (Schedule 80) PVC casing with 0.02-inch slotted (20-slot) well screen

Cluster Wells: combination of hydrated bentonite pellets and cement-bentonite grout

<sup>&</sup>lt;sup>1</sup>Professionally surveyed on June 13, 2011 by Merrell-Johnson Engineering; Reference Elevation provided represents northerly top of PVC casing

<sup>&</sup>lt;sup>2</sup>Piezometers completed with 2-inch diameter (Schedule 40) PVC casing with 0.01-inch slotted (10-slot) well screen

<sup>&</sup>lt;sup>3</sup>#2/12 Monterey Beach Sand

<sup>&</sup>lt;sup>4</sup>Piezometers: hydrated medium bentonite pellets

Table 3
Pumping Test Summary and Estimated Aquifer Parameters

		ANALY	TICAL (COOPI	ER-JACOB) M	ETHOD		NUMERICAL (MODFLOW) METHOD				
	Pond Production	Cluster B Shallow	Cluster B Intermediate	Cluster B Deep	Domestic	Tower	Pond Production	Cluster B Shallow	Cluster B Intermediate	Cluster B Deep	
Distance from Pond Well, r (feet)	0	24.2	22.2	21.6	375	404					
Screen Interval (feet-bgs)	42-202	37-47	94-104	159-179	20-80	?-160?					
Static Water Level (feet TOC) 1	24.9	25.7	24.4	24.5	18.06	13.77					
s (feet) <sup>2</sup>		1.7	4.4	4.6							
effective sand (ft) <sup>3</sup>	98.7	20.0	12.9	23.0							
total sand (ft)	98.7		55.9								
effective sand (% of total sand)	100%	56.6%									
% effective sand	100%	20%	13%	23%							
	-					•					
Discharge, Q, (gpm) <sup>4</sup>	300	61	39	70			300	85	25	100	
Transmissivity, T (feet <sup>2</sup> /day) <sup>5</sup>	3730	1262	315	536			4870	2060	168	52	
Horizontal Hydraulic Conductivity, K <sub>H</sub> (feet/day) <sup>6</sup>	40	63	24	23				103	13	2	
Vertical Hydraulic Conductivity, K <sub>v</sub> (feet/day)							·	0.057	0.006		
Storativity, S (unitless) 7		1.09E-03	9.94E-05	1.79E-05				7.4E10-4	1.70E-04	1.30E-0	

<sup>&</sup>lt;sup>1</sup> Static water level for Pond Production Well was estimated based on average of three Cluster B wells

<sup>&</sup>lt;sup>2</sup>= slope of the difference in drawdown (or recovery) graph expressed as the change in drawdown between any two values of distance on the log scale whose ratio is 10

<sup>&</sup>lt;sup>3</sup>= vertical distance over 1 log cycle on time-drawdown and recovery plots

<sup>&</sup>lt;sup>4</sup> Discharge for Cluster B wells estimated from sand thicknesses compared to Pond Production Well (anaytical method) and adjusted during model calibration (numerical method)

<sup>&</sup>lt;sup>5</sup> = (264 Q / s) / 7.48 (analytical method); T value for Pond Production well equals sum of Cluster well T values divided by .566 (analytical and numerical method)

 $<sup>^{6}</sup>$  = T / b, where b = effective sand thickness (analytical method)

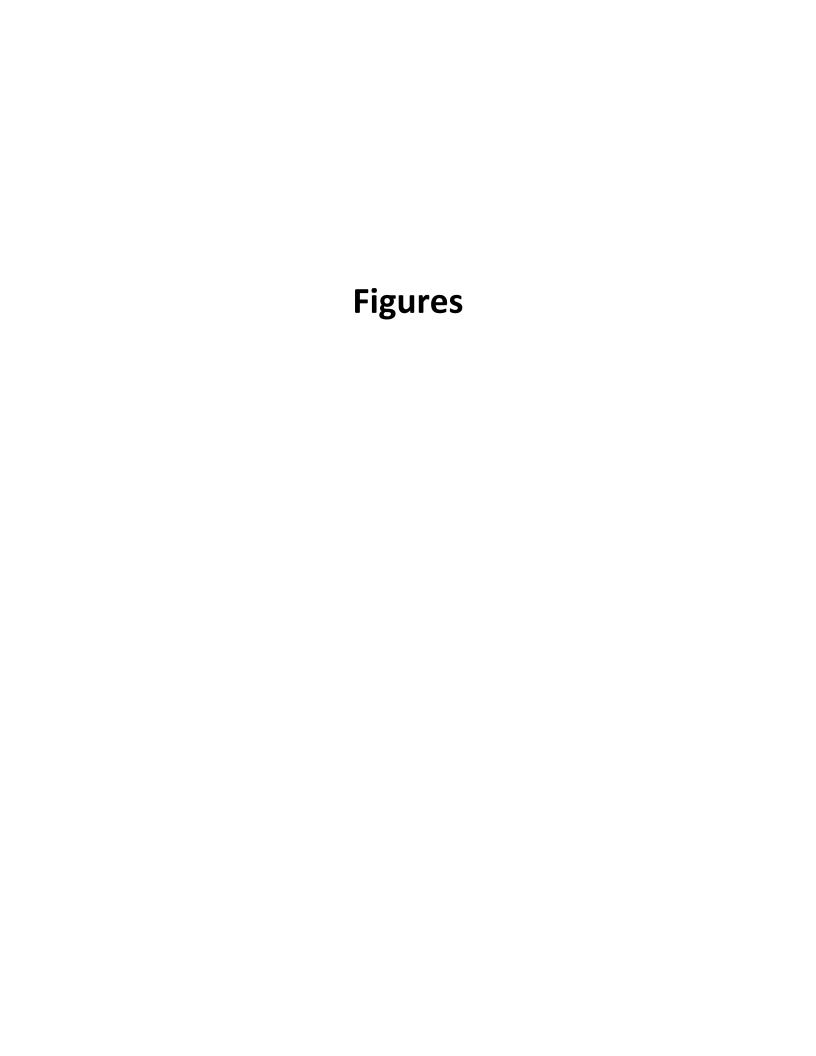
 $<sup>&#</sup>x27; = 0.3T t_o / r^2$ , where  $t_o =$  intercept of straight line at zero drawdown (days) on time-drawdown and time-recovery plots (analytical method) average to value from drawdown and recovery plots used for B-Shallow

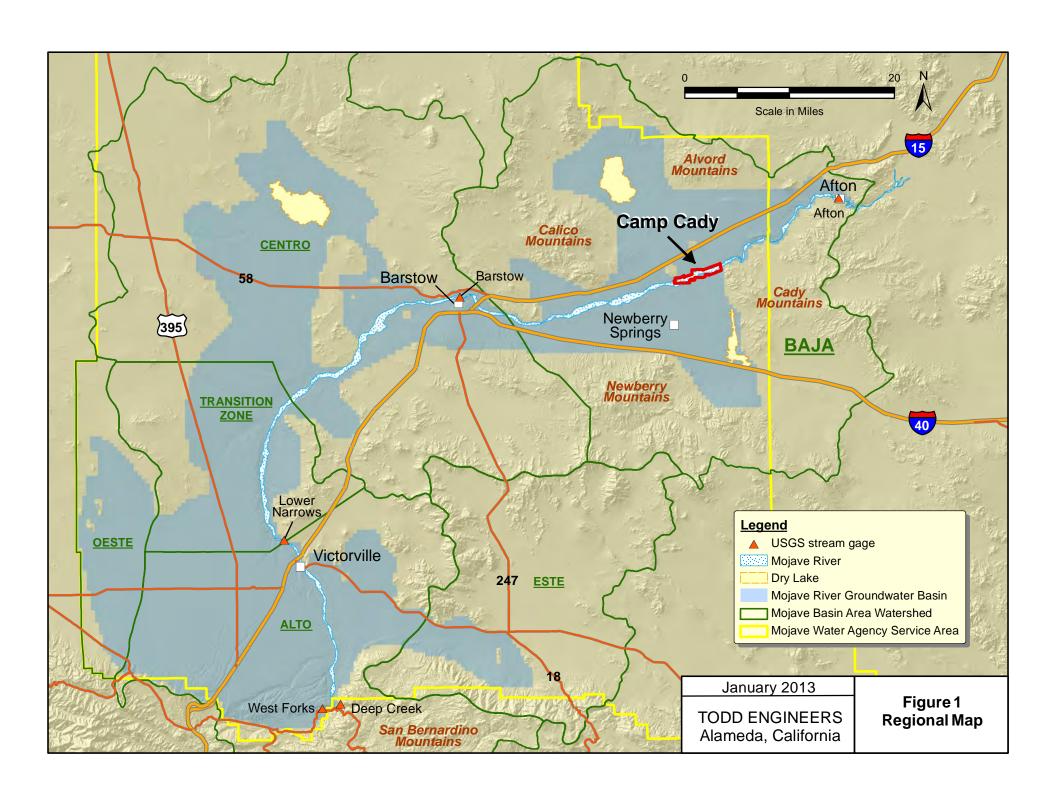
Table 4
Preliminary Cost Estimate for Large-Scale Irrigation Project

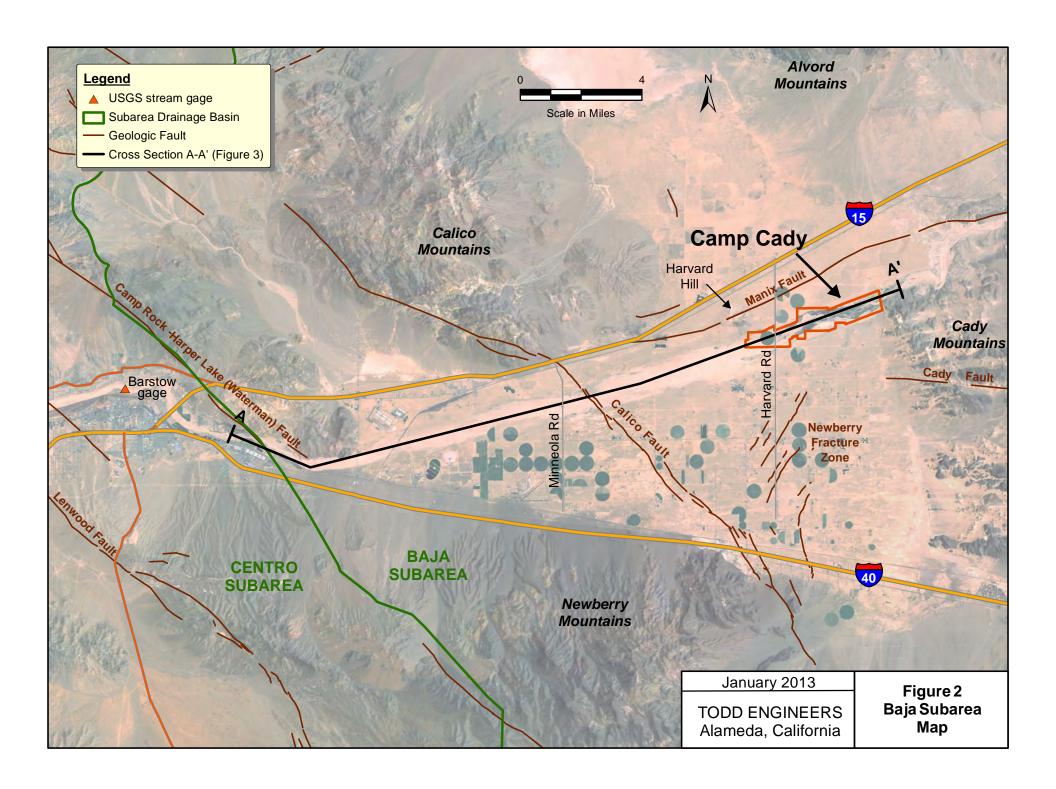
HYPOTHETICAL PROJECT - SOUTH BANK (new 250-foot well, 50 to 70 gpm solar pump with 1,400 W solar array)									
Install New Well	\$	70,000	Well with 8-inch screen/casing (250 feet-bgs / screen interval at 175 to 220 feet-bgs), development and pumping test						
Solar Pump	\$	2,200	Grundfos 4-inch SQFlex 40 SQF-5 (120 VDC / 1400 W solar array needed)						
	\$	12,200	18 Grundfos GF80 panels (80W)						
Solar array	\$	200	Array to controller wire kit, array to array wire kit						
Solal allay	\$	100	IO-50 control panel for solar only						
	\$	2,000	Fixed solar rack - two 8-panel ground mount support						
Estimated Total Cost	\$	86,700							

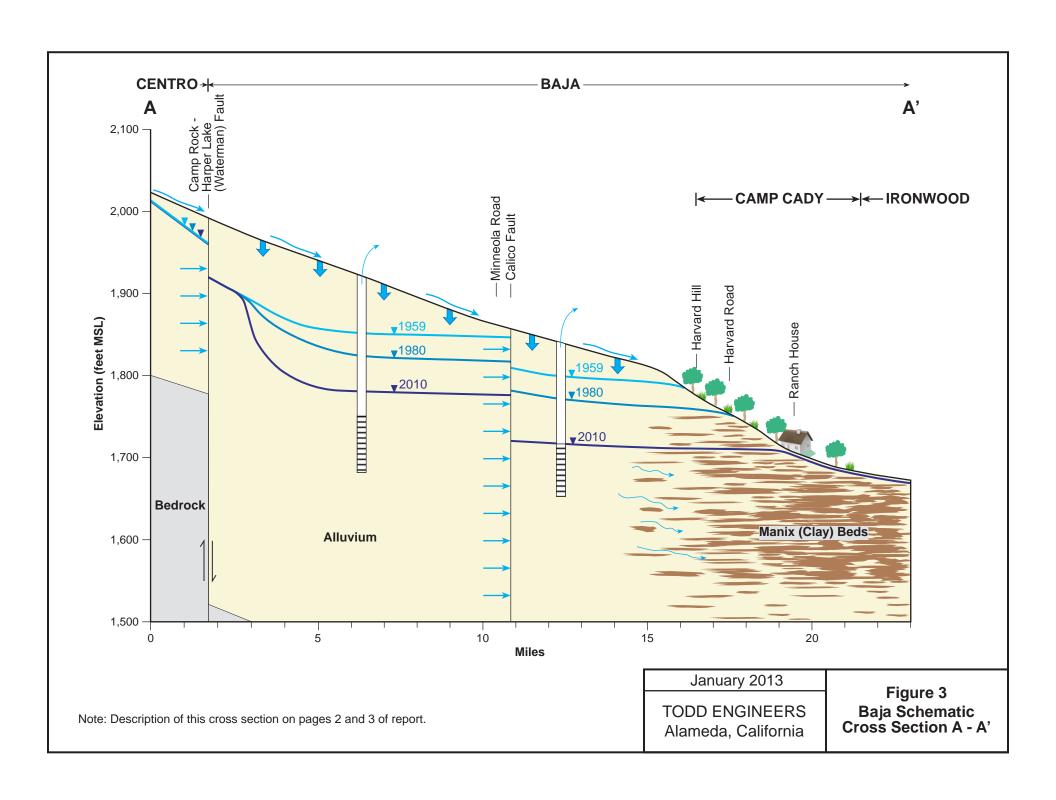
Table 5
Preliminary Cost Estimate for Small-Scale Irrigation Project

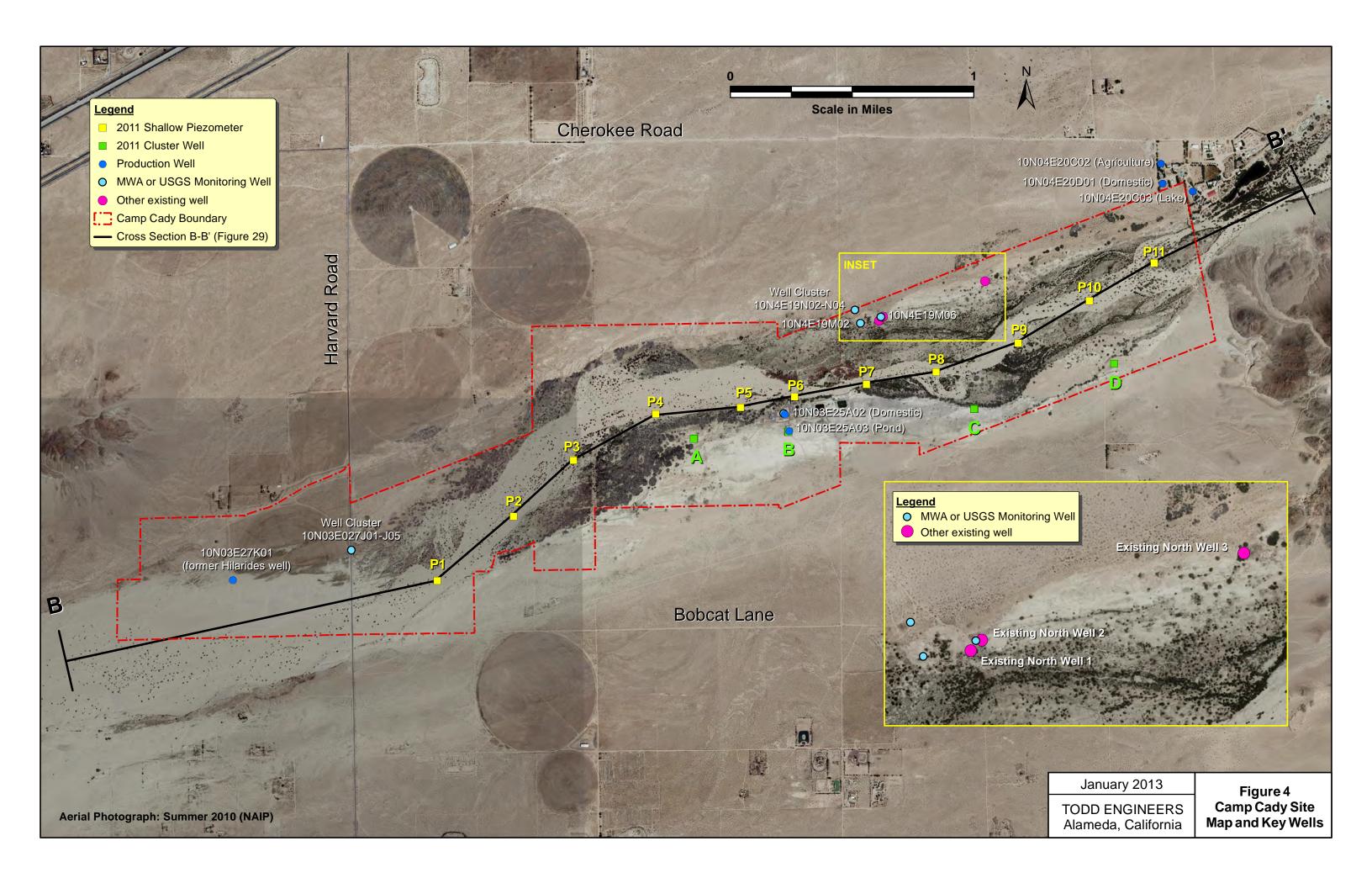
HYPOTHETICAL PROJECT - NORTH BANK (10-gpm solar pump with 240 W solar array)										
Solar Pump \$ 2,100 Grundfos 3-inch SQFlex 11 SQF-2 (120 VDC / 240 W solar array needed)										
	\$	2,100	3 Grundfos GF80 panels (80W)							
Solar array	\$	100	Array to controller wire kit, array to array wire kit							
Oolal allay	\$	100	IO-50 control panel for solar only							
	\$	600	Fixed solar rack - 3-panel ground mount support							
Estimated Total Cost	\$	5,000								

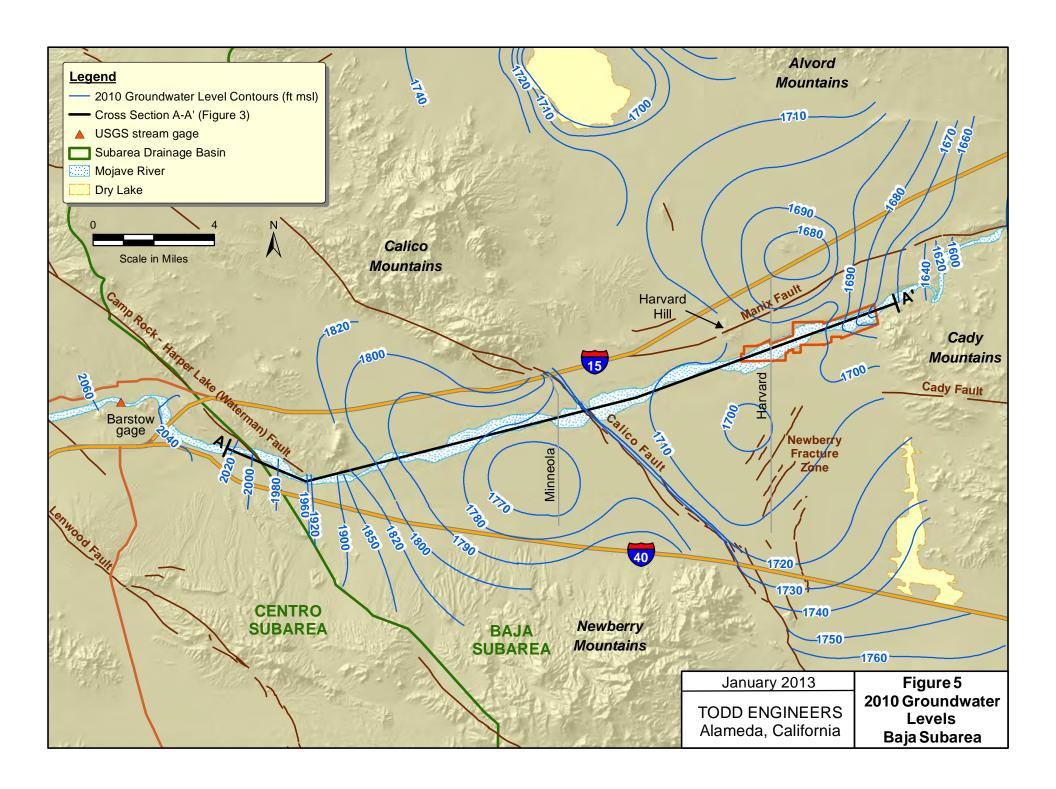


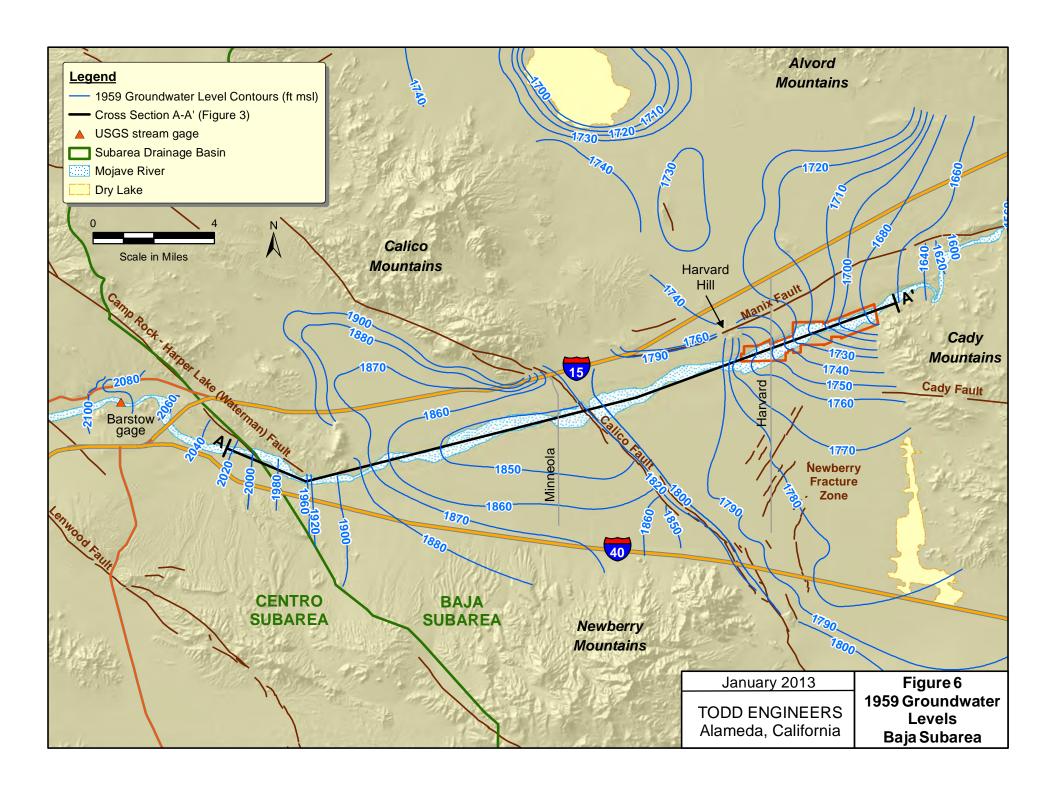


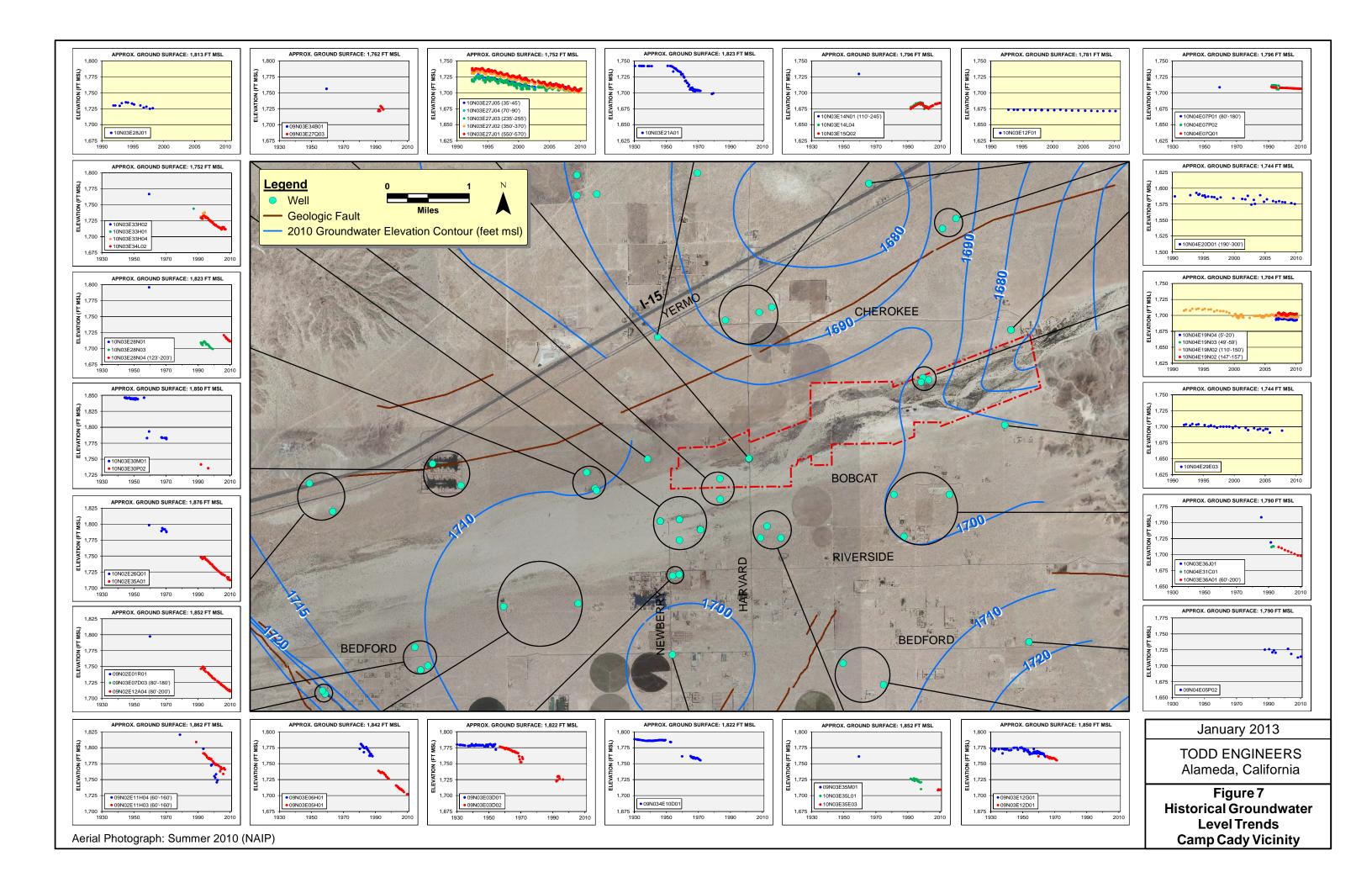


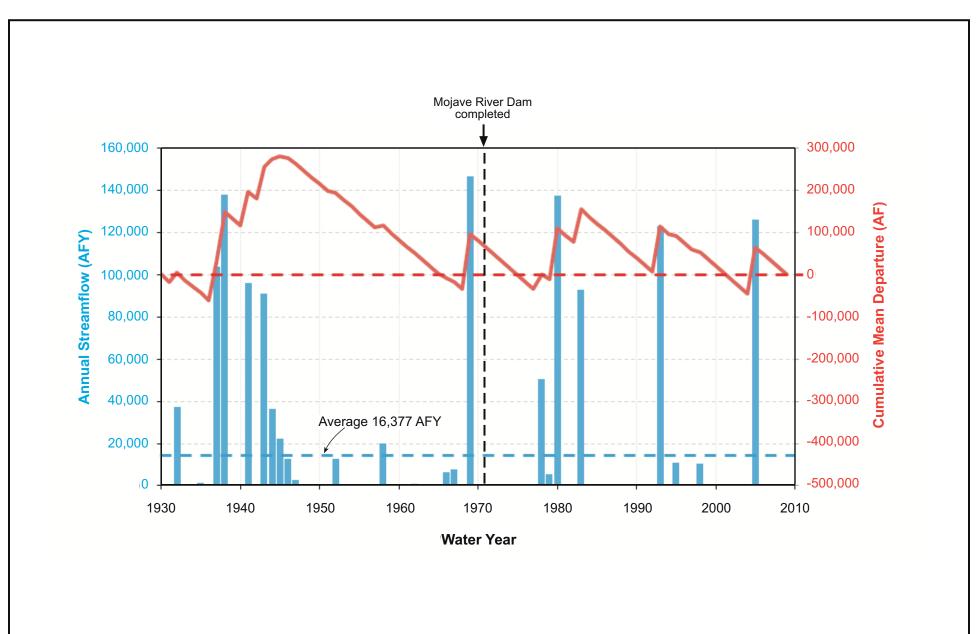










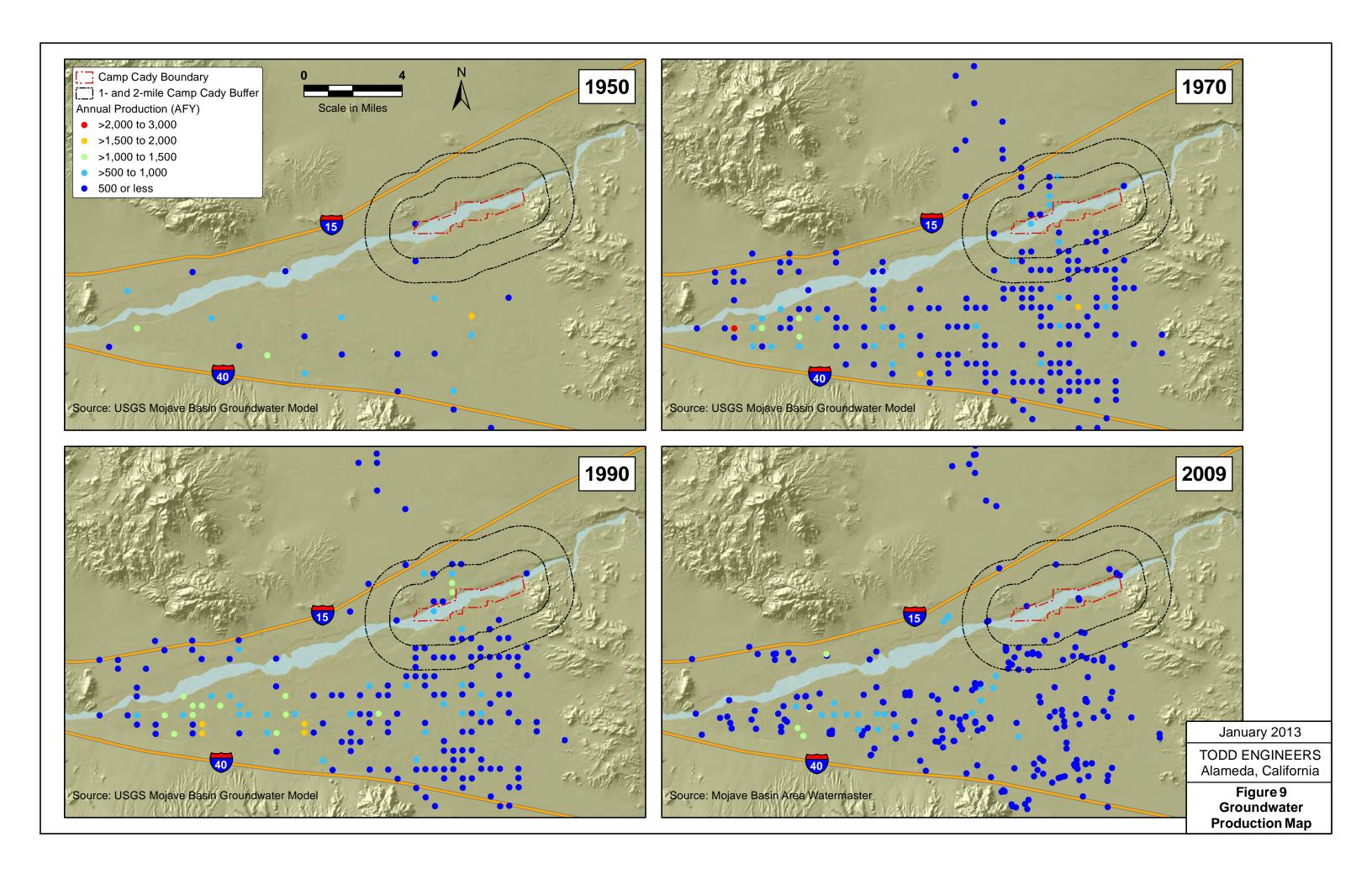


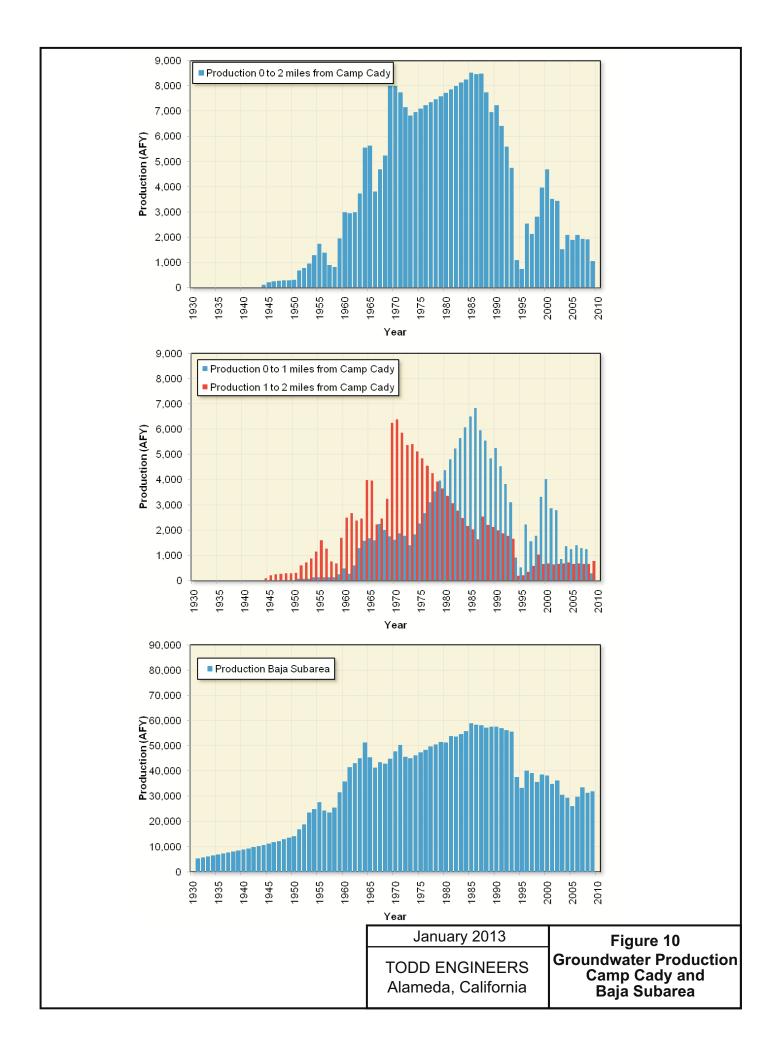
January 2013

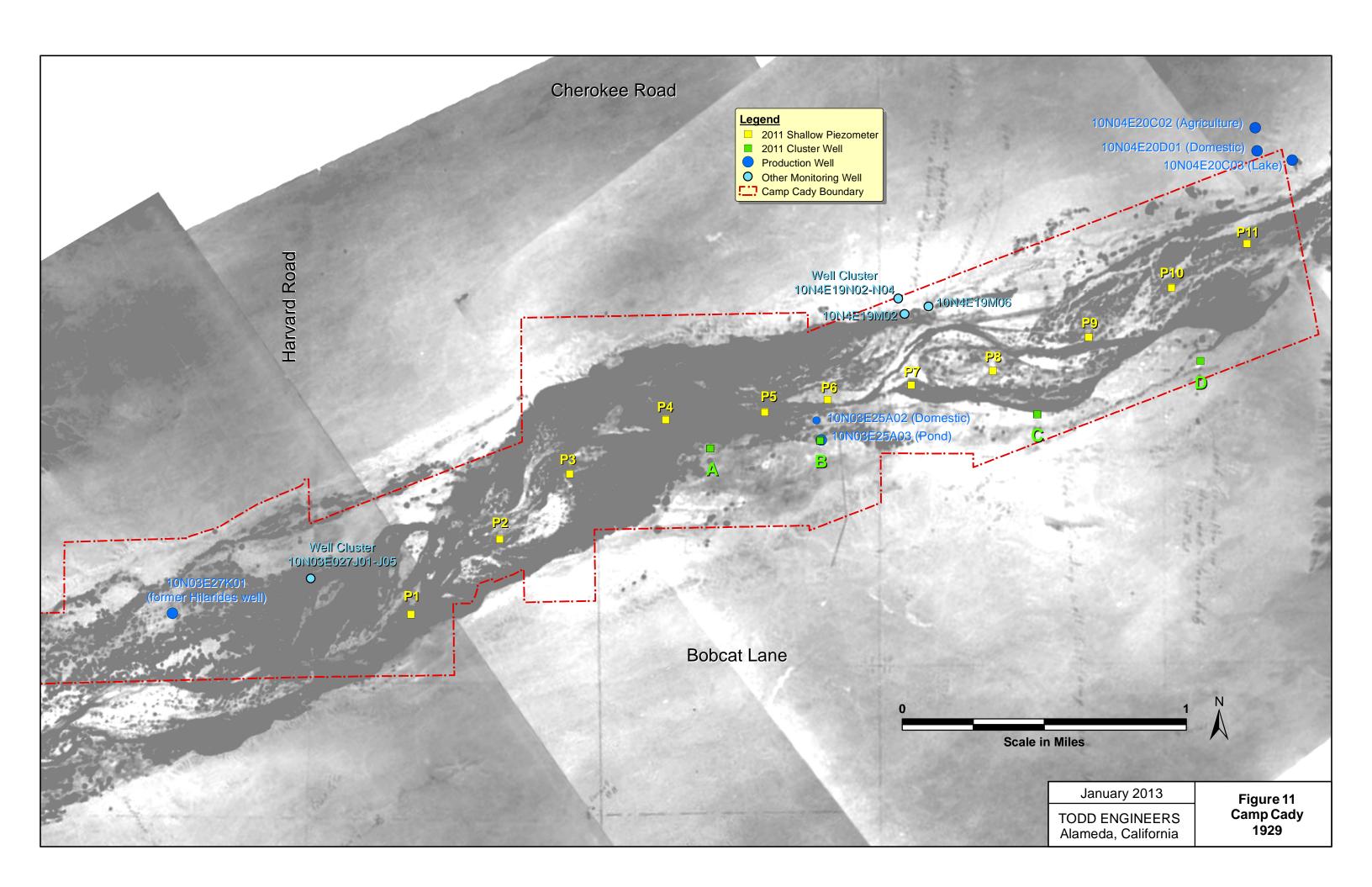
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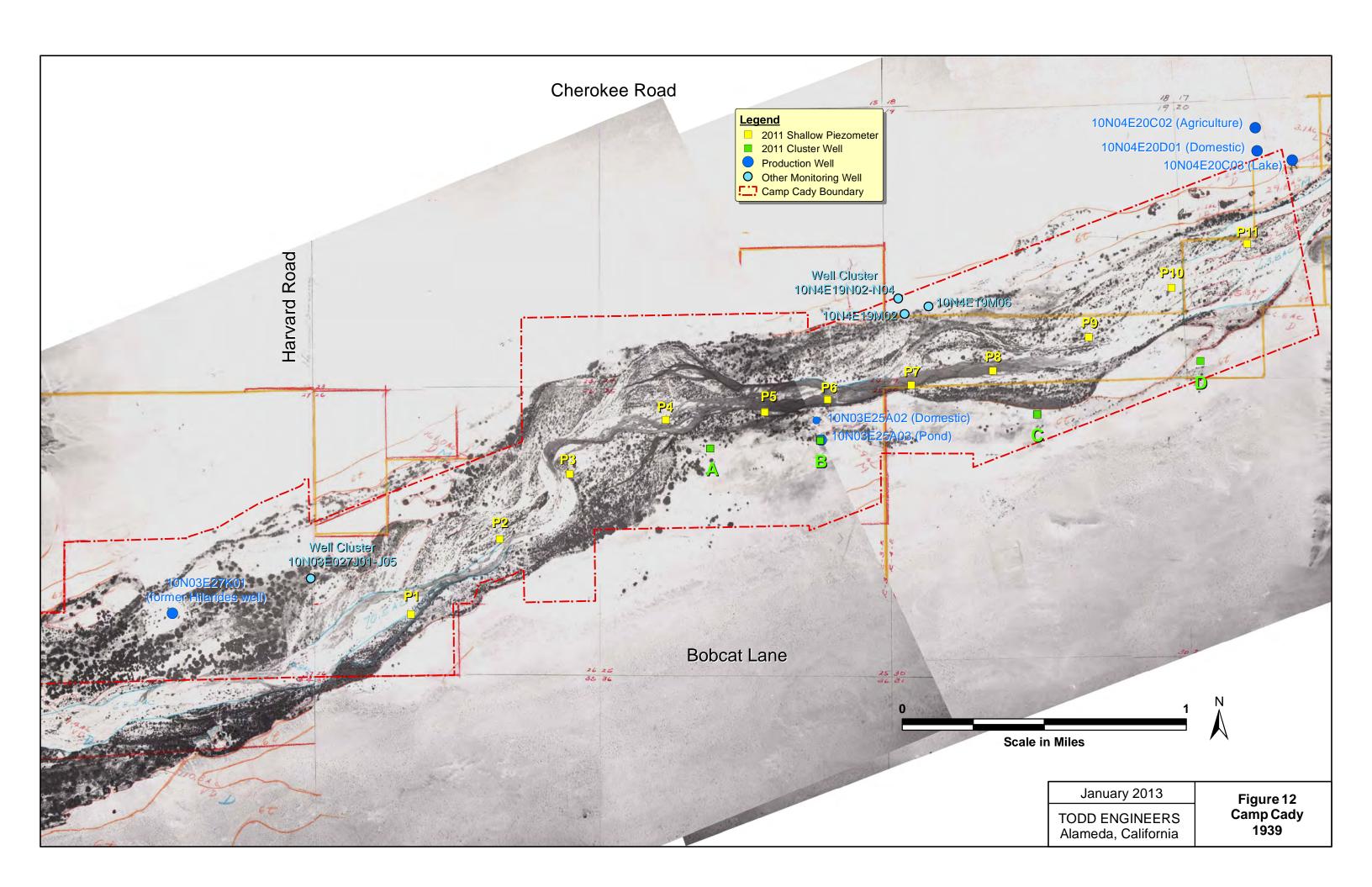
Figure 8

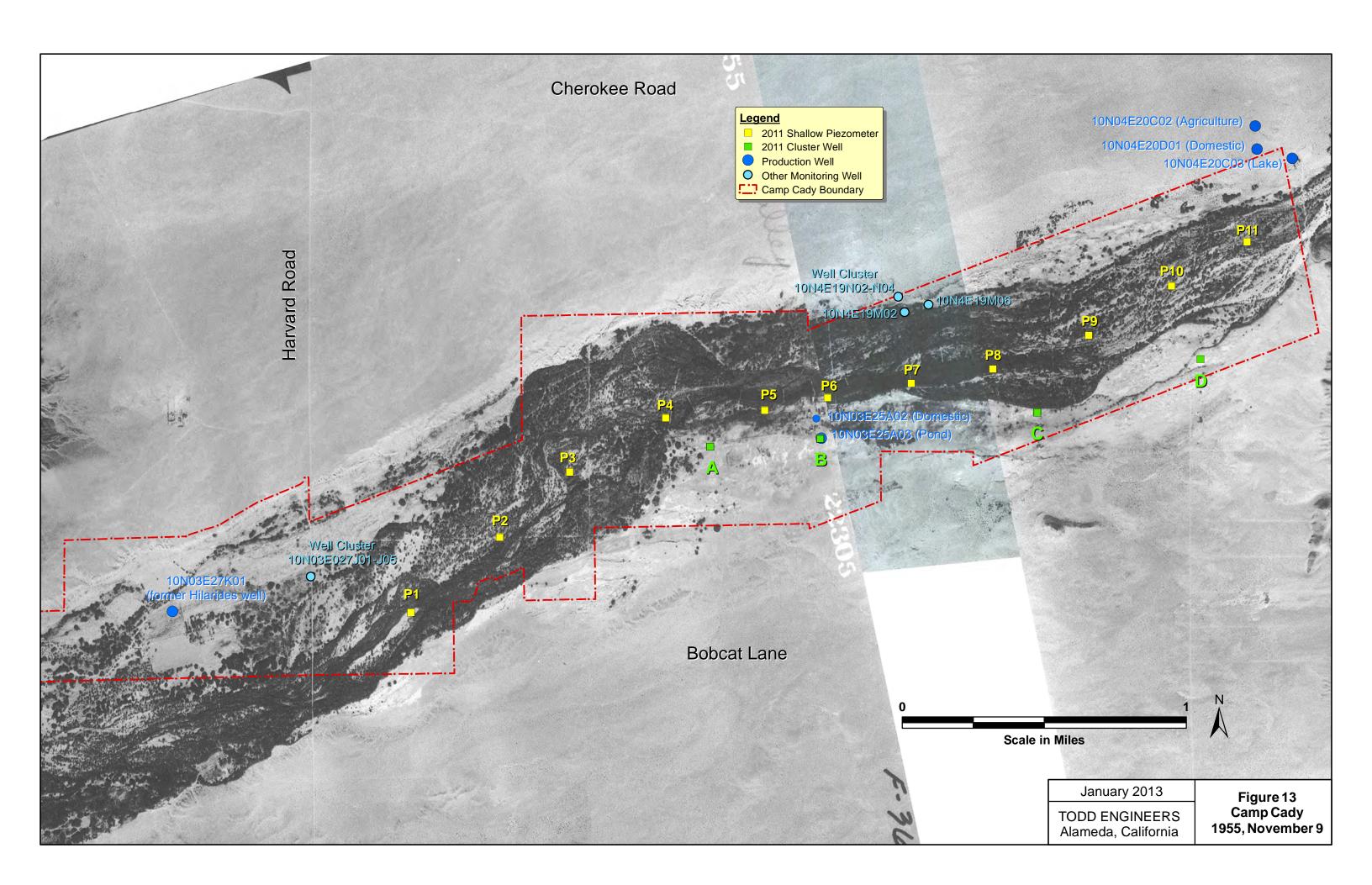
Mojave River Annual
Discharge and Cumulative
Mean Departure Curve
at Barstow

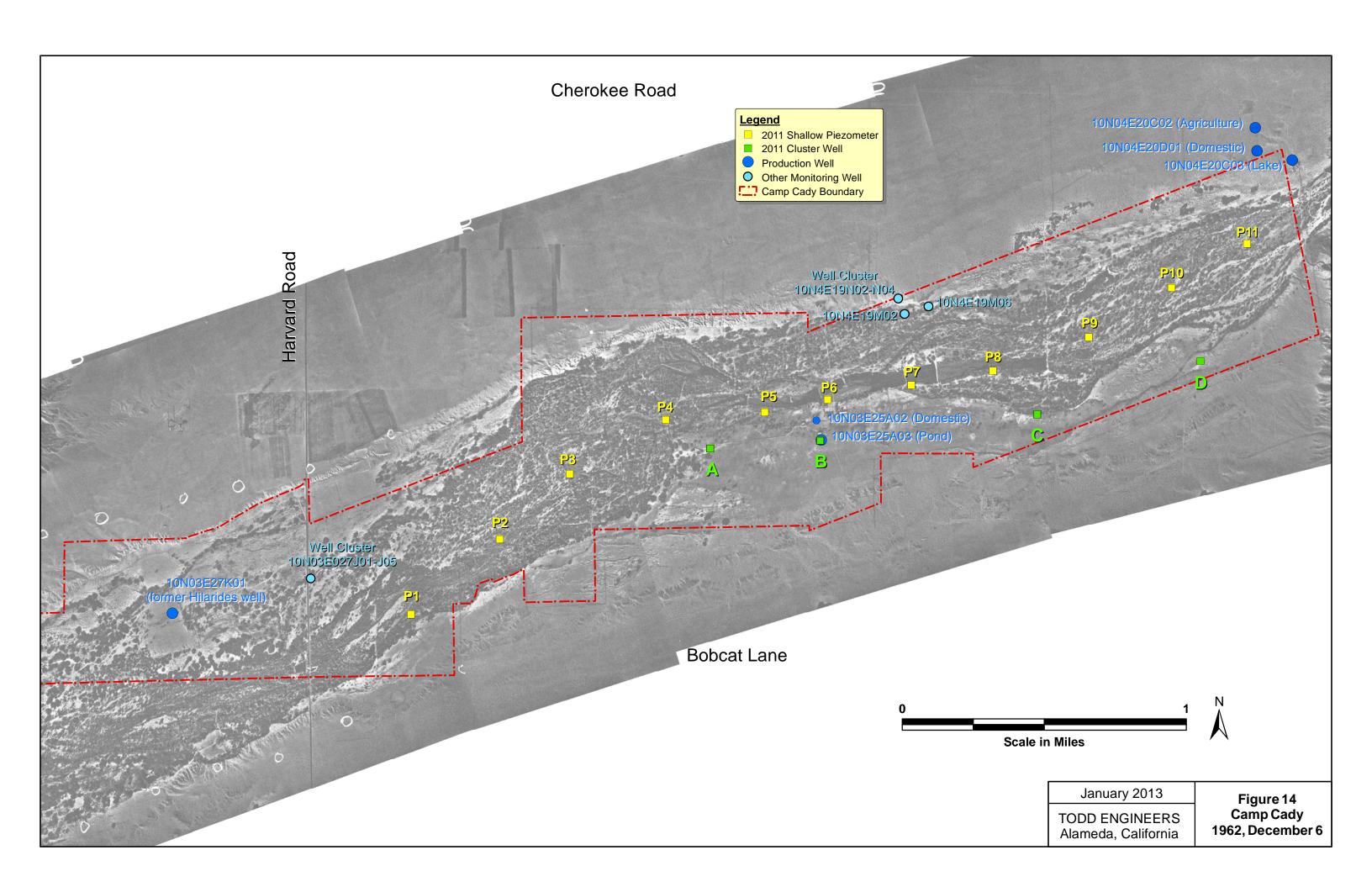


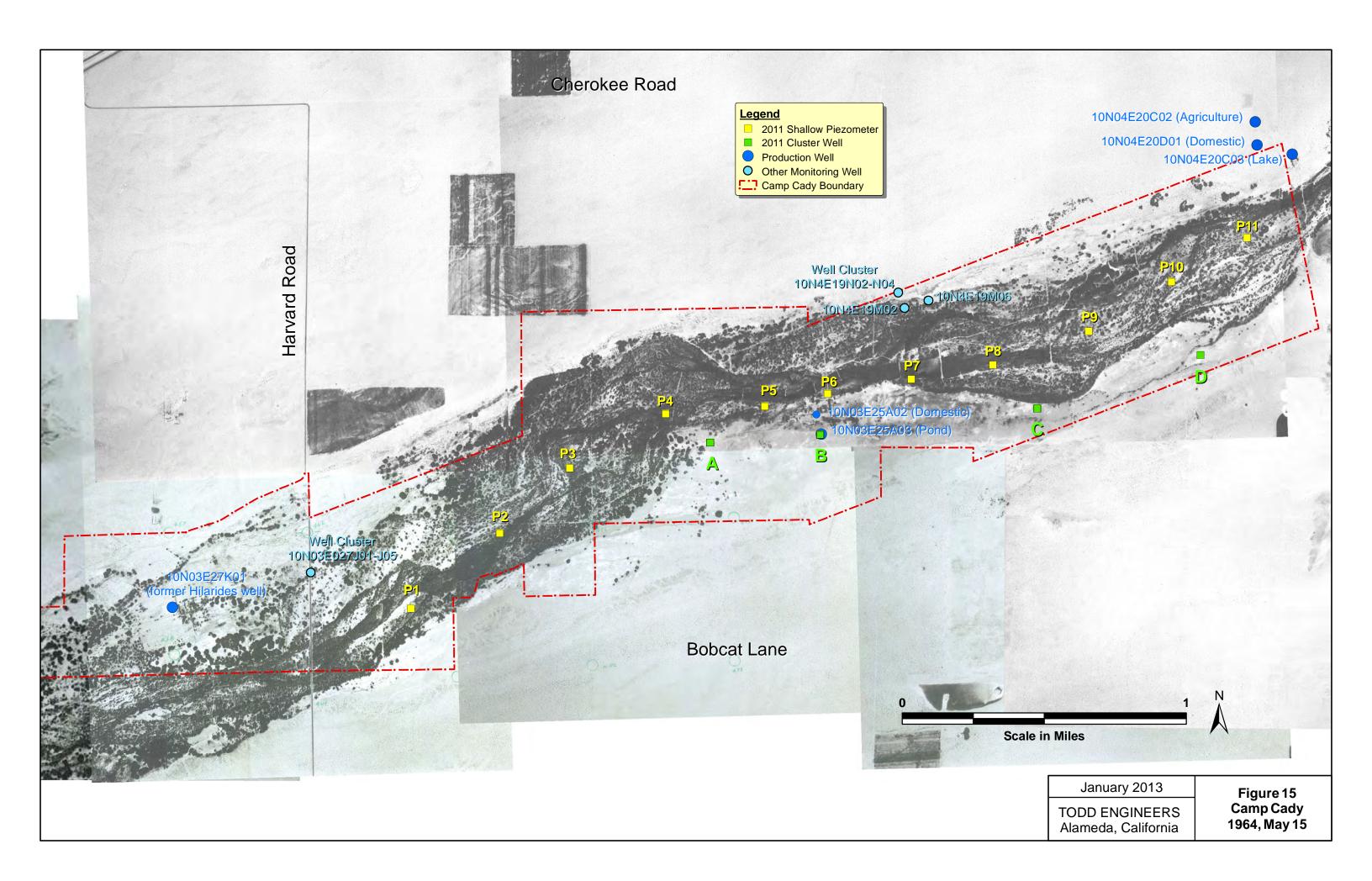


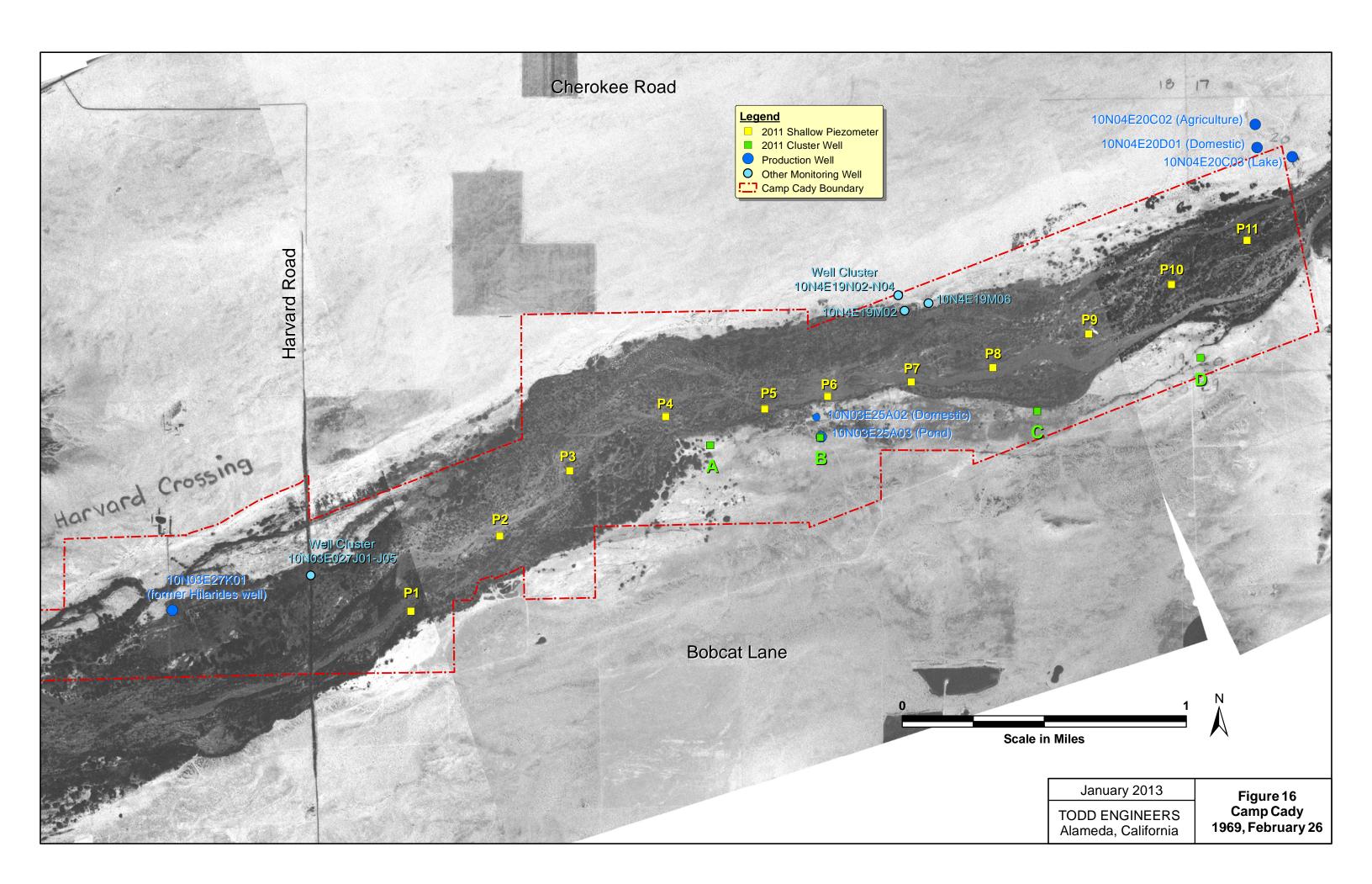


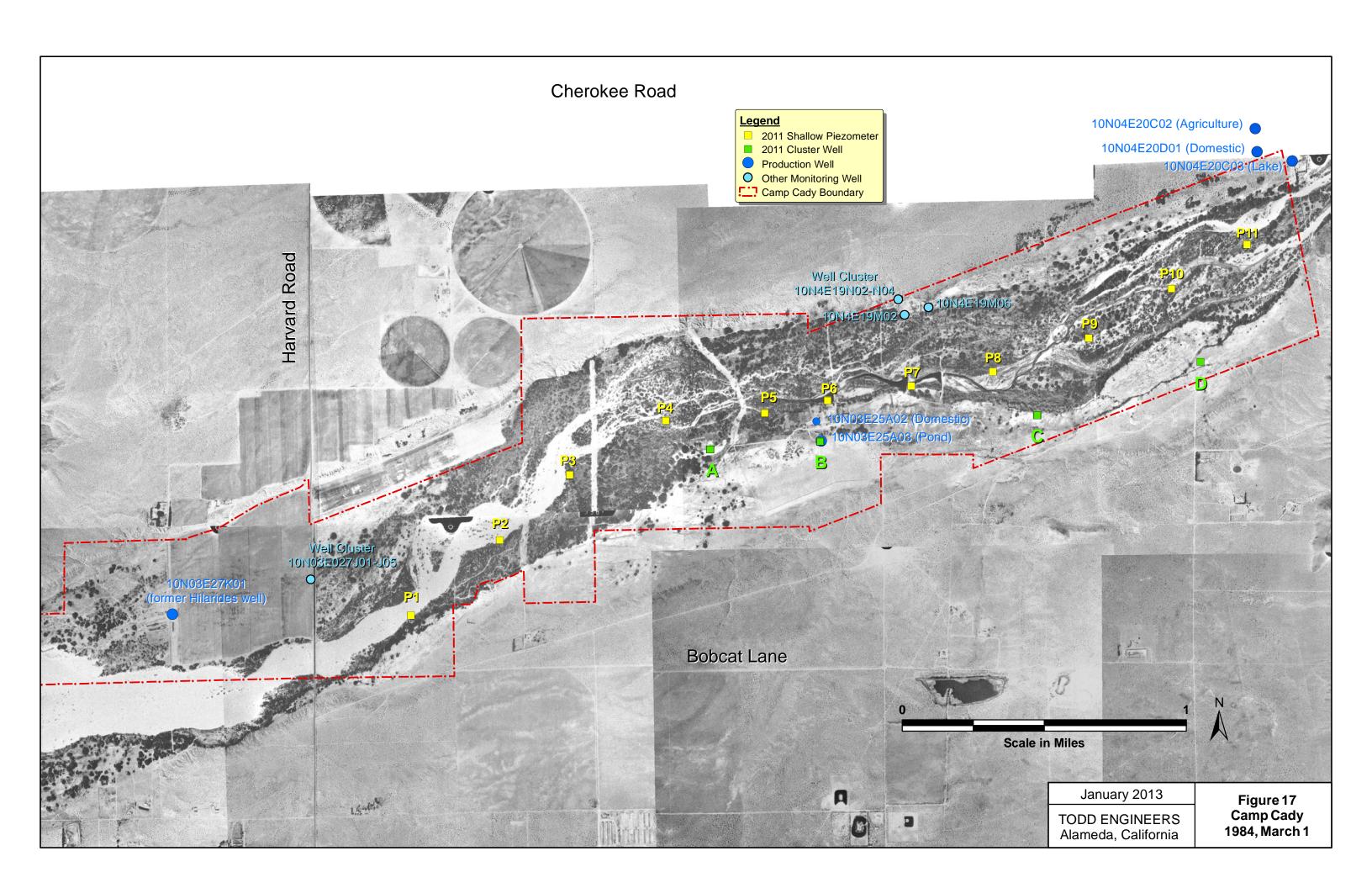


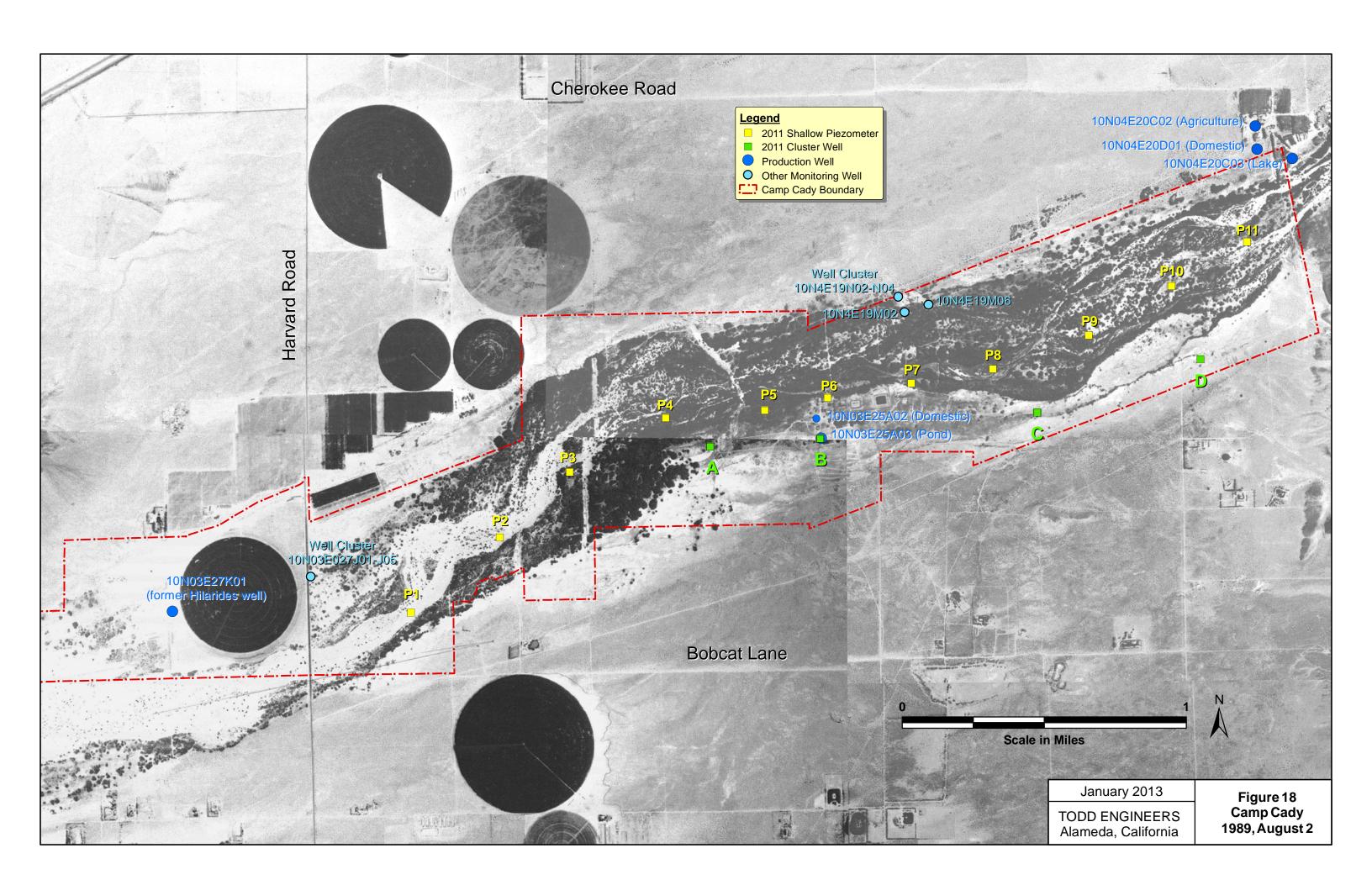


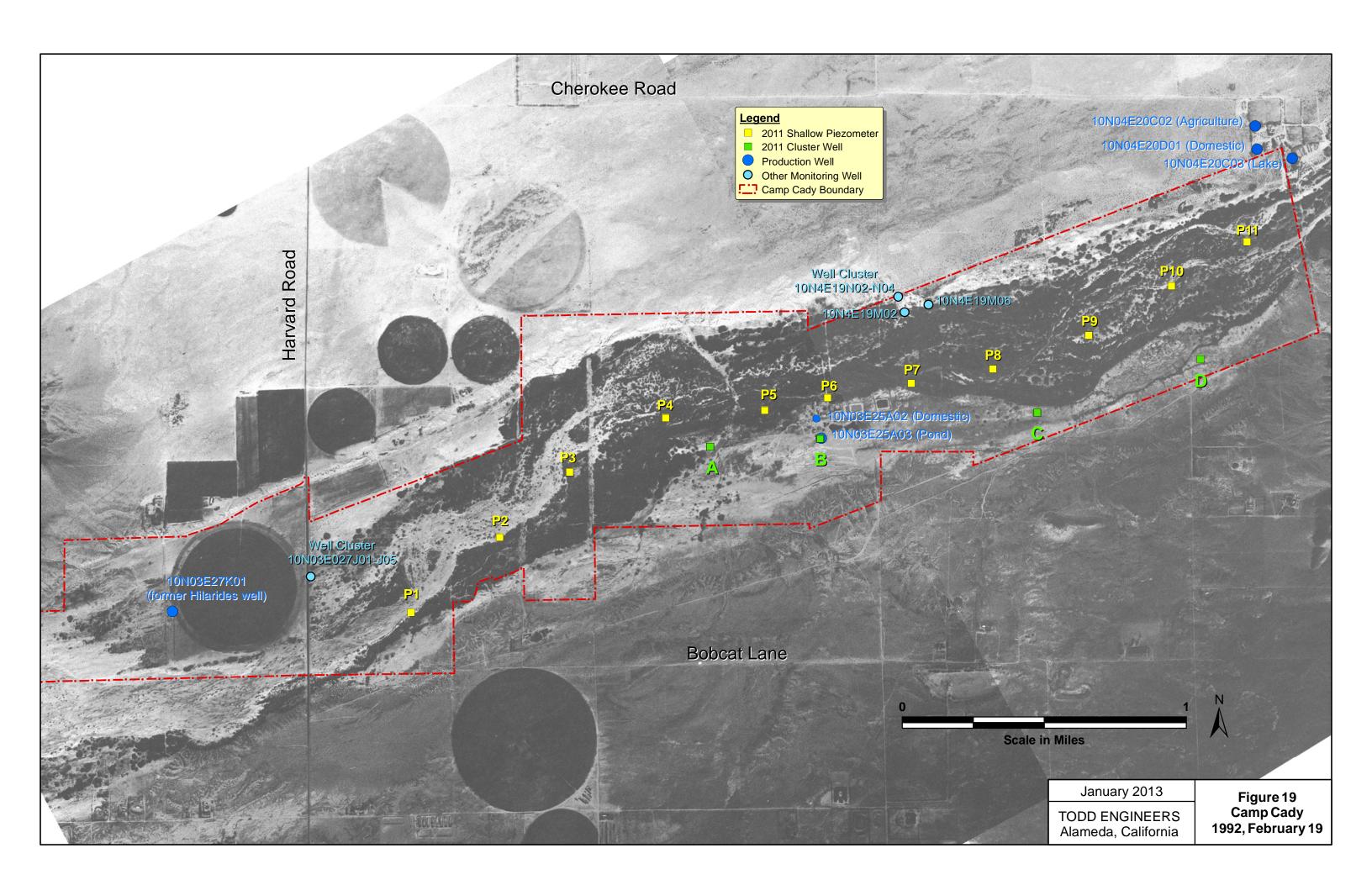


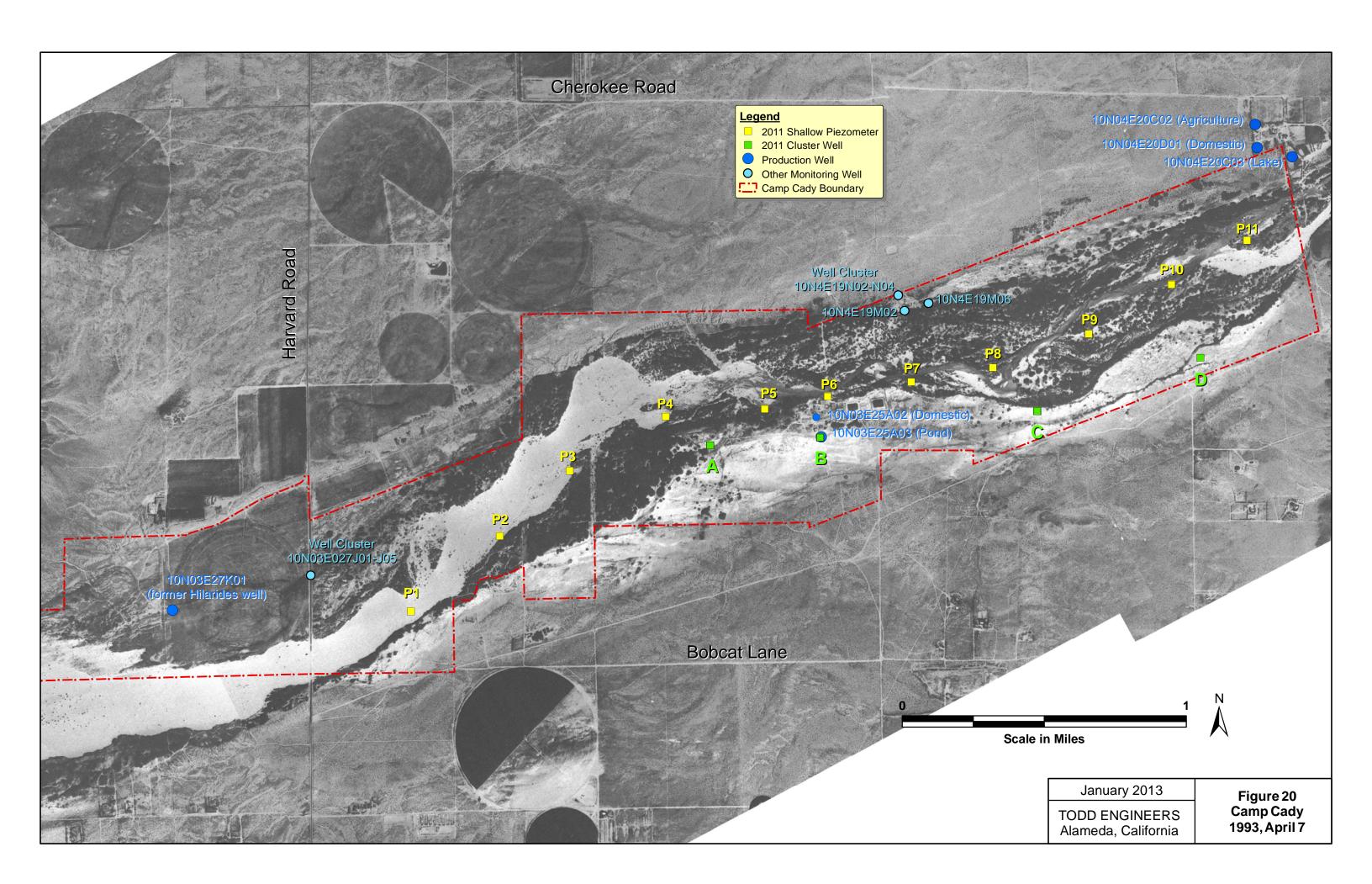


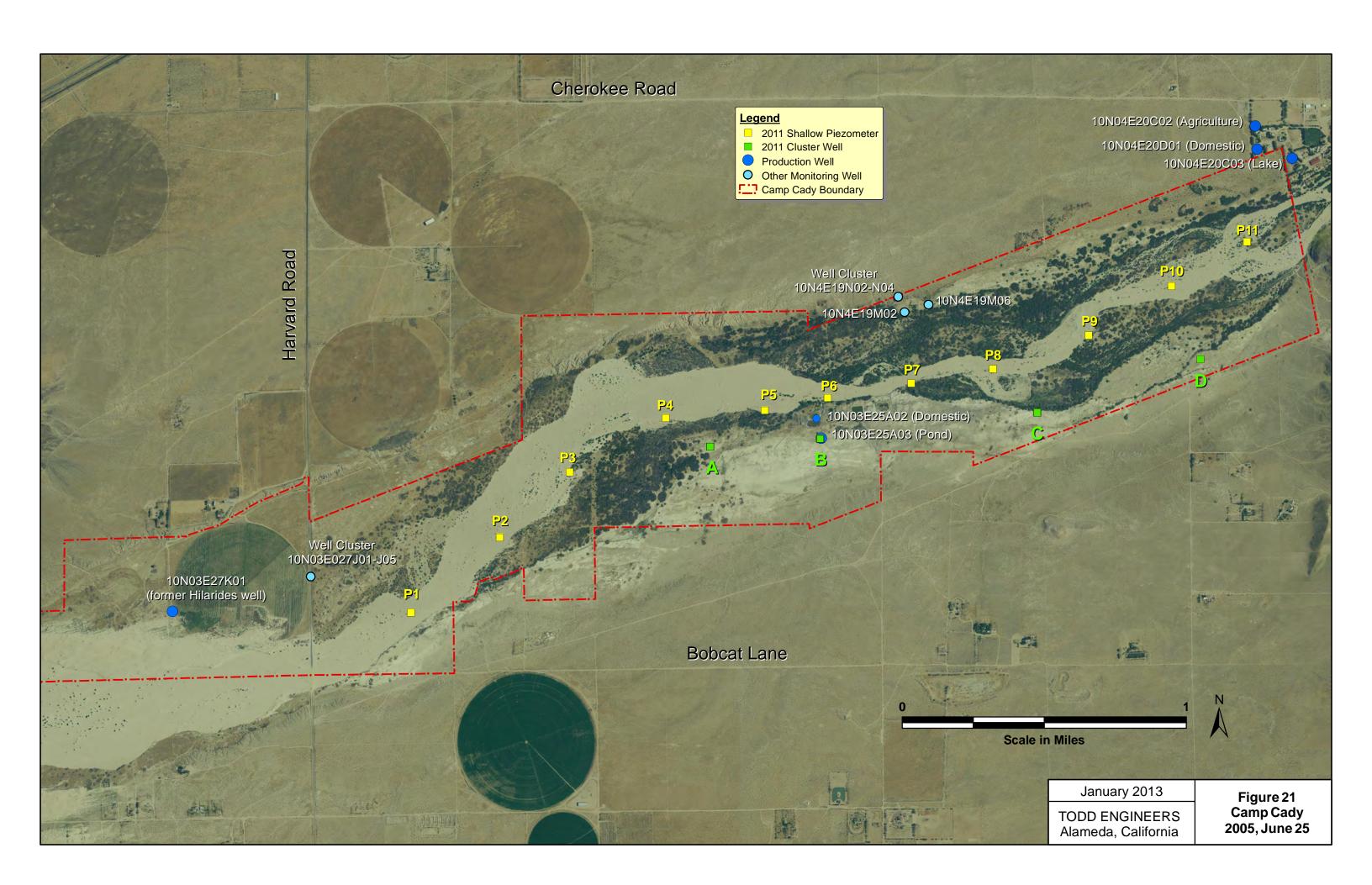


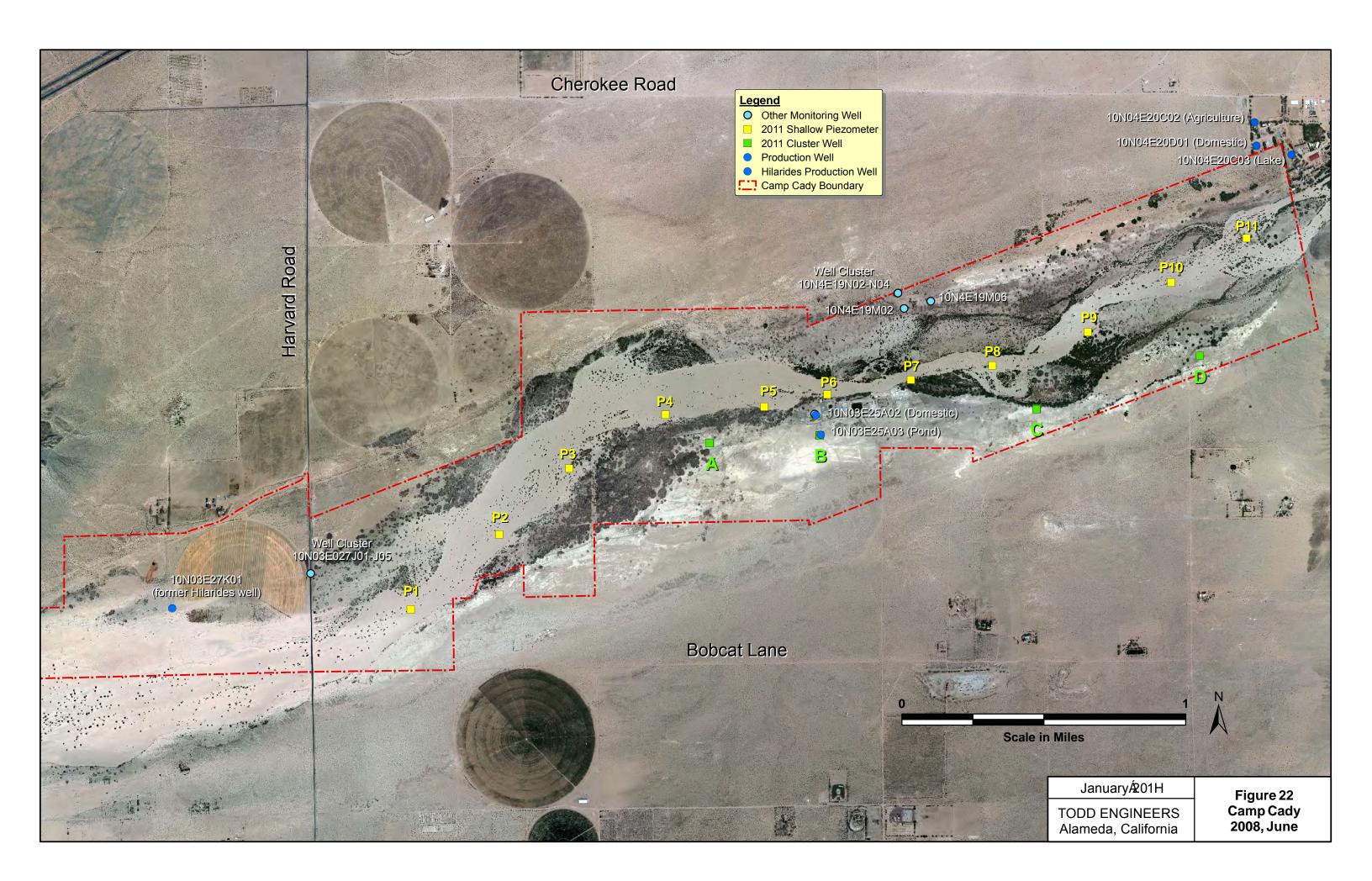


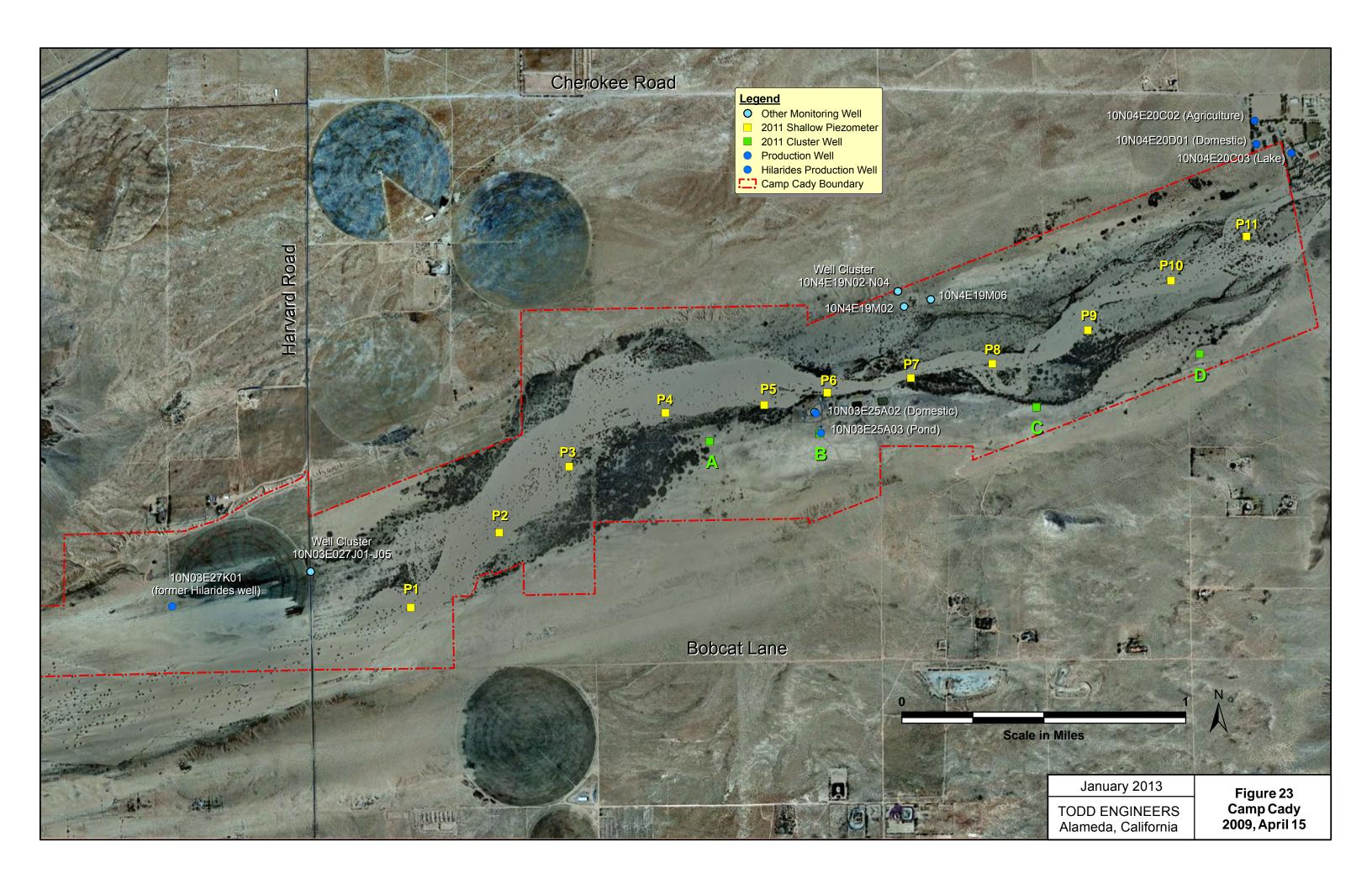


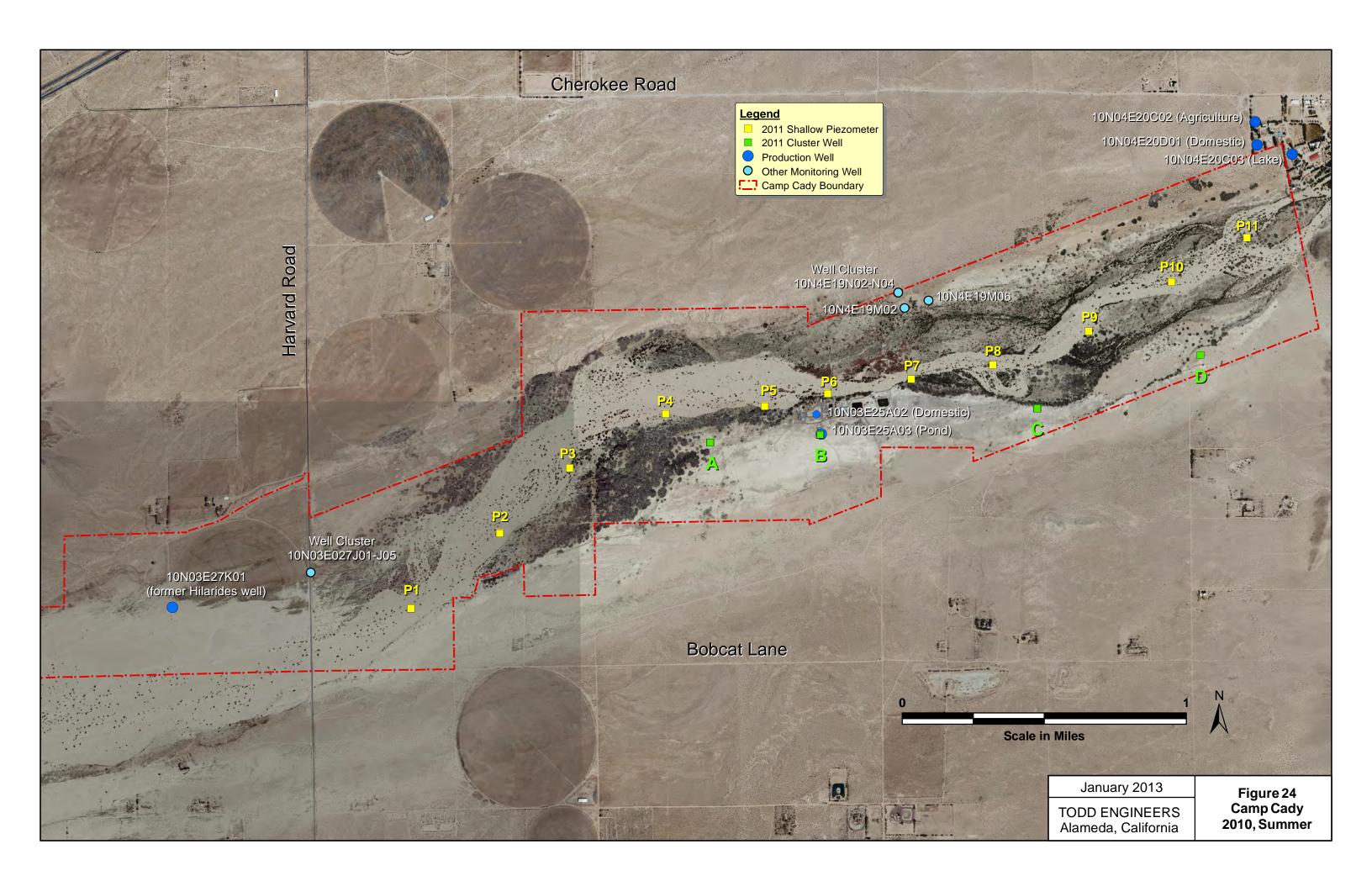


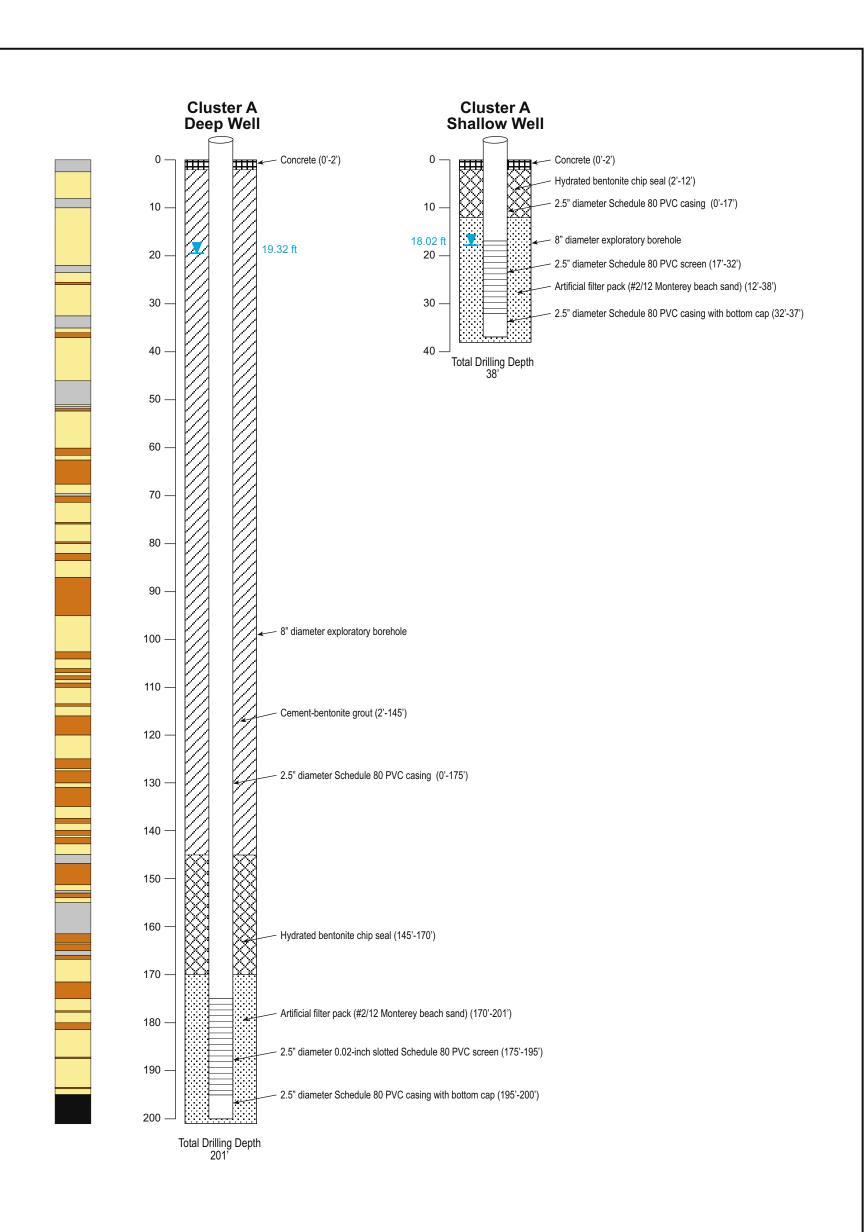


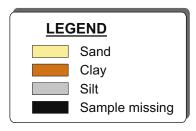


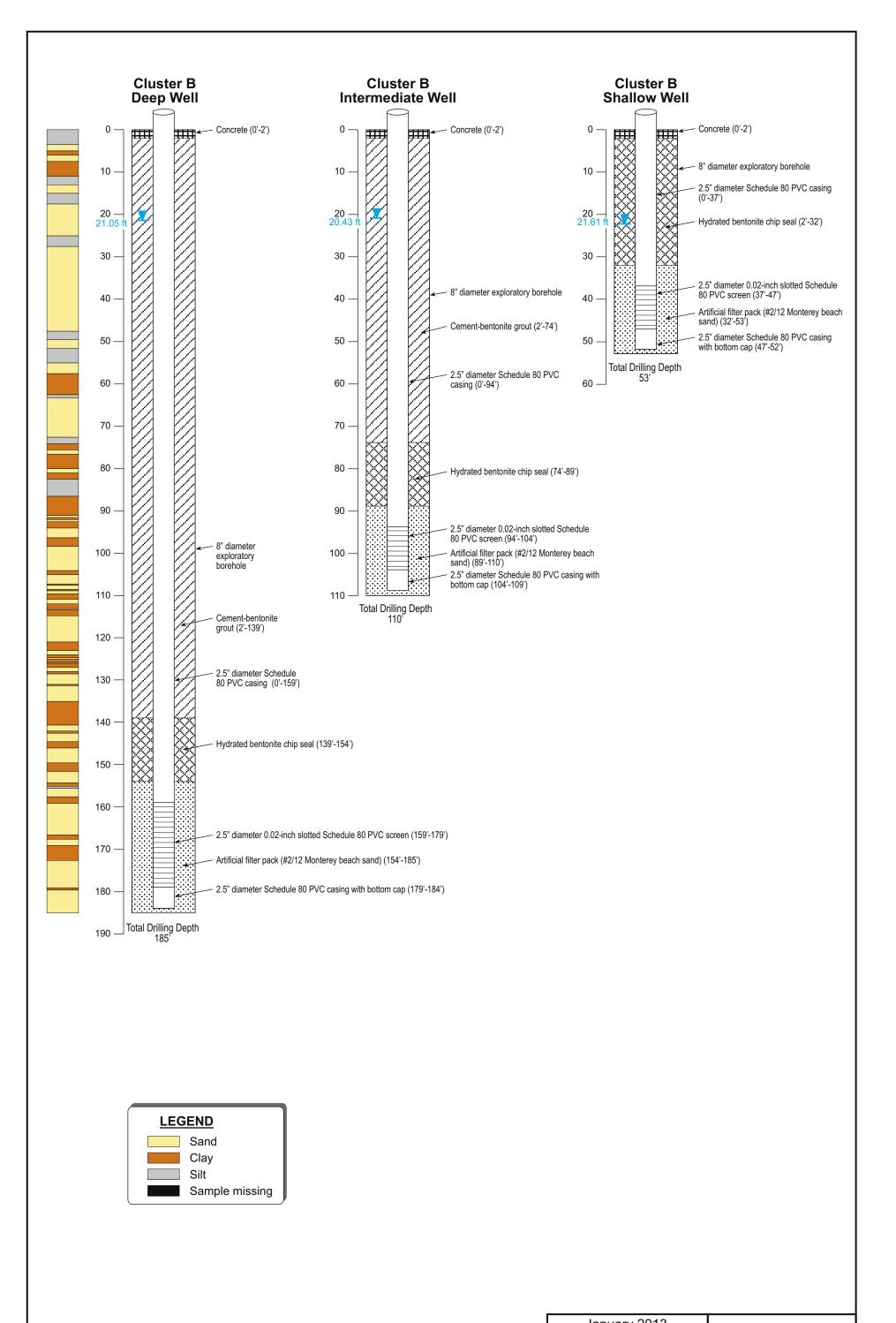








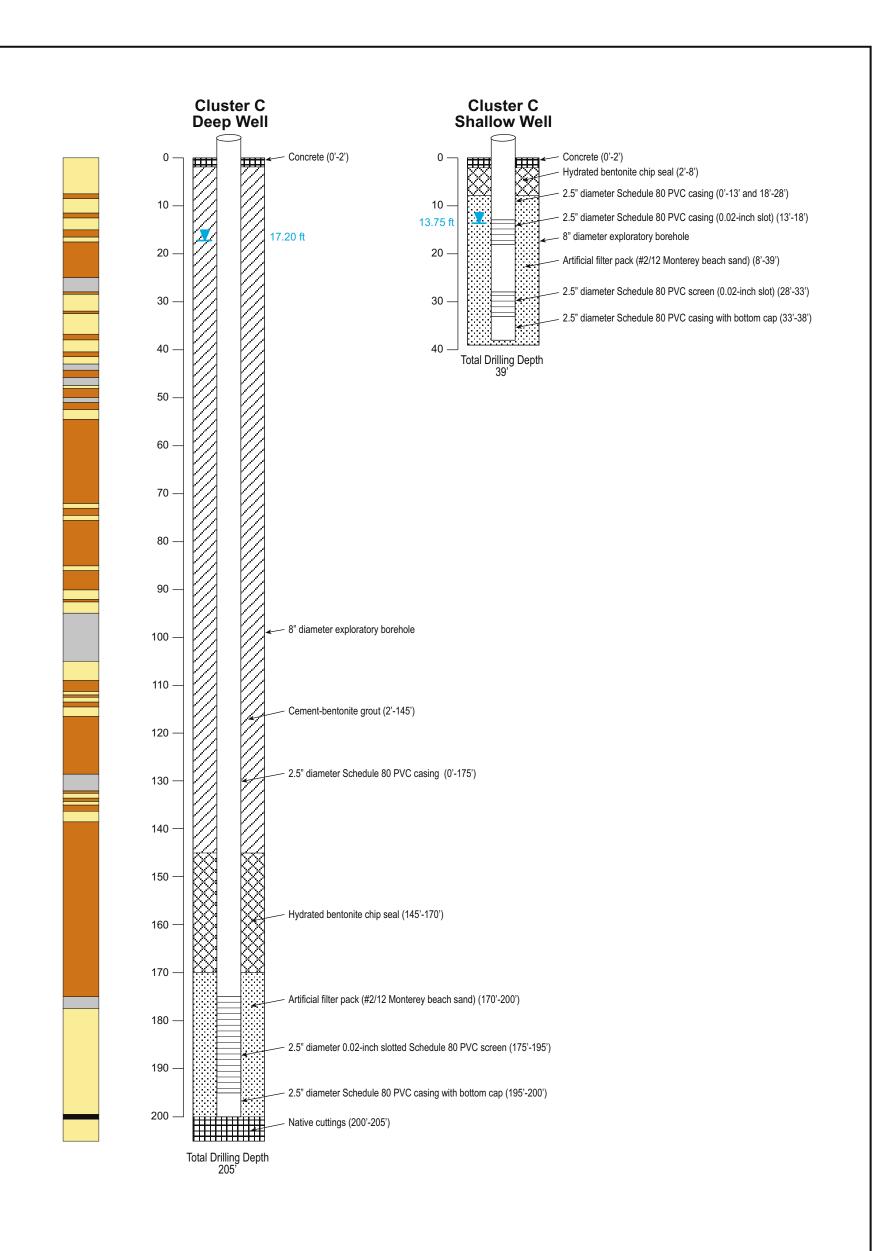


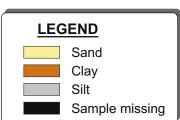


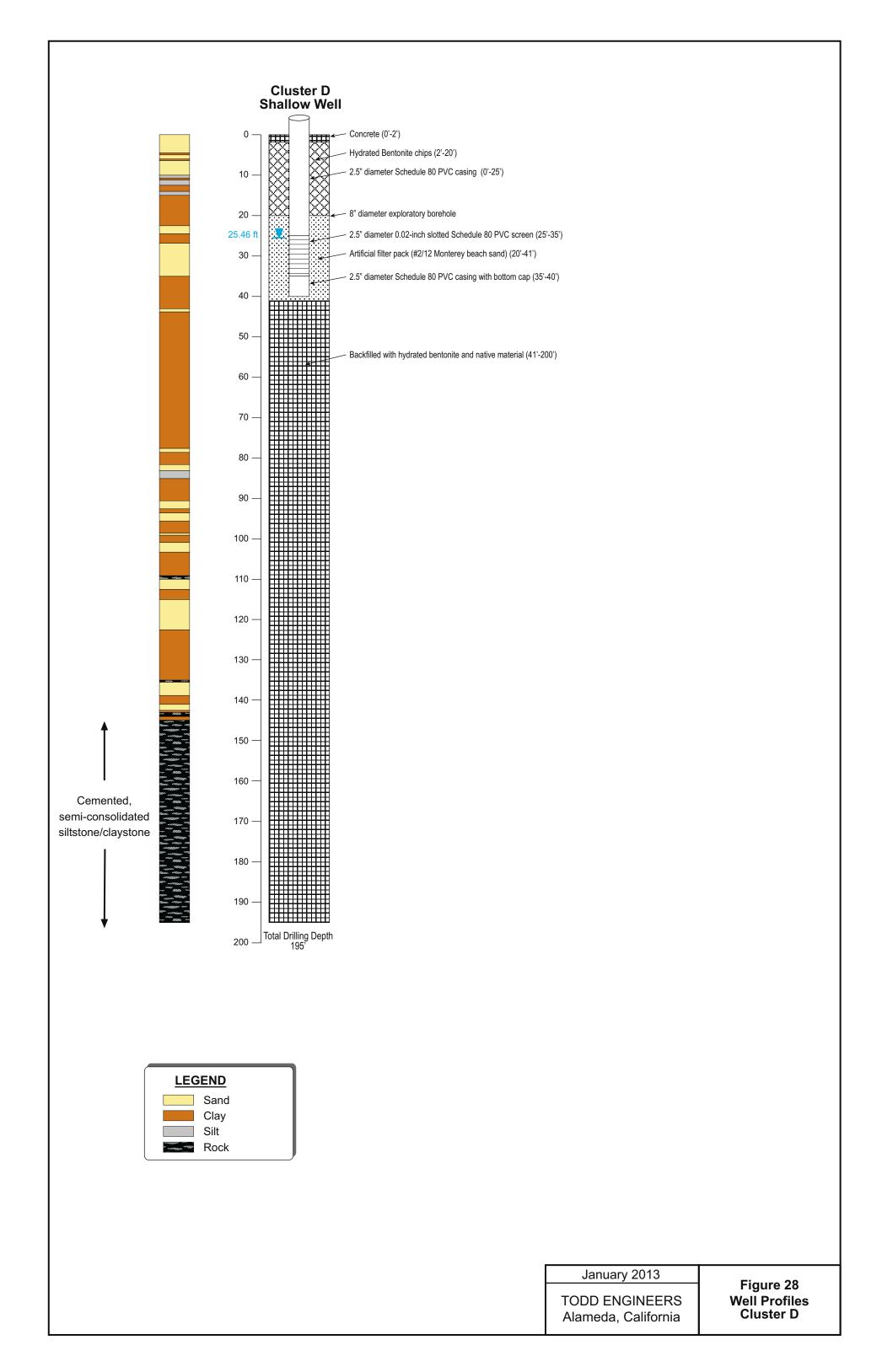
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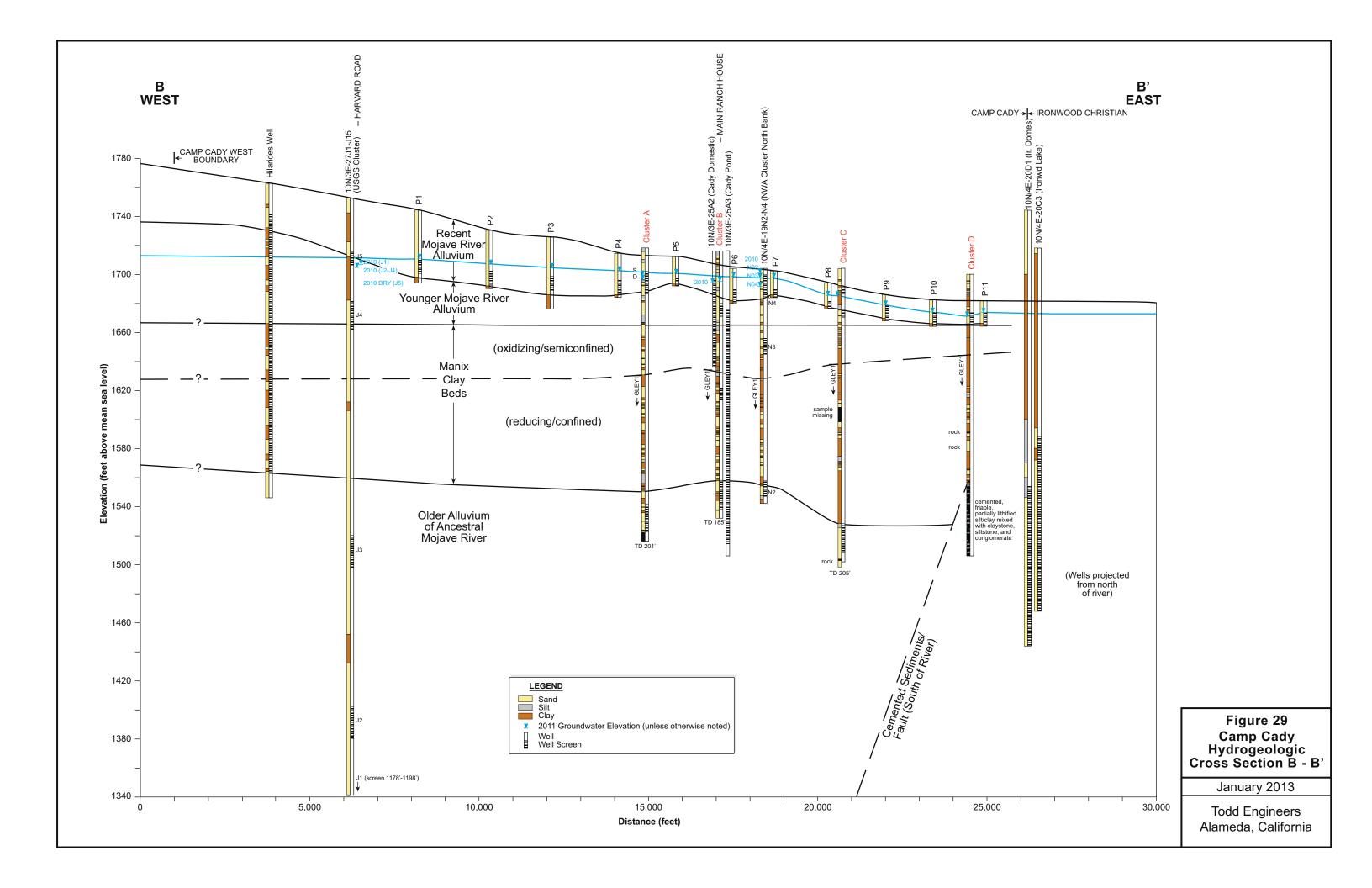
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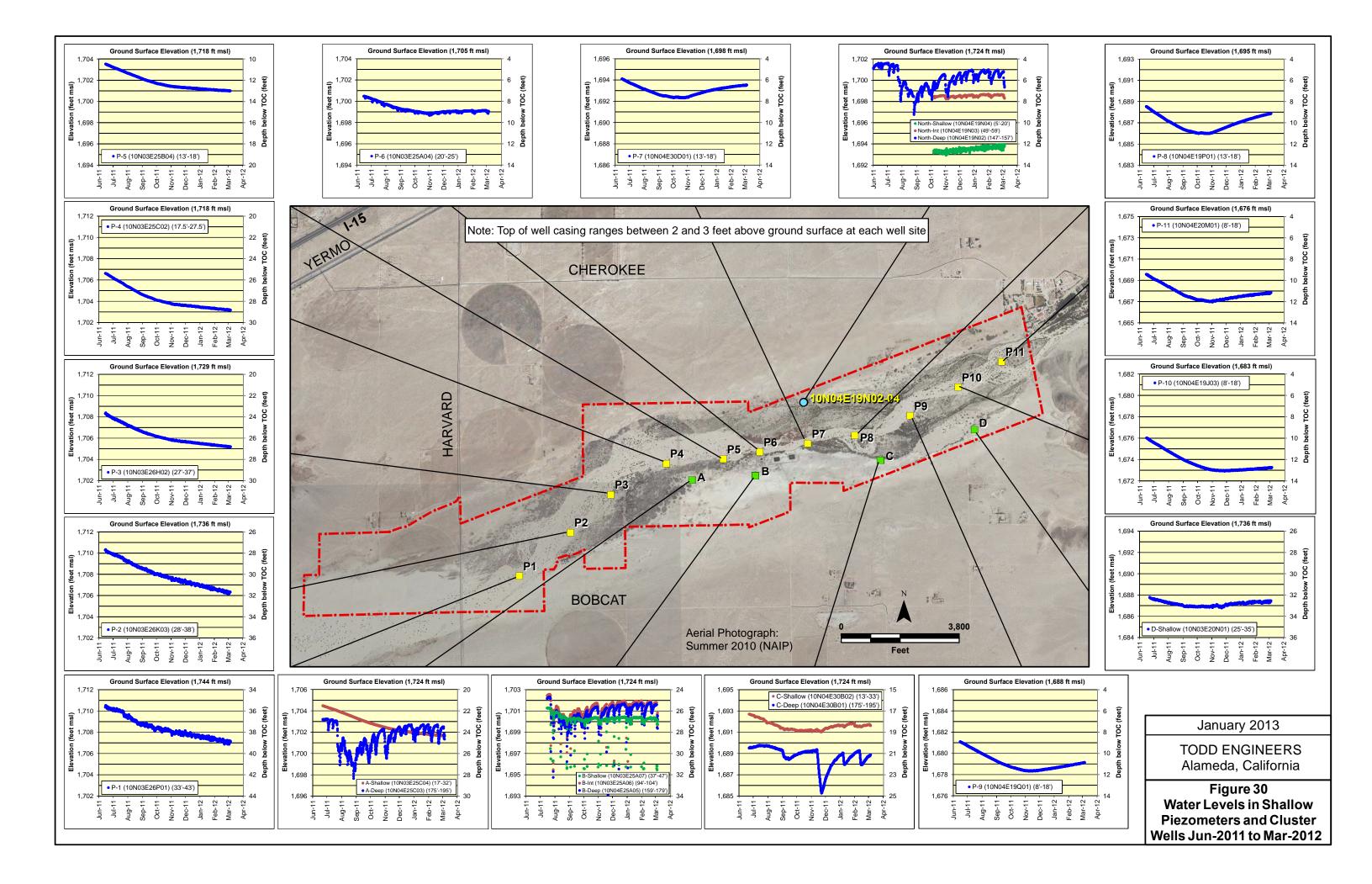
Figure 26 Well Profiles Cluster B

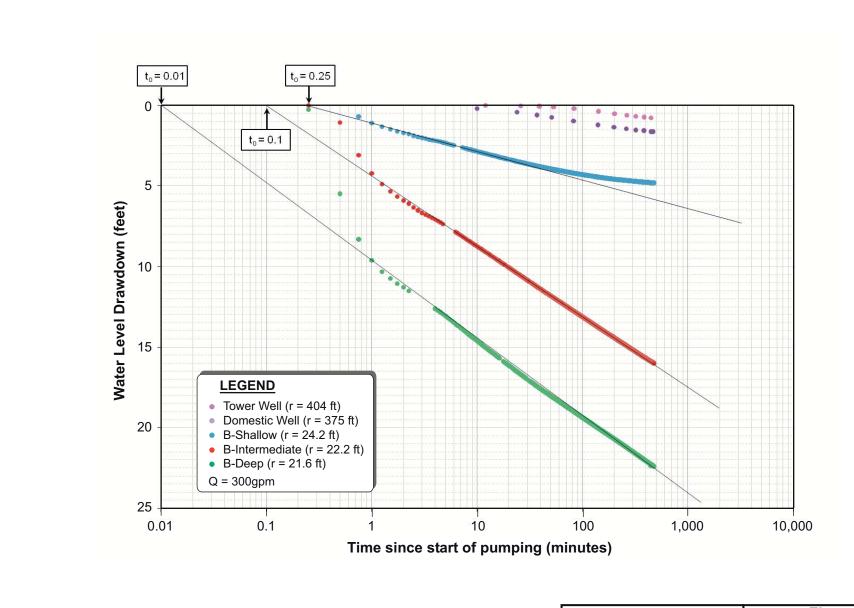








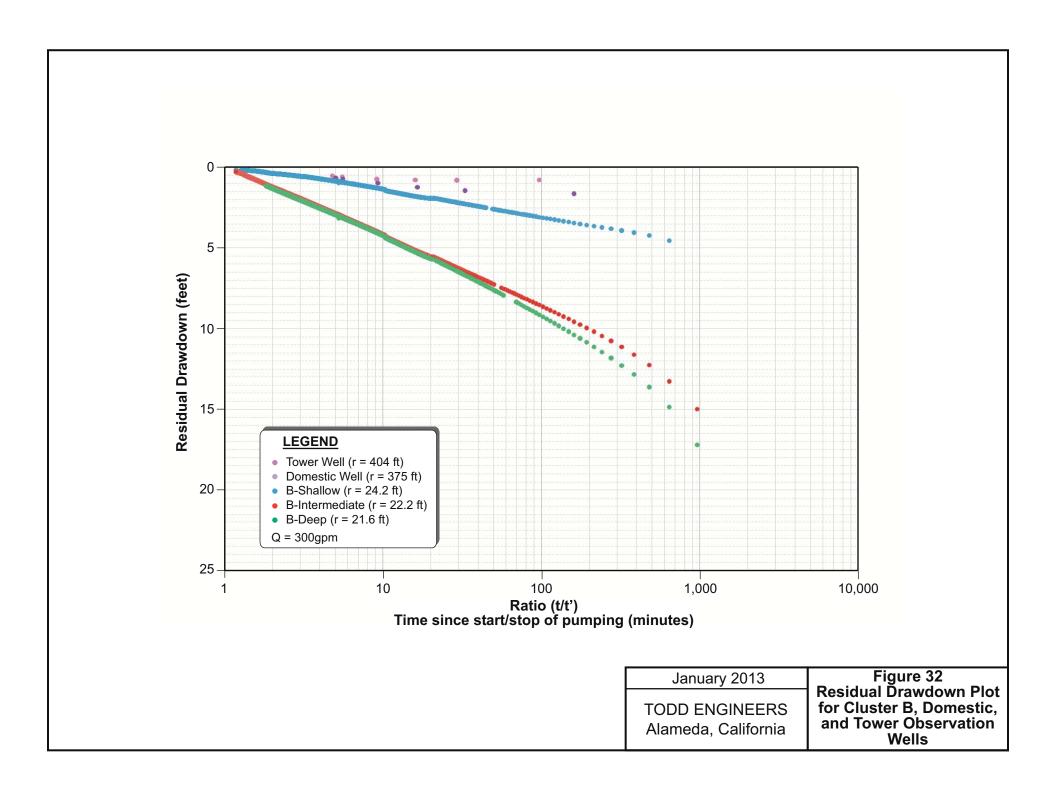


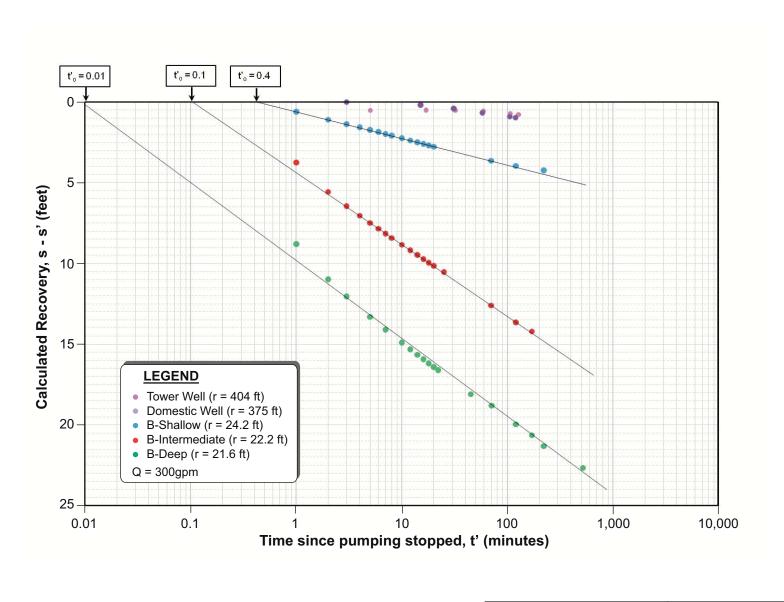


January 2013

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Figure 31
Time-Drawdown Plot
for Cluster B, Domestic,
and Tower Observation
Wells

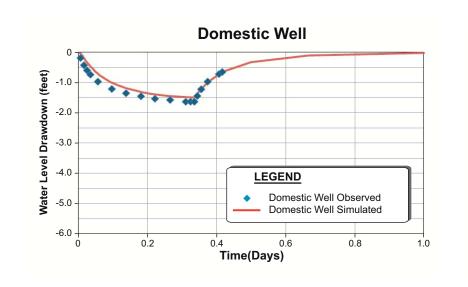


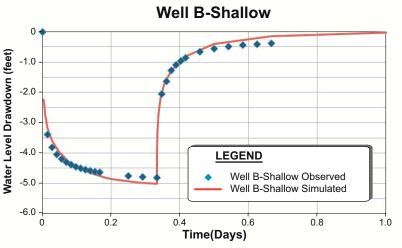


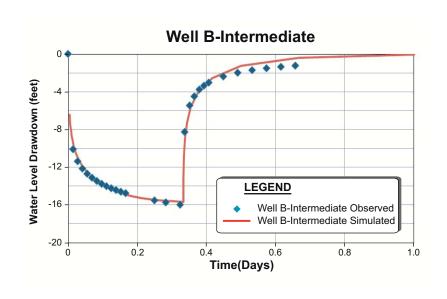
January 2013

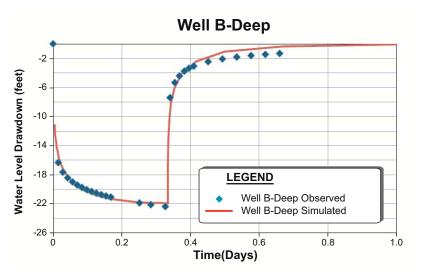
TODD ENGINEERS
Alameda, California

Figure 33
Time Recovery Plot
for Cluster B, Domestic,
and Tower Observation
Wells





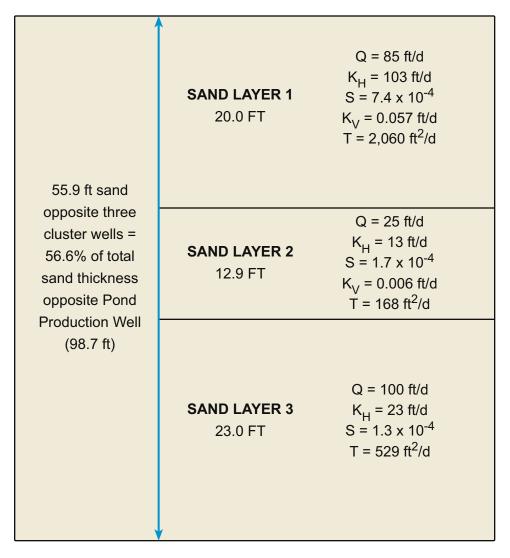




January 2013

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Alameda, California

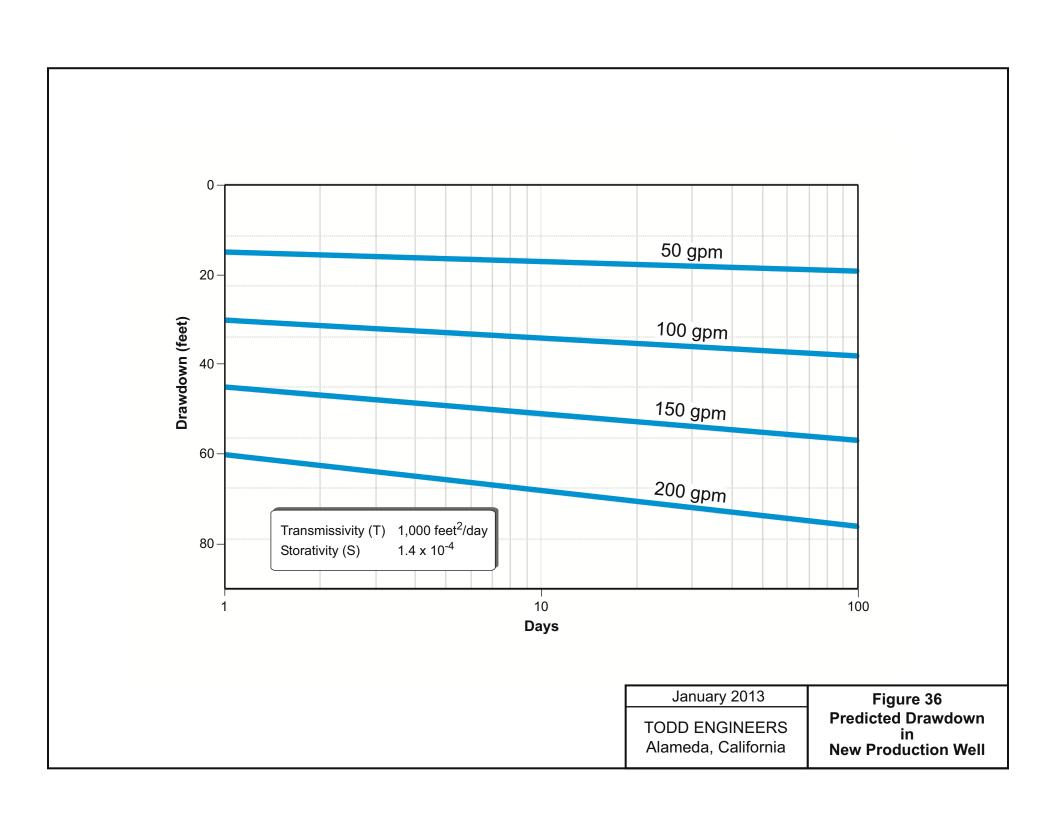
Figure 34
Observed and Simulated
Drawdowns for Cluster B
and Domestic Well

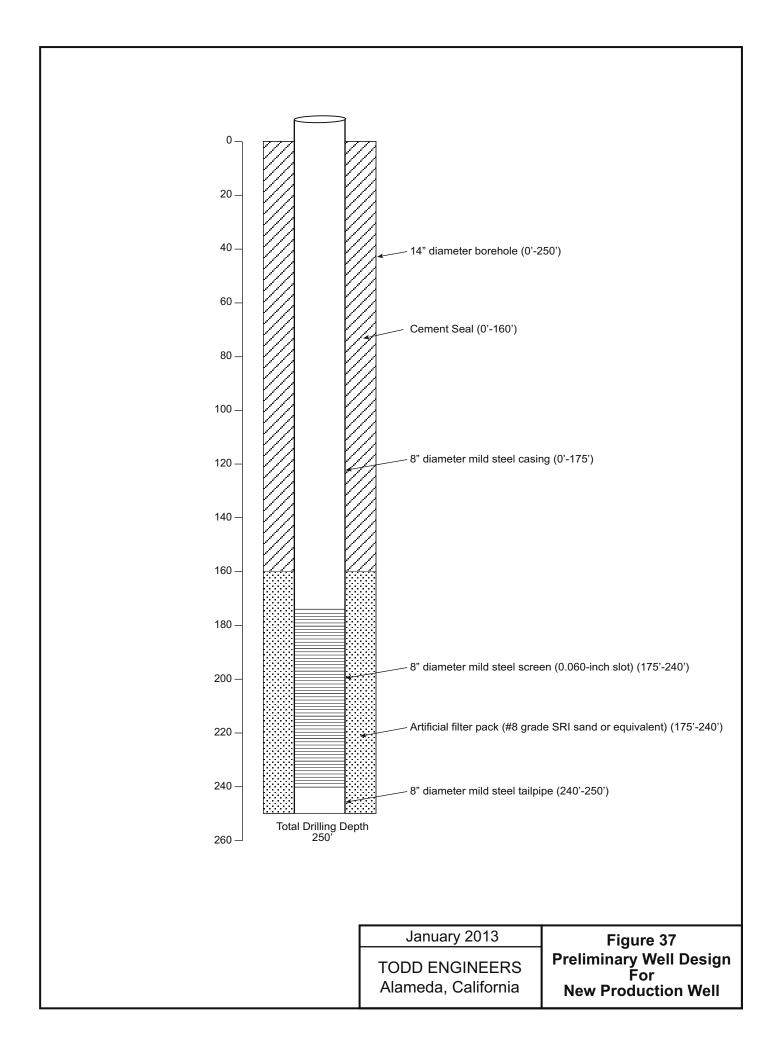


56.6% x 300 gpm = 170 gpm across Cluster B wells (model calibraton indicated +40 gpm correction warranted => 210 gpm)

Estimated Pond Production Well Transmissivity = 4,900 ft<sup>2</sup>/day

January 2013	Figure 35
TODD ENGINEERS Alameda, California	Calibrated MODFLOW Aquifer Parameters





## Appendix A Well Drilling Permits

### DO NOT FILL IN    Permit Number   20/1040   8/1     Record ID	DEPARTMENT C ENVIRONMENTAL 385 N. Arrowhe San Bernardin (909) www.sbco	San Bernardino DF PUBLIC HEALTH L HEALTH SERVICES Paid Ave., 2nd Floor Pio, CA 92415-0160  884-4056  unty.gov/dehs  PERMIT Se Print)  SA 45953  Date DO NOT FILL IN Date Amount S Check # WWW 10 10 10 Receipt Number Paid by City Code
1. OWNER: Name California Dept. Site Address Camp Cady, Mojav City Newberry Springs Mailing Address 407 W. Line S City Bishop 2 Telephone Number (760) 872-115	re Trail Zip 92365 Etreet Zip 93514	Items 6 through 9 to be estimated for new wells, exact for all other wells  5. ANNULAR SEAL: Seal Depth 10 f  Furnished by: Owner K Contractor  Driven Comductor Dia. in., Wall (Gage)  Sealing MaterialCement Grout Thickness 3 in  6. DEPTH OF WELL (feet): Piezometer 1  Proposed 50 Existing  DIAMETER OF BORE (in.): 8
4/18/2011 Slart Date	Drilling iness Name 4/29/2011 Completion Date	7. CASING INSTALLED:  ☐ Steel
3. INTENDED WELL USE (check):  □ Agricultural □ Horizontal  □ Cathodic ☒ Monitoring/Obse □ Ind/Domestic □ Community/PWS  4. TYPE OF WORK (check): ☒ New □ Reconstruction	S/City Dother	From 10 to 50 ft.  8. PERFORATIONS (if applicable): From 40 to 50 ft. Pumping rate (gpm)  9. SEALED ZONES (if applicable): From to ft.
SECTION MAP - DO NOT FILL IN	Scale: 1 inch = ¼ mile  NE ¼	10. LOCATION INFORMATION  (a) TOWNSHIP:     Tier 10 N/S Range 4 E/W Section 19  (b) Assessor's Parcel No. 0541 011 19  (c) Latitude and Longitude     Lat: 34  55  35.08 N/S N     Long: 116  38  18.37 N/S W  (d) Solid or Liquid Disposal Site within Two Miles
SW 1/2 MOSA/E	SE 1/4 ANA	Location  DO NOT FILL IN  Seal Cap Check Valve Electricals Stab Tag Building & Safety Notified

Assessor's Parcel No. 0541 011 19 (a)	In perspective to the well site, sketch and label the
N	following items: well lot property lines, other wells (include abandoned wells), sewage disposal systems (sewers, septic tanks, leaching fields, seepage pits, cesspools), lakes and ponds, watercourses and animals or fowl kept. Indicate the distance, in feet, of any of the following which are within 500 ft of the well site:
Well ° Site  Scale, ½ inch = 100 feet	Other  Sewers  Septic tanks  Leaching fields  Seepage pits  Cesspools  Lakes and ponds  Watercourses  Animal or fowl kept   None of the above are within 500 feet of the well site.
12. I have read this application and agree to comply with all laws regulating the type of C-57 Contractor's Signature	work being performed Date 4-1-11
County Registration No. 108 California Licer	
DISPOSITION OF PERMIT (For Department Use Only)	
<ul> <li>□ Sent to Water Agency for review.</li> <li>□ Water Agency conditions or recommendations attached.</li> <li>□ Denied</li> <li>☑ Approved subject to the following:</li> </ul>	
A ☑ Notify the Department, Safe Drinking Water Program, (909) 387-4666 to make an inspection of the following operations:  ☐ Prior to sealing of the annular space or filling of the conductor casing.  ☐ After installation of the surface protective slab and pumping equipment.  ☐ During destruction of wells, prior to pouring the sealing material.	twenty-four (24) hours in advance
A company of the property of the control of the con	copy of: c Chemical Analysis Chemical analysis

Permit Number		San Bernardino OF PUBLIC HEALTH AL HEALTH SERVICES ead Ave., 2nd Floor no, CA 92415-0160 1884-4056 Dunty.gov/dehs  PERMIT Paid by City Code  SR 45953  Date  Date  Do NOT FILL IN  Date  Amount \$ Check #  Receipt Number  Paid by City Code
1 OWNER: Name California Dep Site Address Camp Cady, Moja City Newberry Springs Mailing Address 407 W. Line City Bishop Telephone Number (760) 872-13	zip 92365 Street Zip 93514	Items 6 through 9 to be estimated for new wells, exact for all other wells  5. ANNULAR SEAL: Seal Depth 10 ft  Furnished by. Owner K Contractor  Driven Comductor Dia. in., Wall (Gage)  Sealing MaterialCement GroutThickness 3 in  6. DEPTH OF WELL (feet): Piezometer 2  Proposed 40 Existing  DIAMETER OF BORE (in.): 8
3 INTENDED WELL USE (check):  □ Agricultural □ Horizontal	Completion Date  Date  Test  Discreption   Dairy	7. CASING INSTALLED:  Steel
SECTION MAP - DO NOT FILL IN  NW 1/4	Destruction  Scale. 1 inch = ¼ mile	9. SEALED ZONES (if applicable): From to ft.  10. LOCATION INFORMATION  (a) TOWNSHIP:     Tier _10
19 sw 1/4 mos nove	SE 14	Cap Check Valve Electricals Stab Tag Building & Safety Notified

abandoned wells), sewage disposal systems (sewers, septic tanks, leaching fields, seepage pits, sewers sewers.  Sewers  Sewers  Septic tanks  Leaching fields  Seepage pits  Cesspools  E Lakes and ponds  Watercourses  Animal or fowl kept
well site.  Scale: ½ inch = 100 feet
Scale: ½ inch = 100 feet  12. I have read this application and agree to comply with all laws regulating the type of work being performed
Scale: ½ inch = 100 feet
Scale: ½ inch = 100 feet  12. I have read this application and agree to comply with all laws regulating the type of work being performed  C-57 Contractor's Signature  County Registration No.  Date  1 1 8 5 1 6 5  DISPOSITION OF PERMIT
Scale: ½ inch = 100 feet  12. I have read this application and agree to comply with all laws regulating the type of work being performed  C-57 Contractor's Signature  County Registration No. 108 California License No. 485165

Permit Number		San Bernardino OF PUBLIC HEALTH LL HEALTH SERVICES ead Ave., 2nd Floor no, CA 92415-0160  884-4056 Dunty.gov/dehs  PERMIT ase Print)  AMOUNT FILL IN Date  Check # 1878  Receipt Number 9779  City Code
1. OWNER: Name California Dept. of Site Address Camp Cady, Mojave City Newberry Springs Zip Mailing Address 407 W. Line St. City Bishop Zip Telephone Number (760) 872-1158	Trail 92365 reet 93514	Items 6 through 9 to be estimated for new wells, exact for all other wells
2. WELL DRILLER: Gregg D  Busine 4/18/2011  Start Date	Orilling ss Name 4/29/2011 Completion Date	7. CASING INSTALLED:  Steel
3. INTENDED WELL USE (check):  □ Agricultural □ Horizontal □ Cathodic ☒ Monitoring/Observ □ Ind/Domestic □ Community/PWS/0		Gravel Pack:
New ☐ Reconstruction	☐ Destruction	9. SEALED ZONES (if applicable); From to ft.
SECTION MAP - DO NOT FILL IN  NW 1/4	Scale: 1 inch = ¼ mile	10. LOCATION INFORMATION  (a) TOWNSHIP:     Tier 10 NS Range 4 EYW Section 19  (b) Assessor's Parcel No. 0541 011 19  (c) Latitude and Longitude     Lat: 34
19 19 19 19 19 19 19 19 19 19 19 19 19 1	SE 1/2 PUVEN	DO NOT FILL IN  Seal Cap Check Valve Electricals Stab Tag Building & Safety Notified

Assess	or's Parcel No. 054101119 (a)	In perspective to the well site, sketch and label the
	N (b)	following items well lot property lines, other wells (include abandoned wells), sewage disposal systems (sewers, septic tanks, leaching fields, seepage pits, cesspools), lakes and ponds, watercourses and animals or fowl kept. Indicate the distance, in <b>feet</b> , of any of the following which are within 500 ft. of the well site:
W Scale: 2	Well ° Site	Other Sewers Septic tanks Leaching fields Seepage pits Cesspools Lakes and ponds Watercourses Animal or fowl kept  None of the above are within 500 feet of the well site.
	have read this application and agree to comply with all laws regulating the type of	work being performed  Date 4 - 1 - 1 1
C	County Registration No California Lice	ense No. 485165
	DISPOSITION OF PERMIT (For Department Use Only)	
☐ Wa	nt to Water Agency for review. ater Agency conditions or recommendations attached. nied proved subject to the following:	
А.Е	<ul> <li>Notify the Department, Safe Drinking Water Program, (909) 387-466 to make an inspection of the following operations:</li> <li>□ Prior to sealing of the annular space or filling of the conductor casing.</li> <li>□ After installation of the surface protective slab and pumping equipment.</li> <li>□ During destruction of wells, prior to pouring the sealing material.</li> </ul>	6 , twenty-four (24) hours in advance
B.f	Water Well Driller's Report ☐ Bacterial Analysis ☐ Inorgani ☐ Radiological Analysis ☐ General Mineral ☐ Organic	copy of: c Chemical Analysis Chemical analysis  General Physical

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County of San Bernardino
DEPARTMENT OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH SERVICES
385 N. Arrowhead Ave., 2nd Floor San Bernardi

nead Ave., 2nd Floor ino, CA 92415-0160	Amount \$ 2950
) 884-4056	Check # 1878
county.gov/dehs	Receipt Number (17291
PERMIT	Paid by (125)
ase Print)	Cdy Code

Date\_

Expiration	(909) 884-4056 www.sbcounty.gov/dehs  WELL PERMIT (Please Print)	Check # 1878  Receipt Number 77291  Paid by 7730  City Code 7
The second secon	5. ANNULAR SEAL: Furnished by: Sealing Materia  6. DEPTH OF WELL ( Proposed 4 DIAMETER OF BO  7. CASING INSTALLE Steel 5. From (ft.)	Owner Ki Contractor ctor Dia in., Wall (Gage) alCement Grout Thickness 3 in.  (feet): Piezometer 4 40
3. INTENDED WELL USE (check):  ☐ Agricultural ☐ Horizontal ☐ ☐ Cathodic ☒ Monitoring/Observation ☐ ☐ Ind/Domestic ☐ Community/PWS/City ☐  4. TYPE OF WORK (check):	Gravel Pack:  From 10 to  Dairy 8. PERFORATIONS (i) From 30 to Pumping rate (gpm  9. SEALED ZONES (ii) From to	o4 0ft.  if applicable):  to4 0ft.  if applicable):
SECTION MAP - DO NOT FILL IN Sca.	10. LOCATION INF   (a) TOWNSH   Tier 10   (b) Assessor   (c) Latitude at   Lat: 34   Long: 11   (d) Solid or Lie	FORMATION HIP:
SW 1/2 SE  (9)  MOJAVE  MOJAVE	SealCap	DO NOT FILL IN

Asses	sor's Parcel No. 0541 611 19 11, PLOT	FPLAN. In perspective to the well site, sketch and label the
	N (b)	following items: well lot property lines, other wells (include abandoned wells), sewage disposal systems (sewers, septic tanks, leaching fields, seepage pits, cesspools), lakes and ponds, watercourses and animals or fowl kept. Indicate the distance, in feet, of any of the following which are within 500 ft. of the well site:
W Scale:	Well Site  S  inch = 100 feet	Other Sewers Septic tanks Leaching fields Seepage pits Cesspools Lakes and ponds Watercourses Animal or fowl kept  None of the above are within 500 feet of the well site
	have read this application and agree to comply with all laws regulating the type o	f work being performed  Date 4 1-11
	County Registration No. 108 California Lice	ense No. 485165
	DISPOSITION OF PERMIT (For Department Use Only)	
□ W □ D □ A	ent to Water Agency for review.  later Agency conditions or recommendations attached.  enied  oproved subject to the following:  Notify the Department, Safe Drinking Water Program, (909) 387-466  to make an inspection of the following operations:  Prior to sealing of the annular space or filling of the conductor casing.  After installation of the surface protective slab and pumping equipment.  During destruction of wells, prior to pouring the sealing material.	6 , twenty-four (24) hours in advance
B	Submit to the Department, within thirty (30) days after completion of work, a  Water Well Driller's Report Bacterial Analysis Inorgani Radiological Analysis General Mineral Organic	copy of: ic Chemical Analysis Chemical analysis  General Physical

### DO NOT FILL IN  Permit Number ### 20/1040/.55  Record ID ### 7/64	DEPARTMENT ( ENVIRONMENTA) 385 N. Arrowhe	San Bernardino OF PUBLIC HEALTH L HEALTH SERVICES ead Ave., 2nd Floor no, CA 92415-0160  SR. 48953  PO NOT FILL IN Date  Amount \$ 74953
Expiration	www.sbco	PERMIT See Print)  Check #   \$7.8  Receipt Number   17.9  City Code   18.0  Check #   \$7.8  Check #   \$7.8  City Code   18.0  City Code
1. OWNER: Name California Dept.  Site Address Camp Cady, Mojave City Newberry Springs Z  Mailing Address 407 W. Line St  City Bishop Z  Telephone Number (760) 872-1158	92365 treet	Items 6 through 9 to be estimated for new wells, exact for all other wells   5. ANNULAR SEAL: Seal Depth 10
2. WELL DRILLER: Gregg  Busin 4/18/2011  Start Date	Drilling ness Name 4/29/2011 Completion Date	7. CASING INSTALLED:  Steel Delastic Other  From (ft.) To (ft.) Dia. (in.) Wall (Gage of the control of the con
3. INTENDED WELL USE (check):  ☐ Agricultural ☐ Horizontal ☐ Cathodic ☒ Monitoring/Obse ☐ Ind/Domestic ☐ Community/PWS  4. TYPE OF WORK (check):		Gravel Pack:  Yes No From 10 to 30 ft.  8. PERFORATIONS (if applicable): From 20 to 30 ft. Pumping rate (gpm)
M New ☐ Reconstruction	☐ Destruction	9. SEALED ZONES (if applicable): From to ft.
NW 1/4	Scale: 1 inch = ¼ mile  NE ¼	10. LOCATION INFORMATION  (a) TOWNSHIP:     Tier 10 (N/S Range
SW 1/4 19 105AVE	SE 1/4	Cap Check Valve Electricals Stab Tag

Building & Safety Notified

Asses	sor's	Parcel No. 0 5 4 1 01	1 19	(a)	In perspective to t	he well site, sketch and l	abel the
		/«	N	(b)	following items: w abandoned wells) septic tanks, leach lakes and ponds,	ell lot property lines, othe , sewage disposal systen ning fields, seepage pits, watercourses and anima nce, in feet, of any of the	r wells (include ns (sewers, cesspools), ls or fowl kept
W	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	We	ell ° Site		E	Other Sewers Septic tanks Leaching fields Seepage pits Cesspools Lakes and ponds	
Scale:	1/2 incl	h = 100 feet			(c) None of well site.	Watercourses Animal or fowl kept the above are within 500	feet of the
	C-57	e read this application and agree to contractor's Signature	omply with all laws regula	ting the type	Date	485165	***************************************
	Coun	nty Registration No U	DISPOSITION O		icense No.	7 6 9 1 6 9	
□ v □ □	Vater / Denied	ved subject to the following:	(For Department	Use Only)	666	twenty-four (24) hour	s in advance
А	1.02	to make an inspection of the followin  Prior to sealing of the annular sp  After installation of the surface p  During destruction of wells, prior	g operations: ace or filling of the condu rotective slab <del>and pumpit</del>	ctor casing.	,	twenty-lour (24) Hour	s iii auvance
Comm	s ☑ nents	Submit to the Department, within this Water Well Driller's Report  Radiological Analysis	dy (30) days after comple ☐ Bacterial Analysis ☐ General Mineral	☐ Inorga	a copy of: anic Chemical Analy nic Chemical analysi		al Physical

### DO NOT FILL IN    Permit Number	DEPARTMENT O ENVIRONMENTAL 385 N. Arrowher San Bernarding (909) 8 www.sbcot	an Bernardino PF PUBLIC HEALTH L HEALTH SERVICES ad Ave., 2nd Floor o, CA 92415-0160 B84-4056 Unity.gov/dehs  PERMIT See Print)  Do NOT FILL IN Date  L HONG STATE OF THE NOTE
1. OWNER: Name California Dept. of Site Address Camp Cady, Mojave T City Newberry Springs Zip Mailing Address 407 W. Line Stre City Bishop Zip Telephone Number (760) 872-1158	92365 eet 93514	Items 6 through 9 to be estimated for new wells, exact for all other wells
		7. CASING INSTALLED:    Steel
3. INTENDED WELL USE (check):  ☐ Agricultural ☐ Horizontal ☐ Cathodic ☒ Monitoring/Observa ☐ Ind/Domestic ☐ Community/PWS/Ci  4. TYPE OF WORK (check): ☒ New ☐ Reconstruction	tion □ Dairy ity □ Other	Gravel Pack: ☐ Yes ☐ No
SECTION MAP - DO NOT FILL IN  NW 1/4	Scale: 1 inch = 1/4 mile	10. LOCATION INFORMATION  (a) TOWNSHIP:     Tier 10 N/S Range (E/W Section 19)  (b) Assessor's Parcel No. 0541 011 19  (c) Latitude and Longitude     Lat: 34 °, 56 ', 15.43 " N/S N     Long: 116 °, 36 ', 42.36 " N/S W  (d) Solid or Liquid Disposal Site within Two Miles  Yes No Location
SW 1/4 MOJAVE	SE 1/4	DO NOT FILL IN  Seal Cap Check Valve Electricals Stab Tag Building & Safety Notified

Assessor's Parcel No. OSU( OII C) 11. P	following items: well lot property lines, other wells (include abandoned wells), sewage disposal systems (sewers,
(b)	septic tanks, leaching fields, seepage pits, cesspools), lakes and ponds, watercourses and animals or fowl kept. Indicate the distance, in <b>feet</b> , of any of the following which are within 500 ft of the well site:
W Well ° Site	Other Sewers Septic tanks Leaching fields Seepage pits Cesspools Lakes and ponds Watercourses Animal or fowl kept  (c) None of the above are within 500 feet of the well site.
Scale: ½ inch = 100 feet  12. I have read this application and agree to comply with all laws regulating the type	
C-57 Contractor's Signature County Registration No. California	Date 4-11-11 License No. 485165
DISPOSITION OF PERMIT	
Sent to Water Agency for review.     Water Agency conditions or recommendations attached.     Denied     Approved subject to the following:     Notify the Department.   Safe Drinking Water Program, (909) 387-to make an inspection of the following operations:     Prior to sealing of the annular space or filling of the conductor casing     After installation of the surface protective slab and pumping equipme     During destruction of wells, prior to pouring the sealing material.	J.
B. Submit to the Department, within thirty (30) days after completion of work  Water Well Driller's Report	k, a copy of: ganic Chemical Analysis  In General Physical
Comments	

Permit Number 70/040/87 Record ID	DEPARTMENT O ENVIRONMENTAL 385 N. Arrowhea San Bernardina (909) 8 www.sbcou WELL (Pleas	an Bernardino  F PUBLIC HEALTH HEALTH SERVICES ad Ave., 2nd Floor o, CA 92415-0160 884-4056 Unity.gov/dehs  PERMIT See Print)  Items 6 through 9 to be estimated for new wells, exact for all other wells  5. ANNULAR SEAL: Seal Depth 10
City Newberry Springs Zip  Mailing Address 407 W. Line Stre  City Bishop Zip  Telephone Number (760) 872-1158	92365 eet	Furnished by: Owner Contractor Driven Comductor Dia. in., Wall (Gage) Sealing MaterialCement Grout Thickness 3 in  6. DEPTH OF WELL (feet): Piezometer 7 Proposed 25 Existing DIAMETER OF BORE (in.): 8
2. WELL DRILLER: Gregg Dr:  Business 4/18/2011 Stan Date		7. CASING INSTALLED:  ☐ Steel
3. INTENDED WELL USE (check):  ☐ Agricultural ☐ Horizontal ☐ Cathodic ☒ Monitoring/Observat ☐ Ind/Domestic ☐ Community/PWS/Cit  4. TYPE OF WORK (check): ☒ New ☐ Reconstruction		From 10 to 25 ft.  8. PERFORATIONS (if applicable): From 15 to 25 ft. Pumping rate (gpm)  9. SEALED ZONES (if applicable): From to ft.
SECTION MAP - DO NOT FILL IN  NW 1/4  SEC.	Scale: 1 inch = ¼ mile  NE ¼	10. LOCATION INFORMATION  (a) TOWNSHIP:
SW 1/4  (19)  mospile	SE 1/4	DO NOT FILL IN  Seal

W Well Site	11. PLOT PLAN:  (a) In perspective to the well site, sketch and label the following items: well to property lines, other wells (include abandoned wells), sewage disposal systems (sewers, septic tanks, leaching fields, seepage pits, cesspools) lakes and ponds, watercourses and animals or fowl kept Indicate the distance, in feet, of any of the following which are within 500 ft. of the well site:  Other  Sewers  Septic tanks  Leaching fields  Seepage pits  Cesspools  E Lakes and ponds  Watercourses  Animal or fowl kept  (c) None of the above are within 500 feet of the
Scale: ½ inch = 100 feet	well site.
12. I have read this application and agree to comply with all laws regulating C-57 Contractor's Signature	the type of work being performed  Date 4-11-11
	lifornia License No. 485165
DISPOSITION OF P	
Sent to Water Agency for review.  Water Agency conditions or recommendations attached.  Denied  Approved subject to the following:  A ☑ Notify the Department, Safe Drinking Water Program, (90 to make an inspection of the following operations:  Prior to sealing of the annular space or filling of the conductor After installation of the surface protective slab and pumping of During destruction of wells, prior to pouring the sealing material	9) 387-4666 , twenty-four (24) hours in advance casing.
B. Submit to the Department, within thirty (30) days after completion Water Well Driller's Report	Inorganic Chemical Analysis
Commons	

DO NOT FILL IN           Permit Number         20/040/88           Record ID         40°7/67           Expiration         /0-12-1/           FF         FA           SN         SN	DEPARTMENT O ENVIRONMENTAL 385 N. Arrowhe San Bernardin (909) 8 www.sbcoi	San Bernardino DF PUBLIC HEALTH L HEALTH SERVICES PAID AND AND AND AND AND AND AND AND AND AN
1. OWNER: Name California Dept. Site Address Camp Cady, Mojave City Newberry Springs Z Mailing Address 407 W. Line S City Bishop Z Telephone Number (760) 872-115	e Trail  ip 92365  treet  ip 93514	Items 6 through 9 to be estimated for new wells, exact for all other wells  5. ANNULAR SEAL: Seal Depth 10 ft  Furnished by: Owner 10 Contractor  Driven Comductor Dia. in., Wall (Gage)  Sealing Material Cement Grout Thickness 3 in  6. DEPTH OF WELL (feet): Piezometer 8  Proposed 25 Existing  DIAMETER OF BORE (in.): 8
3 INTENDED WELL USE (check):	ness Name 4/29/2011 Completion Date	7. CASING INSTALLED:  Steel Description Dia. (in.) Wall (Gage)  0 25 2 Sch. 40 (.154")  Gravel Pack: Yes No From 10 to 25 ft.
☐ Agricultural ☐ Horizontal ☐ Cathodic ☒ Monitoring/Obse ☐ Ind/Domestic ☐ Community/PWS  4. TYPE OF WORK (check): ☒ New ☐ Reconstruction	· · · · · · · · · · · · · · · · · · ·	8. PERFORATIONS (if applicable): From 15 to 25 ft Pumping rate (gpm)  9. SEALED ZONES (if applicable): From to ft.
SECTION MAP - DO NOT FILL IN  NW 1/4	Scale: 1 inch = ¼ mile  NE ¼	10. LOCATION INFORMATION  (a) TOWNSHIP:     Tier 10 NS Range 4 EW Section 19  (b) Assessor's Parcel No. 0541 011 19  (c) Latitude and Longitude     Lat: 34
SW 1/4 MOSAVE	SE 14	DO NOT FILL IN  Seal Cap Check Valve Electricals Slab Tag Building & Safety Notified

N   Scale: 16 inch = 100 feet   Scale: 16 inch = 100 feet	Ass	essor'	s Parcel No. OSGI	<u>/// / / / / / / / / / / / / / / / / / </u>	11 PLOT	PLAN: In perspective to the	ne well site, sketch and	label the
Scalo % inch = 100 feel    Scalo % inch = 100 feel   Scalo % inch = 100 feel				N		following items: we abandoned wells), septic tanks, leach lakes and ponds, we Indicate the distant	ell lot properly lines, oth sewage disposal syste ing fields, seepage pits valercourses and anim ce, in feet, of any of the	ner wells (include ems (sewers, s, cesspools), als or fowl kept.
12. I have read this application and agree to comply with all laws regulating the type of work being performed C-57 Contractor's Signature						(c) None of t	Sewers Septic tanks Leaching fields Seepage pits Cesspools Lakes and ponds Watercourses Animal or fowl kept	D feet of the
County Registration No.   California License N	12.				ting the type of			
Sent to Water Agency for review.     Water Agency conditions or recommendations attached.     Denied     Approved subject to the following:     A.☑ Notify the Department,			5		California Lice	nse No.	185165	
<ul> <li>□ Sent to Water Agency for review.</li> <li>□ Water Agency conditions or recommendations attached.</li> <li>□ Denied</li> <li>☑ Approved subject to the following:</li> <li>A.☑ Notify the Department.</li> <li>□ Safe Drinking Water Program, (909) 387-4666 , twenty-four (24) hours in advance to make an inspection of the following operations:</li> <li>□ Prior to sealing of the annular space or filling of the conductor casing.</li> <li>☑ After installation of the surface protective slab and pumping equipment.</li> <li>□ During destruction of wells, prior to pouring the sealing material.</li> <li>B.☑ Submit to the Department, within thirty (30) days after completion of work, a copy of:</li> <li>☑ Water Well Driller's Report □ Bacterial Analysis □ Inorganic Chemical Analysis □ General Physical</li> </ul>								
to make an inspection of the following operations:  Prior to sealing of the annular space or filling of the conductor casing.  After installation of the surface protective slab and pumping aquipment.  During destruction of wells, prior to pouring the sealing material.  B. Submit to the Department, within thirty (30) days after completion of work, a copy of:  Water Well Driller's Report  Bacterial Analysis  Radiological Analysis  General Mineral  Organic Chemical analysis  General Physical		Water . Denied	Agency conditions or recommendation	25 1000	,,			
Water Well Driller's Report ☐ Bacterial Analysis ☐ Inorganic Chemical Analysis ☐ General Physical ☐ General Physical		A.⊠	to make an inspection of the following Drior to sealing of the annular seal After installation of the surface	ng operations: pace or filling of the condu protective slab <del>and pumpi</del> n	ctor casing.	3,	twenty-four (24) hou	rs in advance
Comments		В. <b>⊠</b>	Water Well Driller's Report	☐ Bacterial Analysis	☐ Inorganio	Chemical Analys		al Physical
	Com	ments						

	0	N. F. W.	SK 48953
DO NOT FILL IN	DEPARTMENT C	San Bernardino DF PUBLIC HEALTH	DO NOT FILL IN
Permit Number <u>Z 0 // 0 // 0 // 89</u> Record ID <u>WP 7/68</u>		L HEALTH SERVICES ead Ave., 2nd Floor	Date
Expiration /0 - /7 - //	San Bernardin	io, CA 92415-0160	Amount \$
The state of the s	St 1, 124	884-4056 unty.gov/dehs	Check # 860
FA	WELL	PERMIT	Receipt Number 1791
SN		se Print)	Paid by GLAP
			City Code
1. OWNER: Name California Dept.	of Fish and Game		ated for new wells, exact for all other wells
Site Address Camp Cady, Mojave	Trail	1	Seal Depth 10 ft.  Owner Ki Contractor
City Newberry Springs Z	ip92365	☐ Driven Comductor	Dia in , Wall (Gage)
Mailing Address 407 W. Line St	reet		
City Bishop Z	ip <u>93514</u>	6. DEPTH OF WELL (fee	et):Piezometer 9Existing
Telephone Number ( 760) <u>872-1158</u>	3	DIAMETER OF BORE	
2 WELL DOWNER Great	Drilling	7. CASING INSTALLED:	
2. WELL DRILLER: Gregg	ess Name	☐ Steel 💆 Pla	estic 🗆 Other
4/18/2011	4/29/2011		(ft.) Dia. (in.) Wall (Gage) 5 2 Sch. 40 (.154")
Start Date	Completion Date		5 Z Sch. 40 (,154")
3. INTENDED WELL USE (check):		Gravel Pack; ☐ Ye	
	☐ Test	From 10 to _	ft.
☐ Cathodic      Monitoring/Obser	rvation 🗆 Dairy	8. PERFORATIONS (if a	applicable):
☐ Ind/Domestic ☐ Community/PWS	/City ☐ Other	From 15 to	25 ft.
		Pumping rate (gpm) _	
TYPE OF WORK (check):      New □ Reconstruction	☐ Destruction	9. SEALED ZONES (if a)	pplicable):
T the solid struction	in Destruction	From to_	ft.
SECTION MAP - DO NOT FILL IN	Scale: 1 inch = ¼ mile	10. LOCATION INFO	RMATION
		(a) TOWNSHIP	
		Tier_10_(	N/S Range 4 (E/W Section 19
		(b) Assessor's	Parcel No. 0541 011 19
NW 1/4	NE 1/4	(c) Latitude and	Longitude
			°, 56 , 27.91 "N/S N
y y			_ •, _ 35 ·, _ 47.22°-\n/s W
			id Disposal Site within Two Miles
SEC		, ,	
19		Location	
			DO NOT FILL IN
		Seal	
sw 1/4	SE Va		
1 ' .	SE /A		
(9)			
mo JAVE			
		Tag	

Building & Safety Notified \_

Assessor	s Parcel No. USUI OI	1 19	11. PLOT1		Il site, sketch and label the
	, or	N	(b)	following items: well lot p abandoned wells), sewa septic tanks, leaching fie lakes and ponds, watero	property lines, other wells (includ- ige disposal systems (sewers, elds, seepage pits, cesspools), courses and animals or fowl kept. feet, of any of the following whic
<b>W</b>	We	II' Site		See Ces Lake Wat	
Scale: ½ in	ch = 100 feet	S		Won one.	
	ve read this application and agree to co	omply with all laws regula	ating the type of	work being performed	
	nty Registration No. 108		_ California Lice		5165
		DISPOSITION C			
☐ Water ☐ Denie	o Water Agency for review. Agency conditions or recommendation d ved subject to the following:	,			
A. 🗹	Notify the Department, Safe to make an inspection of the followin Prior to sealing of the annular sp After installation of the surface production During destruction of wells, prior	ace or filling of the condu	uctor casing	twen, twen	ty-four (24) hours in advance
B.☑ Comments	☐ Radiological Analysis	☐ Bacterial Analysis ☐ General Mineral	☐ Inorganic	Chemical Analysis Chemical analysis	☐ General Physical

## DO NOT FILL IN    Permit Number   20/1040/90     Record ID   10/7/69     Expiration   70/7/1/69     FF   FA   SN   SN	DEPARTMENT O ENVIRONMENTAL 385 N. Arrowhee San Bernardine (909) 8 www.sbcot	an Bernardino  F PUBLIC HEALTH HEALTH SERVICES ad Ave., 2nd Floor o, CA 92415-0160 884-4056 unty.gov/dehs  PERMIT Se Print)  Dale  Do NOT F  Dale  Amount \$ 1978 Receipt Number Paid by City Code	11 1291
1. OWNER: Name California Dept.  Site Address Camp Cady, Mojave City Newberry Springs Z  Mailing Address 407 W. Line St City Bishop Z  Telephone Number (760) 872-1158	e Trail  ip 92365  treet  ip 93514	Items 6 through 9 to be estimated for new wells, exact for   5. ANNULAR SEAL: Seal Depth   5. Furnished by: Owner & Contract   Driven Comductor Dia. in., Wall   Sealing MaterialCement Grout Thickness:   6. DEPTH OF WELL (feet): Piezometer 10   Proposed   20   Existing   DIAMETER OF BORE (in.):   8	ctor (Gage)isir
3 INTENDED WELL USE (check):	Drilling ness Name 4/29/2011 Completion Date	7. CASING INSTALLED:  ☐ Steel	Wall (Gage) Sch. 40 (.154"
□ Cathodic ☑ Monitoring/Obser □ Ind/Domestic □ Community/PWS  4. TYPE OF WORK (check): ☑ New □ Reconstruction	S/City    Other	8. PERFORATIONS (if applicable): From 10 to 20 ft. Pumping rate (gpm)  9. SEALED ZONES (if applicable): From to ft.	
SECTION MAP - DO NOT FILL IN  NW 1/4	Scale: 1 inch = ¼ mile	10. LOCATION INFORMATION  (a) TOWNSHIP:     Tier 10 NS Range 4 EN  (b) Assessor's Parcel No. 0541  (c) Latitude and Longitude     Lat: 34	011 19 .30 "N/S N .10 "N/S W Two Miles
SW 1/4	SE 14	Cap Check Valve Electricals Stab Tag Building & Safety Notified	

In perspective to the well site, sketch and takeh the following items: well by rates, learning felds items well by rates, learning felds shandoned wells), sewage disposal systems (sewers, septe tanks, learning felds watercourses and animals or fowl kept includes the distance, in feet, of any of the following which are within 500 ft. of the well site:    Other
Well Site    Cesspools   Lakes and ponds   Watercourses   Animal or fow kept
12. I have read this application and agree to comply with all laws regulating the type of work being performed  C-57 Contractor's Signature  County Registration No.  DISPOSITION OF PERMIT  (For Department Use Only)  Sent to Water Agency for review.  Water Agency conditions or recommendations attached.  Denied
DISPOSITION OF PERMIT (For Department Use Only)  Sent to Water Agency for review.  Water Agency conditions or recommendations attached.  Denied
(For Department Use Only)  Sent to Water Agency for review.  Water Agency conditions or recommendations attached.  Denied
<ul> <li>□ Sent to Water Agency for review.</li> <li>□ Water Agency conditions or recommendations attached.</li> <li>□ Denied</li> </ul>
A.☑ Notify the Department, Safe Drinking Water Program, (909) 387-4666 , twenty-four (24) hours in advance to make an inspection of the following operations:  □ Prior to sealing of the annular space or filling of the conductor casing.  ☑ After installation of the surface protective slab and particular space.  □ During destruction of wells, prior to pouring the sealing material.
B. Submit to the Department, within thirty (30) days after completion of work, a copy of:    Water Well Driller's Report

## DO NOT FILL IN    Permit Number   \( \frac{70/040/9/}{0-12-1/} \)    Expiration   \( \frac{70-12-1/}{0-12-1/} \)    FF   FA   SN   SN	DEPARTMENT ( ENVIRONMENTAI 385 N. Arrowhe San Bernardin (909) www.sbco	San Bernardino DF PUBLIC HEALTH L HEALTH SERVICES Bad Ave., 2nd Floor Bo, CA 92415-0160 B84-4056 Bunty.gov/dehs  PERMIT Se Print)  City Code  CR 44753  DO NOT FILL IN  Date  Amount \$  Check #  Receipt Number  Paid by  City Code
1. OWNER: Name California Dept.  Site Address Camp Cady, Mojave City Newberry Springs Z  Mailing Address 407 W. Line St City Bishop Z  Telephone Number (760) 872-1158	92365 treet p 93514	Items 6 through 9 to be estimated for new wells, exact for all other wells  5. ANNULAR SEAL: Seal Depth 5 frumished by: Owner 12 Contractor Driven Comductor Dia. in , Wall (Gage) Sealing Material Cement Grout Thickness 3 in  6. DEPTH OF WELL (feet): Piezometer 11 Proposed 20 Existing DIAMETER OF BORE (in.): 8
2. WELL DRILLER: Gregg  Busin  4/18/2011  Start Date  3. INTENDED WELL USE (check):  Agricultural Horizontal  Cathodic Monitoring/Obsert Ind/Domestic Community/PWS	A/29/2011 Completion Date  Test rvation □ Dairy	7. CASING INSTALLED:  Steel Plastic Other  From (ft.) To (ft.) Dia. (in.) Wall (Gage)  0 20 2 Sch. 40 (.154")  Gravel Pack: Yes No From 5 to 20 ft.  8. PERFORATIONS (if applicable): From 10 to 20 ft.
4. TYPE OF WORK (check):  ☑ New ☐ Reconstruction	☐ Destruction	9. SEALED ZONES (if applicable): From to ft.
NW 1/4	Scale: 1 inch = ½ mile	10. LOCATION INFORMATION  (a) TOWNSHIP:     Tier 10 N/S Range 4 E/W Section /4  (b) Assessor's Parcel No. 0541 011 19  (c) Latitude and Longitude     Lat: 34
SW 1/4	SE 1/4	Cap

Building & Safety Notified \_\_

Assessor'	s Parcel No. 0 SUI OII I	(a) In perspective to the well site, sketch and label the
	N	following items: well lot property lines, other wells (include abandoned wells), sewage disposal systems (sewers, septic tanks, leaching fields, seepage pits, cesspools), lakes and ponds, watercourses and animals or fowl kept.  (b) Indicate the distance, in <b>feet</b> , of any of the following which are within 500 ft. of the well site:
<b>W</b>	Well * Site	Other Sewers Septic tanks Leaching fields Seepage pits Cesspools Lakes and ponds Watercourses Animal or fowl kept  None of the above are within 500 feet of the well site
Scale: ½ ind	ch = 100 feet	wan site.
12. I hav	ve read this application and agree to comply with all laws regulating the to 7 Contractor's Signature	type of work being performed  Date 4-1-11  nia License No. 455165
	DISPOSITION OF PERMI (For Department Use Only)	
☐ Water ☐ Denie	to Water Agency for review.  Agency conditions or recommendations attached.	
Λ.Ε.	to make an inspection of the following operations:  Prior to sealing of the annular space or filling of the conductor casi  After installation of the surface protective slab and pumping equips  During destruction of wells, prior to pouring the sealing material.	sing.
B. ✓ Comments	☐ Radiological Analysis ☐ General Mineral ☐ Oi	norganic Chemical Analysis  Organic Chemical analysis  General Physical

SR 48946
TO NOT FILL IN
18 328.00
# [8 LE] t Number <u>G 7,2 S7)</u>
GOT TODD ELGINETICS
de
wwwells, exact for all other wells I Depth 125 ft. Contractor in., Wall (Gage) Grout Thickness 3.5 in.
Grout Thickness 3.5 in.
existing
□ Other
Dia. (in.) Wall (Gage) 2.5 Sch. 40 (.276")
□ No 0 ft.
/e): 0 ft.
(e): ft.
N

Date

D	O NOT FILL IN
Permit Number	2011040169
Record ID	WP 7148
Expiration	10-12-11
FF	
FA	
SN	

County of San Bernardino DEPARTMENT OF PUBLIC HEALTH ENVIRONMENTAL HEALTH SERVICES 385 N. Arrowhead Ave., 2nd Floor

Record ID	(909) 8 www.sbcot	O, CA 92415-0160  884-4056  Unity.gov/dehs  PERMIT  See Print)  Amount'\$ Check #   8   6   Receipt Number   7   7   7   City Code   1
1 OWNER: Name California De Site Address Camp Cady, Mo City Newberry Springs Mailing Address 407 W. Lin City Bishop Telephone Number (760) 872-	jave Trail  Zip 92365  e Street  Zip 93514	Items 6 through 9 to be estimated for new wells, exact for all other wells   5. ANNULAR SEAL: Seal Depth 125   ft   Furnished by: Owner 10 Contractor   Driven Comductor Dia in., Wall (Gage)   Sealing MaterialCement Grout Thickness 3.5 in   6. DEPTH OF WELL (feet): Cluster A Deep   Proposed 140   Existing   DIAMETER OF BORE (in.): 10
2. WELL DRILLER: Boa 5/2/2011  Start Date	art Longyear  Business Name  6/10/2011  Completion Date	7. CASING INSTALLED: ☐ Steel
3. INTENDED WELL USE (check):  ☐ Agricultural ☐ Horizontal ☐ Cathodic ☒ Monitoring/0 ☐ Ind/Domestic ☐ Community/	☐ Test  Dbservation ☐ Dairy  PWS/City ☐ Other	From 125 to 140 ft.  8. PERFORATIONS (if applicable): From 135 to 140 ft. Pumping rate (gpm)
4. TYPE OF WORK (check):  Ñ New ☐ Reconstruction	on 🗆 Destruction	9. SEALED ZONES (if applicable): From to ft.
SECTION MAP - DO NOT FILL IN  NW 1/4	Scale: 1 inch = ¼ mile	10. LOCATION INFORMATION  (a) TOWNSHIP:     Tier 10 N/S Range 4 E/W Section 19  (b) Assessor's Parcel No. 0541 011 19  (c) Latitude and Longitude     Lat: 34 °, 56 ', 4.93 " N/S N     Long: 116 °, 37 ', 10.91 " N/S W  (d) Solid or Liquid Disposal Site within Two Miles  1 Yes No     Location 19
SW 1/4	SE 1/4 putel	Cap Check Valve Electricals Stab Tag Building & Safety Notified

W 0541 011	N N Well 'Site	11. PLOT (a)	In perspective to the well of following items: well lot pro abandoned wells), sewage septic lanks, leaching field lakes and ponds, watercoulndicate the distance, in feare within 500 ft. of the well sewers.  Other  Sewers  Septic  Leachi  Seepa  Cesspi	operty lines, other wells (include e disposal systems (sewers, ls, seepage pits, cesspools), urses and animals or fowl kept. Let, of any of the following which ell site
Scale: ½ inch = 100 feet  12. I have read this application and agree to C-57 Contractor's Signature	S comply with all laws regular	ling the type of	well site  work being performed  Date	e are within 500 feet of the $f = \frac{1}{4} - \frac{1}{4}$
County Registration No. /6		California Lice	nse No. <u>69468</u>	86
to make an inspection of the follow Prior to sealing of the annular After installation of the surface During destruction of wells, pri B. Submit to the Department, within the Water Well Driller's Report Radiological Analysis	fe Drinking Water Program, ving operations: space or filling of the conductor protective slab and pumping or to pouring the sealing ma	(909) 387-4666 ctor casing. g-equipment	,,	four (24) hours in advance
Comments				

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Permit Number	2011040170
Record ID	WP 7149
Expiration	10-12-11
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County of San Bernardino
DEPARTMENT OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH SERVICES
385 N. Arrowhead Ave., 2nd Floor
San Bernardino, CA 92415-0160
(909) 884-4056

www.sbcounty.gov/dehs

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Amount S 377K
Check #
Receipt Number 17281)
Paid by GAY
City Code

FASN		Paid byCity Code		
1. OWNER: Name California De Site Address Camp Cady, Mo City Newberry Springs  Mailing Address 407 W. Lin City Bishop  Telephone Number (760) 872-	jave Trail  Zip 92365  e Street  Zip 93514	Items 6 through 9 to be estimated for new wells, exact for all other wells   5. ANNULAR SEAL: Seal Depth 60 ft.     Furnished by: Owner 10 Contractor     Driven Comductor Dia. in. Wall (Gage)     Sealing Material Cement Grout Thickness 3.5 in.     6. DEPTH OF WELL (feet): Cluster A Intermediate     Proposed 80 Existing     DIAMETER OF BORE (in.): 10		
2. WELL DRILLER: Boa 5/2/2011 Start Date	Business Name 6/10/2011 Completion Date	7. CASING INSTALLED:  ☐ Steel		
3. INTENDED WELL USE (check):  □ Agricultural □ Horizontal  □ Cathodic ☒ Monitoring/c □ Ind/Domestic □ Community/	☐ Test  Observation ☐ Dairy  /PWS/City ☐ Other	From 60 to 80 ft.  8. PERFORATIONS (if applicable): From 70 to 80 ft.  Pumping rate (gpm)		
4. TYPE OF WORK (check);  ☑ New ☐ Reconstructi	on 🗆 Destruction	9. SEALED ZONES (if applicable): From to ft.		
SECTION MAP - DO NOT FILL IN  NW 1/4	Scale. 1 inch = ¼ mile	10. LOCATION INFORMATION  (a) TOWNSHIP:     Tier 10 N/S Range 4 E/W Section 7  (b) Assessor's Parcel No. 0541 011 19  (c) Latitude and Longitude     Lat: 34 56 4.93 "N/S N  Long: 116 37 10.91 "N/S W  (d) Solid or Liquid Disposal Site within Two Miles     Yes \$\frac{1}{2}\$ No		
SW 14	SE M	Cap Check Valve Electricals Stab Tag Building & Safety Notified		

W Scale: ½ inch		N N N Site	11.	PLOT (a)	In perspective to the well standard following items: well lot proabandoned wells), sewage septic tanks, leaching field lakes and ponds, watercoul indicate the distance, in feare within 500 ft. of the well sewers.  Other Sewers Septic Leaching Seepart Cessport Lakes Watercould Animal	operty lines, other wells (include a disposal systems (sewers, is, seepage pits, cesspools), urses and animals or fowl kept et, of any of the following which all site:
	read this application and agree to	comply with all laws regul	ating the	type of		4-4-11
	y Registration No. 161		Californ	nia Lice	nse No. <u>6946</u>	
□ Water Ag □ Denied □ Approve A. □ I I I I I I I I I I I I I I I I I I I	Water Agency for review. gency conditions or recommendation of subject to the following:  Notify the Department,	e Drinking Water Programing operations: space or filling of the condition of the condition of the condition of the condition of the pouring the sealing mainty (30) days after completing Bacterial Analysis  General Mineral	, (909) 3.  uctor cas  no equip  aterial.  In line	ing. ment. rork, a c		four (24) hours in advance  General Physical

## DO NOT FILL IN    Permit Number	DEPARTMENT O ENVIRONMENTAL 385 N. Arrowher San Bernardin (909) 8 www.sbcot	DO NOT FILL IN Date Do NOT FILL IN Date Amount \$ Check #  PERMIT Se Print)  DO NOT FILL IN Date Check #  City Code  DO NOT FILL IN Date Check #  City Code
1. OWNER: Name California Dept. Site Address Camp Cady, Mojav City Newberry Springs Mailing Address 407 W. Line S City Bishop Telephone Number (760) 872-115	re Trail Zip 92365 Etreet Zip 93514	Items 6 through 9 to be estimated for new wells. exact for all other wells   5. ANNULAR SEAL: Seal Depth 35 frumished by: Owner 15 Contractor Inc., Wall (Gage) Sealing Material Cement Grout Thickness 3.5 in   6. DEPTH OF WELL (feet): Cluster A Shallow Proposed 55 Existing DIAMETER OF BORE (in.): 10
2 WELL DRILLER: Boart  Bus  5/2/2011  Start Date	Longyear iness Name 6/10/2011 Completion Date	7. CASING INSTALLED:  Steel Delastic Other  From (ft.) To (ft.) Dia. (in.) Wall (Gage)  0 55 2.5 Sch. 40 (.276"
3. INTENDED WELL USE (check):  ☐ Agricultural ☐ Horizontal ☐ Cathodic ☒ Monitoring/Obse ☐ Ind/Domestic ☐ Community/PW  4. TYPE OF WORK (check): ☒ New ☐ Reconstruction	S/City	Gravel Pack:  Yes  No From 35 to 55 ft.  8. PERFORATIONS (if applicable): From 45 to 55 ft Pumping rate (gpm)  9. SEALED ZONES (if applicable):
SECTION MAP - DO NOT FILL IN  NW 1/4	Scale: 1 inch = ¼ mile	From to ft.
SW 1/2  SW 1/2  MOSAVE	SE WA	Pes XI No Location  DO NOT FILL IN  Seal Cap Check Valve Electricals Stab

County of San Bernardino

Assessor's Parcel No. 0541 011 1	N .	11. PLOT (a)	In perspective to the following items: we abandoned wells), septic tanks, leach lakes and ponds, v	he well site, sketch and ell lot property lines, oth sewage disposal syste ning fields, seepage pits watercourses and anim ice, in <b>feet</b> , of any of the	ner wells (includents (sewers, s, cesspools), als or fowl kept.
Scale: ½ inch = 100 feet	Vell * Site		E		X
<ol> <li>I have read this application and agree to</li> <li>C-57 Contractor's Signature</li> </ol>	comply with all laws regulat	ing the type of	work being performan	rmed 4-4-/1	
County Registration No. 161		California Lice	ense No.	694686	
	DISPOSITION OF				
□ Sent to Water Agency for review □ Water Agency conditions or recommendatio □ Denied □ Approved subject to the following:	ons attached.		c c		
A. Notify the Department, Safe to make an inspection of the following Prior to sealing of the annular sealing of the surface During destruction of wells, prior	pace or filling of the conductorotective slab and pumping	tor casing.	,	twenty-four (24) hou	's in advance
B.☑ Submit to the Department, within th ☑ Water Well Driller's Report ☐ Radiological Analysis Comments	☐ Bacterial Analysis ☐ General Mineral	☐ Inorgania	copy of: c Chemical Analys Chemical analysis		al Physical

		SR 4899	140		
Record ID CORP 7/5/ San Bernardin		DO NOT FILL IN	DO NOT FILL,IN		
		AL HEALTH SERVICES Dale	Dale 1 S		
		ino, CA 92415-0160 Amount \$	Amount \$ 3778 (U		
Expiration /0-17-11	*******	) 884-4056 Check #			
FF		Receipt Number 12 23	L		
FA		Pend by Paid b			
SN	(1 164	City Code			
1. OWNER: Name California Dept.	of Fish and Game	Illems 6 through 9 to be estimated for new wells, exact for all other 5. ANNULAR SEAL: Seal Depth 125	r wells		
Site Address Camp Cady, Mojav	e Trail	Furnished by: Owner Ki Contractor	v on whitehead security registers.		
City Newberry Springs		☐ Driven Comductor Dia in., Wall (Gage)☐ Sealing MaterialCement Grout Thickness	3.5 in		
Mailing Address 407 W. Line S	treet	6. DEPTH OF WELL (feet): Cluster B Deep			
City Bishop 2	Zip 93514	Proposed140 Existing			
Telephone Number ( 760) 872-115	8	DIAMETER OF BORE (in.): 10			
2 WELL DRILLER: Boart	Longyear	7. CASING INSTALLED:			
	iness Name	☐ Steel 💆 Plastic ☐ Other  From (ft.) ☐ To (ft.) ☐ Dia. (in.) ☐ Wall	<u> </u>		
5/2/2011	6/10/2011		(Gage)		
Start Date	Completion Date				
INTENDED WELL USE (check):		Gravel Pack: ☐ Yes ☐ No			
☐ Agricultural ☐ Horizontal	☐ Test	From 125 to 140 ft.			
☐ Cathodic		8 PERFORATIONS (if applicable):			
☐ Ind/Domestic ☐ Community/PW\$		From 135 to 140 ft.			
		Pumping rate (gpm)			
4. TYPE OF WORK (check):		0 854 50 70450 (6 6 4 4			
New □ Reconstruction	☐ Destruction	9. SEALED ZONES (if applicable): From to ft.			
SECTION MAP - DO NOT FILL IN	Scale: 1 inch = 1/4 mile	10. LOCATION INFORMATION			
		(a) TOWNSHIP:	16		
		Tier 10 (N/S Range 4 (E/W Section	on _ /1		
		(b) Assessor's Parcel No. 0541 011	19		
		(c) Latitude and Longitude			
NW 1/4	NE 1/4	Lat: <u>34</u> °, <u>56</u> ', <u>6.16</u> "	N SA		
		Long: 116 °, 37 ', 47.96 "			
		(d) Solid or Liquid Disposal Site within Two Mile			
		☐ Yes X No	00		
SEC					
19		Location			
		DO NOT FILL IN			
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sw ¼	SE V	Cap			
	SE MIL	Check Valve			
(19)	. '   /	Electricals			
MOJAVE	)	Stab			
		Tag			
. / /		Building & Safety Notified			

Assessor's Parcel No. 0541 011 19	11. PLOT PLAN:
N	<ul> <li>(a) In perspective to the well site, sketch and label the following items: well lot property lines, other wells (include abandoned wells), sewage disposal systems (sewers, septic tanks, leaching fields, seepage pits, cesspools), lakes and ponds, watercourses and animals or fowl kept.</li> <li>(b) Indicate the distance, in feet, of any of the following which are within 500 ft. of the well site:</li> </ul>
	,
	Other
	Sewers
	Septic tanks
	Leaching fields
	Seepage pits
	Cesspools
Well Site	
Weil Site	E Lakes and ponds
	Watercourses X
	/ Animal or fowl kept
	/ /
	f = f
	<i>'</i>
	1
	(c) None of the above are within 500 feet of the
	well site.
S S	
Scale: ½ inch = 100 feet	
12. I have read this application and agree to comply with all laws regulating	
C-57 Contractor's Signature	Date 4-4-11
County Registration NoCa	ifornia License No. 694686
DISPOSITION OF PI (For Department Use	
Sent to Water Agency for review.	
☐ Water Agency conditions or recommendations attached.	
☐ Denied	
Approved subject to the following:	
A. Notify the Department, Safe Drinking Water Program, (90)	3) 387-4666 , twenty-four (24) hours in advance
to make an inspection of the following operations:	
Prior to sealing of the annular space or filling of the conductor	casing.
After installation of the surface protective slab and pumping s	pripment.
☐ During destruction of wells, prior to pouring the sealing material	
B. Submit to the Department, within thirty (30) days after completion	of work, a copy of
	Inorganic Chemical Analysis
☐ Radiological Analysis ☐ General Mineral ☐	- 1985 -
	Organic Chemical analysis   General Physical
Comments	Organic Chemical analysis   General Physical

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DEPARTMEN	of San Bernardino T OF PUBLIC HEALTH  DO NOT FILL IN
	TAL HEALTH SERVICES Date Date
Jan bernar	dino, CA 92415-0160 Amount \$
	19) 884-4056 Check #
1	L PERMIT  Receipt Number 97 87  Paid by 47
	ease Print) City Code
	City Code
1. OWNER: Name California Dept. of Fish and Game	Items 6 through 9 to be estimated for new wells, exact for all other wells
Site Address Camp Cady, Mojave Trail	5. ANNULAR SEAL: Seal Depth 60 ft
City Newberry Springs Zip 92365	☐ Driven Comductor Dia in , Wall (Gage) ☐ Sealing Material Cement Grout Thickness 3.5 in
Mailing Address 407 W. Line Street	
City Bishop Zip 93514	6. DEPTH OF WELL (feet): Cluster B Intermediat
Telephone Number ( 760) 872-1158	Proposed 80 Existing  DIAMETER OF BORE (in.): 10
Telephone Number ( 760) 872-1138	
2. WELL DRILLER: Boart Longyear	7. CASING INSTALLED:
Business Name	☐ Steel ☑ Plastic ☐ Other  From (ft.) To (ft.) Dia. (in.) Wall (Gage)
5/2/2011 6/10/2011	0 80 2.5 Sch. 40 (.276")
Start Date Completion Date	
3. INTENDED WELL USE (check):	Gravel Pack:
☐ Agricultural ☐ Horizontal ☐ Test	From 00 to 00 tt.
☐ Cathodic ☑ Monitoring/Observation ☐ Dairy	8. PERFORATIONS (if applicable):
☐ Ind/Domestic ☐ Community/PWS/City ☐ Other	From 70 to 80 ft.
4. TYPE OF WORK (check):	Pumping rate (gpm)
New □ Reconstruction □ Destruction	9. SEALED ZONES (if applicable):
	From to ft.
SECTION MAP - DO NOT FILL IN Scale: 1 inch = ½ m	ille 10. LOCATION INFORMATION
	(a) TOWNSHIP:
	Tier 10 N/S Range 4 E/W Section 19
	(b) Assessor's Parcel No. 0541 011 19
NW ¼ NE ¼	(c) Latitude and Longitude
NL /4	Lat: <u>34</u> °, <u>56</u> °, <u>6.16</u> "N/S N
	Long: 116 °, 37 ', 47.96 "TN/S W
	(d) Solid or Liquid Disposal Site within Two Miles
	□ Yes 街 No
SEC	Location
17	DO NOT FILL IN
	Seal
	Cap
SW 1/2 SE 1/4 CV KN	Check Valve
(19)	Electricals
(19) MOSAVE	Slab
1// 1	Tag

Building & Safety Notified

In perspective to the visite has well of properly lines, sether and label for following times well of properly lines, sether and label following times to the visit of the following will obtain the distance of the following will be set to the following be set to the following operations:    Prior to sealing of the annular space of filing of the conductor casing   Approved subject to the following operations:   Prior to sealing of the annular space of filing of the conductor casing   Approved subject to the following operations:   Prior to sealing of the annular space of filing of the conductor casing   Approved subject to the following operations:   Prior to sealing of the annular space of filing of the conductor casing   Approved subject to the following operations:   Prior to sealing of the annular space of filing of the conductor casing   Approved subject to the following operations:   Prior to sealing of the annular space of filing of the conductor casing   Approved subject to the following operations:   Prior to sealing of the annular space of filing of the conductor casing   Approved subject to the following operations:   Prior to sealing of the annular space of filing of the conductor casing   Approved subject to the following operations:   Prior to sealing of the annular space of filing of the conductor casing   Approved subject to the following oper	Assess	or's Parcel No0	541 011 19		11		PLAN:	the wall site ok	otch and label the	
Watercourses X  Animal or fowl kept  (c) None of the above are within 500 feet of the well site.  Scale 12. I have read this application and agree to comply with all laws regulating the type of work being performed  C-57 Contractor's Signature  County Registration No.  Disposition OF PERMIT  (For Department Use Only)  Sent to Water Agency for review.  Water Agency conditions or recommendations attached.  Denied  Approved subject to the following:  A Motify the Department.  Safe Drinking Water Program, (909) 387-4666  to make an inspection of the following operations:  Prior to sealing of the annular space or filling of the conductor casing  After installation of the surface protective slab and pumping sequences.  During destruction of wells, prior to pouring the sealing material.  B Submit to the Department, within thirty (30) days after completion of work, a copy of:  Water Well Driller's Report   Bacterial Analysis   Inorganic Chemical Analysis		or's Parcel No.				(a)	In perspective to following items: w abandoned wells septic tanks, lead lakes and ponds, Indicate the dista are within 500 ft.	vell lot property ), sewage dispo hing fields, see watercourses a nce, in feet, of of the well site:  Other  Sewers  Septic tanks  Leaching fiel  Seepage pits  Cesspools	lines, other wells (ir osal systems (sewer page pits, cesspool and animals or fowl any of the following	rs, ls), kept
12. I have read this application and agree to comply with all laws regulating the type of work being performed  C-57 Contractor's Signature  County Registration No.  Disposition of Permit  (For Department Use Only)  Sent to Water Agency for review.  Water Agency conditions or recommendations attached.  Denied  Approved subject to the following:  A ☑ Notify the Department.  Safe Drinking Water Program. (909) 387-4666  to make an inspection of the following operations:  Prior to sealing of the annular space or filling of the conductor casing  After installation of the surface protective slab and pumping squipment.  During destruction of wells, prior to pouring the sealing material.  B ☑ Submit to the Department, within thirty (30) days after completion of work, a copy of:  Water Well Driller's Report  Bacterial Analysis  Inorganic Chemical Analysis	1	Ginch = 100 feet					(c) None of	Watercourse Animal or for	wikept	
DISPOSITION OF PERMIT (For Department Use Only)  Sent to Water Agency for review.  Water Agency conditions or recommendations attached.  Denied  Approved subject to the following:  A ☑ Notify the Department. Safe Drinking Water Program, (909) 387-4666 , twenty-four (24) hours in advance to make an inspection of the following operations:  Prior to sealing of the annular space or filling of the conductor casing  After installation of the surface protective slab and pumping equipment.  During destruction of wells, prior to pouring the sealing material.  B ☑ Submit to the Department, within thirty (30) days after completion of work, a copy of:  Water Well Driller's Report □ Bacterial Analysis □ Inorganic Chemical Analysis				mply with all laws regul	ating the	e type of			4-11	
Sent to Water Agency for review.     Water Agency conditions or recommendations attached.     Denied     Approved subject to the following:     A.☑ Notify the Department.   Safe Drinking Water Program, (909) 387-4666   , twenty-four (24) hours in advance to make an inspection of the following operations:     Prior to sealing of the annular space or filling of the conductor casing     After installation of the surface protective slab and pumping equipment.     During destruction of wells, prior to pouring the sealing material.     B.☑ Submit to the Department, within thirty (30) days after completion of work, a copy of:     Water Well Driller's Report   Bacterial Analysis   Inorganic Chemical Analysis					_ Califo	rnia Lice			70 10 10 10 10 10 10 10 10 10 10 10 10 10	
<ul> <li>Water Agency conditions or recommendations attached.</li> <li>Denied</li> <li>Approved subject to the following:         <ul> <li>A.☑ Notify the Department. Safe Drinking Water Program, (909) 387-4666 , twenty-four (24) hours in advance to make an inspection of the following operations:                 □ Prior to sealing of the annular space or filling of the conductor casing.</li></ul></li></ul>										
<ul> <li>□ Prior to sealing of the annular space or filling of the conductor casing.</li> <li>☑ After installation of the surface protective slab and pumping squipment.</li> <li>□ During destruction of wells, prior to pouring the sealing material.</li> <li>B ☑ Submit to the Department, within thirty (30) days after completion of work, a copy of:</li> <li>☑ Water Well Driller's Report □ Bacterial Analysis □ Inorganic Chemical Analysis</li> </ul>	☐ Wa ☐ De ☑ Ap	iter Agency conditions or nied proved subject to the folk Notify the Departme	recommendations  owing:  nt. Safe D	rinking Water Program	, <b>(9</b> 09) :	387 <b>-</b> 466€	6,	twenty-four (	(24) hours in adva	ance
Water Well Driller's Report 🔲 Bacterial Analysis 🔲 Inorganic Chemical Analysis		☐ Prior to sealing of After installation	of the annular spa of the surface pro	ce or filling of the cond elective slab and pump	ag oqui					
Comments		₩ Water Well Drille  Radiological Ana	er's Report [	Bacterial Analysis		Inorganio	c Chemical Analy		General Physic	:al

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Permit Number Record ID	2011040174 wp 7153
Expiration	10-17-11
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County of San Bernardino
DEPARTMENT OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH SERVICES
385 N. Arrowhead Ave., 2nd Floor
San Bernardino, CA 92415-0160
(909) 884-4056
www.sbcounty.gov/dehs

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Date	DO NOT FILL IN
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Check #	1829
Receipt Nu	mber 97789
Paid by	447
City Code_	01

FA WELL I		PERMIT se Print)  Receipt Number 17787  Paid by 1770  City Code		
1 OWNER: Name California Deposite Address Camp Cady, Moj City Newberry Springs Mailing Address 407 W. Line	ave Trail Zip 92365	Items 6 through 9 to be estimated for new wells, exact for all other wells  5. ANNULAR SEAL: Seal Depth 35 f  Furnished by: Owner Contractor  Driven Comductor Dia. in Wall (Gage)  Sealing Material Cement Grout Thickness 3.5 in		
City Bishop Telephone Number (760) 872-1		6. DEPTH OF WELL (feet): Cluster B Shallow Proposed 55 Existing DIAMETER OF BORE (in.): 10		
5/2/2011  Start Date  3. INTENDED WELL USE (check):	Business Name 6/10/2011  Completion Date	7. CASING INSTALLED:  Steel		
☐ Agricultural ☐ Horizontal ☐ Cathodic ☒ Monitoring/O ☐ Ind/Domestic ☐ Community/F	☐ Test bservation ☐ Dairy PWS/City ☐ Other	8. PERFORATIONS (if applicable): From 45 to 55 ft. Pumping rate (gpm)		
4 TYPE OF WORK (check):  ☑ New ☐ Reconstructio	n 🗆 Destruction	9. SEALED ZONES (if applicable): From to ft.		
SECTION MAP - DO NOT FILL IN	Scale: 1 inch = ½ mile	10. LOCATION INFORMATION  (a) TOWNSHIP:  Tier 10 (N/S Range 4 E/W Section 9  (b) Assessor's Parcel No. 0541 011 19		
NW 1/4	NE 1/4	(c) Latitude and Longitude  Lat: 34 ° 56 ' 6.16 "N/S N  Long: 116 ° 37 ' 47.96 "N/S W  (d) Solid or Liquid Disposal Site within Two Miles  Yes \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		
SW 1/2	SE (IV)	Cap		

Assessor'	s Parcel No. 0541 011 1	.9	11. PLOT (a)	PLAN:	well also also take and laked the
		N	(b)	following items: well lo abandoned wells), ser septic tanks, leaching lakes and ponds, water	well site, sketch and label the ot property lines, other wells (include wage disposal systems (sewers, fields, seepage pits, cesspools), ercourses and animals or fowl kept in feet, of any of the following which e well site:
<b>w</b>		ell ° Site		Se S	ther  ewers  eplic tanks  eaching fields  eepage pits  esspools  akes and ponds  /atercourses X  nimal or fowl kept  above are within 500 feet of the
Scale: ½ inc	ch = 100 feet	S		well site.	
	ve read this application and agree to c	omply with all laws regula	ting the type of	work being performe	ed <b>- - - / /</b>
	nty Registration No. 161		California Lice		94686.
		DISPOSITION O (For Department			
☐ Water ☐ Denied	o Water Agency for review. Agency conditions or recommendatio d ved subject to the following:				
∧ ☑	Notify the Department, Safe to make an inspection of the followin Prior to sealing of the annular space After installation of the surface produced During destruction of wells, prior	ace or filling of the condurotective slab and pumping	ctor casing.	5	enty-four (24) hours in advance
B.☑ Comments	Submit to the Department, within thi  Water Well Driller's Report  Radiological Analysis	☐ Bacterial Analysis ☐ General Mineral	☐ Inorganic	copy of: c Chemical Analysis Chemical analysis	☐ General Physical

### DO NOT FILL IN    Permit Number   ZO//0 40175	DEPARTMENT O ENVIRONMENTAL 385 N. Arrowhee San Bernardine (909) 8 www.sbcot	an Bernardino  F PUBLIC HEALTH  HEALTH SERVICES ad Ave., 2nd Floor o, CA 92415-0160 884-4056  Inty.gov/dehs  PERMIT Se Print)  S. C. 45740  Do NOT FILL IN  Date  Amount \$  Check #  Receipt Number  Paid by  City Code			
1. OWNER: Name California Dept Site Address Camp Cady, Mojar City Newberry Springs Mailing Address 407 W. Line S	ve Trail Zip 92365	Items 6 through 9 to be estimated for new wells, exact for all other wells			
CityBishop Telephone Number ( 760) _872-11!		6. DEPTH OF WELL (feet): Cluster C Deep Proposed140			
5/2/2011  Start Date  3. INTENDED WELL USE (check):	Longyear siness Name 6/10/2011 Completion Date	7. CASING INSTALLED:  Steel			
☐ Ind/Domestic ☐ Community/PW  4. TYPE OF WORK (check):  ☑ New ☐ Reconstruction		8. PERFORATIONS (if applicable):     From135 to140 ft.     Pumping rate (gpm)  9. SEALED ZONES (if applicable):     From to ft.			
SECTION MAP - DO NOT FILL IN	Scale: 1 inch = ¼ mile  NE ¼	10. LOCATION INFORMATION  (a) TOWNSHIP:			
		Long: 116 °, 35 ', 58.66 " N/S W  (d) Solid or Liquid Disposal Site within Two Miles			

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	sw (q)	no.	SE AUVE	2
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Seal	
Сар	
Check Valve	
Electricals	
Stab	
Tag	
Building & Safety Notified	

□ Yes X□ No

Location

N  Well Sile  Scale % inch = 100 feet	11. PLOT (a)	following items: well abandoned wells), se septic tanks, leaching lakes and ponds, wal Indicate the distance are within 500 ft. of the St.	well site, sketch and label the lot property lines, other wells (include lawage disposal systems (sewers, glields, seepage pits, cesspools), tercourses and animals or fowl kept, in feet, of any of the following which he well site:  Other  Sewers Septic tanks Leaching fields Seepage pits Cesspools Lakes and ponds Watercourses  Animal or fowl kept  above are within 500 feet of the
12. I have read this application and agree to comply with all laws regulat	iting the type of	work being perform	ned 4-4-11
C-57 Contractor's Signature  County Registration No	California Lice		694686
DISPOSITION OF (For Department L)  Sent to Water Agency for review.  Water Agency conditions or recommendations attached.		***************************************	
<ul><li>□ Denied</li><li>☑ Approved subject to the following:</li></ul>			
A. Notify the Department,Safe Drinking Water Program, to make an inspection of the following operations:  □ Prior to sealing of the annular space or filling of the conduct After installation of the surface protective slab and pumping □ During destruction of wells, prior to pouring the sealing ma	ctor casing.	5 , tw	venty-four (24) hours in advance
B. Submit to the Department, within thirty (30) days after complet  Water Well Driller's Report Bacterial Analysis  Radiological Analysis General Mineral  Comments	☐ Inorgani	copy of: c Chemical Analysis Chemical analysis	☐ General Physical

DEPARTMENT C		an Bernardino F PUBLIC HEALTH HEALTH SERVICES ad Ave., 2nd Floor o, CA 92415-0160 B84-4056 Intty.gov/dehs  PERMIT Se Print)  Items 6 through 9 to be estimated for new wells, exact for all other wells  5. ANNULAR SEAL: Seal Depth 60 ft.  Furnished by: Owner Contractor Driven Comductor Dia, in Wall (Gage) Sealing MaterialCement Grout Thickness 3.5 in.			
Mailing Address 407 W. Line S  City Bishop Z  Telephone Number (760) 872-115	7ip 93514	6. DEPTH OF WELL (feet): Cluster C Intermediate Proposed 80 Existing DIAMETER OF BORE (in.): 10			
5/2/2011 Start Date  3 INTENDED WELL USE (check):	Longyear ness Name 6/10/2011 Completion Date	7. CASING INSTALLED:  Steel			
☐ Agricultural ☐ Horizontal ☐ Cathodic ☒ Monitoring/Obse ☐ Ind/Domestic ☐ Community/PWS	V/ (6/2	8 PERFORATIONS (if applicable): From 70 to 80 ft. Pumping rate (gpm)			
4. TYPE OF WORK (check):  ☑ New ☐ Reconstruction	□ Destruction	9 SEALED ZONES (if applicable): From to ft.			
SECTION MAP - DO NOT FILL IN  NW 1/4	Scale: 1 inch = ¼ mile  NE ¼	10. LOCATION INFORMATION  (a) TOWNSHIP:     Tier 10 (N/S Range			
(9) 19 mos Avie	SE 1/4	DO NOT FILL IN  Seal  Cap  Check Valve  Electricals  Stab  Tag  Building & Safety Notified			

Ass	essor's	s Parcel No. 0541	011 19		11.	PLOT (a)	PLAN: In perspective to the	نعيام مائم المبيدة	lab and labal the
				N .		(b)	following items: we abandoned wells), septic tanks, leach lakes and ponds. V	ell lot property lir sewage dispos- sing fields, seep watercourses an ice, in <b>feet</b> , of ar	nes, other wells (includines, other wells (includines, otherwells (includines, age pits, cesspools), and animals or fowl kept. The following which we have the following w
W			Wel	° Site			E	Other Sewers Septic tanks Leaching field: Seepage pits Cesspools Lakes and por Watercourses Animal or fowl	hods X kept
Scal	e: ½ inc	ch = 100 leet	```	<b>S</b>			(c) None of t well site.	he above are wi	thin 500 feet of the
12.		ve read this application ar		mply with all laws regula	ating the	type of	work being perfo	rmed 4-	4-11
		nty Registration No.	161		Califor	nia Lice	nse No.	694680	ó
			<u></u>	DISPOSITION C	31i. =: 10.101				
	Water in Denied	ved subject to the following Notify the Department, to make an inspection of the Prior to sealing of the	ommendation  g: Safe [ f the following e annular spa	orinking Water Program	uctor cas	sing.	5,	twenty-four (2	4) hours in advance
	B.☑ ments	1	of wells, prior that, within thirt Report	o pouring the sealing m y (30) days after comple ☑ Bacterial Analysis ☑ General Mineral	aterial. etion of v	vork, a d	copy of: c Chemical Analysi Chemical analysi		General Physical

Permit Number   20/1040 77     BENVIRONMEN   385 N. Arro   San Berna   Expiration   /0 - 12 - 1/2     FF     WWW.   FA   WEL	of San Bernardino INT OF PUBLIC HEALTH NTAL HEALTH SERVICES Dewhead Ave., 2nd Floor Purising CA 92415-0160 Public HEALTH Services Downerdino, CA 92415-0160 Public HEALTH Services Check # 124  Receipt Number (77.77) Paid by City Code 1
1. OWNER: Name California Dept. of Fish and Game Site Address Camp Cady, Mojave Trail City Newberry Springs Zip 92365 Mailing Address 407 W. Line Street City Bishop Zip 93514 Telephone Number (760) 872-1158	Items 6 through 9 to be estimated for new wells, exact for all other wells
2. WELL DRILLER: Boart Longyear  Business Name  5/2/2011 6/10/2011  Start Date Completion Date  3. INTENDED WELL USE (check):  Agricultural Horizontal Test Cathodic Monitoring/Observation Dairy	7. CASING INSTALLED:  Steel
□ Ind/Domestic □ Community/PWS/City □ Other  4. TYPE OF WORK (check):  ☑ New □ Reconstruction □ Destruction	From 45 to 55 ft Pumping rate (gpm)  9. SEALED ZONES (if applicable): From to ft.
NW 1/4 NE 1/4	10. LOCATION INFORMATION  (a) TOWNSHIP:     Tier 10 N/S Range
19	DO NOT FILL IN

SE 1/2

MOJOVE

SW 1/4

	DO NO	OT FILL IN
Seal		
Сар		
Check Valve		
Electricals		
Stab		200000000000000000000000000000000000000
Tag		
Building & Safety	Notified	

Asses	sor's Parcel No. 0541 011 19		(a)	PLAN: In perspective to the well:	site sketch and lahel the
	N		(b)	following items. well lot pri abandoned wells), sewage septic tanks, leaching field lakes and ponds, waterco	operty lines, other wells (include e disposal systems (sewers, ds, seepage pits, cesspools), urses and animals or fowl kept, eet, of any of the following which
			```		
	1 1		,/	Other	
		The state of the s	``,	Other	-
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	1 / /		1	Septio	tanks
			1	Leach	ing fields
		-	\	Seepa	age pits
1			1	Cessr	oools
187	Well ° S	ite !	i		and ponds
W		/	1	1	37
1			/	1	
			/	/ Anima	al or fowl kept
		1	/	, <sup>′</sup>	
			/	/	
		200	j	<i>,</i> ′	
	1, 1,		/		
			1		
	1	بر بر	,		
					ve are within 500 feet of the
	S			well site	
Scale	% inch = 100 feet				\$
	have read this application and agree to compl	y with all laws regulating the	e type of	work being performed	4-4-11
	C-57 Contractor's Signature	~		Date	01
	County Registration No. /6/	Califo	rnia Lice	nse No. 6946	86
29		DISPOSITION OF PER (For Department Use On			
	ent to Water Agency for review.				
2	ater Agency conditions or recommendations at	lached.			
	enied				
	proved subject to the following:				
A		king Water Program, (909) 3	387-4666	twenty	r-four (24) hours in advance
	to make an inspection of the following op		1240 2		
	Prior to sealing of the annular space	7	- 5		
	After installation of the surface protect		pment.		
	☐ During destruction of wells, prior to pr				
В.		17 (EU)			
	, .			Chemical Analysis	
		General Mineral	Organic (	Chemical analysis	☐ General Physical
Comm	ents				
					THE BOOK OF THE PARTY OF THE PA

### DO NOT FILL IN    Permit Number   20/1340178     Record ID   WP 7/.57     Expiration   10.17.1/     FF   FA   SN	DEPARTMENT OF ENVIRONMENTAL SAFE N. Arrowher San Bernardin (909) www.sbco	San Bernardino DF PUBLIC HEALTH L HEALTH SERVICES and Ave., 2nd Floor no, CA 92415-0160 884-4056 unty.gov/dehs  PERMIT se Print)  SAL 48940  DO NOT FILL IN  Date  Amount \$  Check #  Receipt Number  Paid by  City Code
1. OWNER: Name_California Dept. Site Address _ Camp Cady, Mojav City _ Newberry Springs  Mailing Address _ 407 W. Line S City _ Bishop  Telephone Number (760) _ 872-115	ze Trail Zip 92365 Street Zip 93514	Items 6 through 9 to be estimated for new wells, exact for all other wells  5. ANNULAR SEAL: Seal Depth 125  Furnished by Downer Mocontractor Driven Comductor Dia. in , Wall (Gage) Sealing MaterialCement Grout Thickness 3.5 in  6. DEPTH OF WELL (feet): Cluster D Deep Proposed 140 Existing DIAMETER OF BORE (in.): 10
5/2/2011 Start Date	Longyear iness Name 6/10/2011 Completion Date	7. CASING INSTALLED:  ☐ Steel
3. INTENDED WELL USE (check):  ☐ Agricultural ☐ Horizontal ☐ Cathodic ☒ Monitoring/Obse ☐ Ind/Domestic ☐ Community/PW  4. TYPE OF WORK (check):	S/City	From 125 to 140 ft.  8. PERFORATIONS (if applicable): From 135 to 140 ft. Pumping rate (gpm)  9. SEALED ZONES (if applicable):
New Reconstruction  SECTION MAP - DO NOT FILL IN  NW 1/4	☐ Destruction  Scale: 1 inch = ¼ mile	Township:   Tier 10 N/S Range 4 (E/W Section 19
-SEC 19		Long: 116 °, 35 ', 24.08 "-N/S W  (d) Solid or Liquid Disposal Site within Two Miles  □ Yes 전 No  Location  DO NOT FILL IN
SW 1/4  MOSAVE	SE 14	Seal Cap Check Valve Electricals Stab Tag Building & Safety Notified

Assessor	's Parcel No. 0541 011 19		11. PLOT		National and the state of the s
		N	(b)	following items: well lot abandoned wells), sewa septic tanks, leaching fi- lakes and ponds, water	If site, sketch and label the property lines, other wells (include age disposal systems (sewers, elds, seepage pits, cesspools), courses and animals or fowl kept a feet, of any of the following which well site:
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			``,	`\ Sev	vers
/			1	\ Sep	tic tanks
/		,	' /	\\ Lea	ching fields
/		·\	/ /	ì	page pits
ĺ		1 1		į	espools
		/ell ° Site	1 1	İ	1
W		/	1	! —	es and ponds
Ì				į Wa	tercourses X
1		/	f = f	, <sup>′</sup> Anii	mal or fowl kept
\			<i>!</i>	,'	
).	, ,		/	/	
			1	1	
			1 1	<i>\$</i>	
			11		
				(c)  None of the ab well site.	ove are within 500 feet of the
		S			
Scale: 1/2 in	ch = 100 feet				
	ve read this application and agree to	comply with all laws regula	ting the type o		
C-5	7 Contractor's Signature	KIL		Date	4-4-11
Cou	inty Registration No		California Lice	ense No <i>69</i>	4686
		DISPOSITION O	F PERMIT	<del></del>	<del> </del>
		(For Department	Use Only)		
☐ Sent	to Water Agency for review.				
☐ Wate	r Agency conditions or recommendation	ons attached.			
☐ Denie					
✓ Appro	oved subject to the following:				
A.Ø		Drinking Water Program,	(909) 387-466	6 . twer	ity-four (24) hours in advance
	to make an inspection of the followi				
	☐ Prior to sealing of the annular s	. N	177		
	After installation of the surface				
	☐ During destruction of wells, prio	r to pouring the sealing ma	iterial.		
В. <b></b>	Submit to the Department, within th				
	Water Well Driller's Report	☐ Bacterial Analysis		c Chemical Analysis	
0	☐ Radiological Analysis	☐ General Mineral	☐ Organic	Chemical analysis	☐ General Physical
Comments					

D	O NOT FILL IN
Permil Number	201104017
Record ID	WP 7158
Expiration	10-12-11
FF	
FA	
SN	

County of San Bernardino
DEPARTMENT OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH SERVICES
385 N. Arrowhead Ave., 2nd Floor
San Bernardino, CA 92415-0160
(909) 884-4056

www.sbcounty.gov/dehs

SIC 48940
DO NOT FILL IN
Date 4-5
Amount \$ 3728 00
Check #
Receipt Number 92787
Paid by GAA
City Code 1

FA <b>W</b>	/ELL PERMIT (Please Print)  Receipt Number Paid by City Code
1. OWNER: Name California Dept. of Fish and G Site Address Camp Cady, Mojave Trail Culy Newberry Springs Zip 92365 Mailing Address 407 W. Line Street City Bishop Zip 93514 Telephone Number (760) 872-1158	5. ANNULAR SEAL: Seal Depth 60 ft.  Furnished by: D Owner 12 Contractor
2 WELL DRILLER: Boart Longyear  Business Name  5/2/2011 6/10/2011  Start Dale Completion Date	0 2.5 Sch. 40 (.276*)
3. INTENDED WELL USE (check):  ☐ Agricultural ☐ Horizontal ☐ Test ☐ Cathodic ☒ Monitoring/Observation ☐ Dairy ☐ Ind/Domestic ☐ Community/PWS/City ☐ Other	( , , , , , , , , , , , , , , , , , , ,
4. TYPE OF WORK (check):  ☑ New ☐ Reconstruction ☐ Destruction	9. SEALED ZONES (if applicable): From to ft.
NW 1/4 NE 1/4	(a) TOWNSHIP: Tier 10 (N/S Range 4 E/W Section /9  (b) Assessor's Parcel No. 0541 011 19  (c) Latitude and Longitude Lat: 34 ° 56 · 19.81 " N/S N Long: 116 ° 35 · 24.08 " N/S W  (d) Solid or Liquid Disposal Site within Two Miles
SW 1/2 SE 1/2 RIVER	Location  DO NOT FILL IN  Seal Cap Check Valve Electricals Stab Tag Building & Safety Notified

Assessor's Parcel No0	541 011 19		LOT PLAN:	
John Commencer of the C	N	(a)	following items: v abandoned wells septic tanks, lead lakes and ponds,	the well site, sketch and label the vell lot property lines, other wells (include ), sewage disposal systems (sewers, ching fields, seepage pits, cesspools), watercourses and animals or fowl kept ince, in <b>feet</b> , of any of the following which of the well site:
w	Well ° Site		E	Other Sewers Septic tanks Leaching fields Seepage pits Cesspools Lakes and ponds Watercourses X Animal or fowl kept
Scale: ½ inch = 100 feet	S		(c) None of well site	the above are within 500 feet of the
	on and agree to comply with all la	aws regulating the type	e of work being perfe	ormed
C-57 Contractor's Signa	~ / / /	aws regulating the type	Date	11 11 11
County Registration No.	161	California I	License No.	694686
	DISPO (For L	SITION OF PERMIT Department Use Only)		
<ul> <li>□ Sent to Water Agency for</li> <li>□ Water Agency conditions of</li> <li>□ Denied</li> <li>☑ Approved subject to the for</li> </ul>	or recommendations attached.			
☐ Prior to sealing  ☐ After installation	nent, Safe Drinking Water tion of the following operations: g of the annular space or filling of an of the surface protective slab-a- tion of wells, prior to pouring the	nd <del>pumping eq</del> uipmer		twenty-four (24) hours in advance
		nalysis 🔲 Inorg	, a copy of: anic Chemical Analy nic Chemical analys	
A CONTRACTOR OF THE CONTRACTOR				

## DO NOT FILL IN    Permit Number   20/1040/80     Record ID   10-12-1/     FF   FA   SN	DEPARTMENT O ENVIRONMENTAL 385 N. Arrowher San Bernarding (909) 8 www.sbcot	San Bernardino DF PUBLIC HEALTH L HEALTH SERVICES ad Ave., 2nd Floor o, CA 92415-0160 884-4056 unty.gov/dehs  PERMIT Se Print)  Do NOT FILL IN Date  Amount \$  Check #  Receipt Number  Paid by  City Code
1. OWNER: Name California Dept Site Address Camp Cady, Mojas City Newberry Springs Mailing Address 407 W. Line S City Bishop Telephone Number (760) 872-115	ve Trail Zip 92365 Street Zip 93514	Items 6 through 9 to be estimated for new wells, exact for all other wells   5. ANNULAR SEAL: Seal Depth 35 ft.   Furnished by: Owner 10 Contractor   Driven Comductor Dia. in., Wall (Gage)   Sealing MaterialCement Grout Thickness 3.5 in.   6. DEPTH OF WELL (feet): Cluster D Shallow   Proposed 55 Existing   DIAMETER OF BORE (in.): 10
2. WELL DRILLER: Boart  But  5/2/2011  Start Date	Longyear siness Name 6/10/2011 Completion Date	7. CASING INSTALLED:  ☐ Steel  Plastic ☐ Other  From (ft.) To (ft.) Dia. (in.) Wall (Gage)  ☐ 55
Accept 4 1994 And Company Conduction Conduct	NICE CONTRACTOR OF THE PROPERTY OF THE PROPERT	Gravel Pack: ☐ Yes ☐ No From35 to55 ft.  8. PERFORATIONS (if applicable): From45 to55 ft. Pumping rate (gpm)  9. SEALED ZONES (if applicable): From to ft.
SECTION MAP - DO NOT FILL IN  NW 1/4	Scale: 1 inch = 1/4 mile	10. LOCATION INFORMATION  (a) TOWNSHIP:     Tier 10 N/S Range 4 E/W Section 4  (b) Assessor's Parcel No. 0541 011 19  (c) Latitude and Longitude     Lat: 34
SW 14	SE 14	CapCheck Valve

Assessor	's Parcel No. 0541	011 19		PLOT PLAN:		
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	se or	N		followin abando septic t lakes a (b) Indicate	pective to the well site, ske ig items: well lot property list aned wells), sewage dispost anks, leaching fields, seep, ind ponds, watercourses are the distance, in <b>feet</b> , of an hin 500 ft. of the well site:	nes, other wells (include al systems (sewers, age pits, cesspools), nd animals or fowl kept.
	and the second		·	``		
				``	Olher	
	A A		-, ',	`\		
	1 1 1	<b>,</b>	1	\	Sewers	
/			,, ,	\ \ \	Septic tanks	
,'	/ /		\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	1	Leaching field	s
;	/ / /	/	', ',	, ,	Seepage pits	
1			\ \ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	1	Cesspools	
107		( Well * Site )	i i	i		ods.
W		/	; ;		E Lakes and por	
Ì	, ,		/ /	-	Watercourses	x
,	<i>'</i> , ', ', ', ', ', ', ', ', ', ', ', ', ',	,	1 1	/ /	Animal or fowl	kept
12. I ha	nch = 100 feet  eve read this application a  7 Contractor's Signature		iws regulating the ty	(c) □	None of the above are wind well site.  eing performed Date 4-4	
Cou	unty Registration No	161	Californi	a License No.	69468	6
☐ Wate	500 6	(For D ew. commendations attached.	SITION OF PERMI epartment Use Only)	Т		
A. 🗹			Program, (909) 383	7-4666	twenty-four /2	4) hours in advance
M. 12	Notify the Department	Jaio Dilillang Hatel		,,,,,,	, twenty-lour (2	T) Hours in advance
	Notify the Department, to make an inspection	of the following operations:				
	to make an inspection	of the following operations: he annular space or filling of	the conductor casir	ng		
	to make an inspection Prior to sealing of t	he annular space or filling of		-		
	to make an inspection Prior to sealing of t  After installation of		nd pumping equipm	-		
R ₩	to make an inspection  Prior to sealing of t  After installation of  During destruction	he annular space or filling of the surface protective slab at of wells, prior to pouring the s	n <b>d pumping aquipm</b> sealing material.	ient.		
В.☑	to make an inspection  Prior to sealing of t  After installation of  During destruction  Submit to the Department	the annular space or filling of the surface protective slab are of wells, prior to pouring the se ent, within thirty (30) days after	nd pumping equipmosealing material. er completion of wo	ork, a copy of:		
В.☑	to make an inspection  Prior to sealing of t  After installation of  During destruction	he annular space or filling of the surface protective slab as of wells, prior to pouring the s ent, within thirty (30) days after Report   Bacterial An	nd pumping equipm sealing material. er completion of wo nalysis	ient.	ical Analysis	General Physical
B.☑ Comments	to make an inspection Prior to sealing of t After installation of During destruction  Submit to the Departm Water Well Driller's Radiological Analysis	he annular space or filling of the surface protective slab as of wells, prior to pouring the s ent, within thirty (30) days after Report   Bacterial An	nd pumping equipmosealing material.  er completion of word alysis	ork, a copy of:	ical Analysis	General Physical

## Appendix B Department of Water Resources (DWR) Well Completion Reports

		-	be used to view	and complet	e this form			•	ased to compl	ete, save	, and reus	e a saved	form.	
File Origi	nal with	DWR					ate of Cal		. [		D۷	VR Use Or	nly – Do	Not Fill In
Page 1		of 8	<b>;</b>		V			ion Rep	ort					
			uster A Deep	Well			r to Instruction • e01303				Sta	ite Well Nu	mber/S	ite Number
Date Wo					Work Er	nded <u>6/4/</u>					Latitude	IN		Longitude
			n Bernardino	County DF	H EHS									
Permit N	umber <u>2</u>	2011040	)169	Permit D	ate <u>4/5/</u>	<u>′11                                   </u>		_	L			APN/	ΓRS/Otl	her
			Geolo	gic Log							Well	Owner		
Orie	entation		tical O Ho	rizontal	OAngle	e Speci	fy	Name .	California	Departi	ment of	Fish and	l Gam	ne
	Method S				Drilling			_ Mailing	Address 4	07 W.	Line Str	eet		
	from St	urface eet	Dos	Des cribe materia	cription			City B					<sub>ite</sub> CA	<u>zip 93514</u>
0			ML) 10YR 7/					0.1,7			Wall	Location		
			cobbles (<1		C DIOWII	One with	JOINE	A al alua a	ss Camp C	adv M				
2.5		- 1	(SW) 10YR 7		ine-coar	se sand i	with some							San Bernardino
2.0			gravel	10 1011011 1	ino ooai	oo oana							-	
4.5		- 1	(SW) 10YR 6	/3 Pale bro	wn fine	-medium	coarse	Latitud	e <u>34</u> Deg.	Min.	Sec.	N Longiti	ıde <u>l</u>	16 37 13 W Deq. Min. Sec.
1.0			sand with m			modium	004.00	Datum	NAD83	Decima	l Lat. <u>34</u>	.934695	_ Dec	imal Long. <u>-116.6201</u>
5.5		-	(SM) 10YR 6/		h vellow	silty fine	sand	APN B	ook <u>0541</u>	Pag	e <u>011</u>		Parc	el <u>19</u>
0.0		'	with black li			Only Inio	oana	Towns	hip <u>10N</u>	Rang	ge <u>03E</u>	$\square$	Sect	ion <u>25</u>
6.0		- 1	(SW) 10YR 6	_		-medium	coarse			ion Sk				Activity
0.0		<u>'</u>	sand with s				000100	(Sketcl	h must be drawi	n by hand a		printed.)		lew Well
8.0		- 1	(SC) 10YR 4/				))	<b>⊣</b>		North	-			Modification/Repair
10.0			(SW) 10YR 6				-	-11				. 1		O Deepen O Other
10.0		<u>'</u>	coarse-coal										OD	Destroy
			cobbles (<1		1011	giavoic	arra —							Describe procedures and materials under "GEOLOGIC LOG"
10.8		- 1	(SW) 10YR 7		e brown	n fine-coa	rse sand	4						Planned Uses
10.0		'	with some of										ΟV	Vater Supply
			@12.5-13.5		o gravo	r arra oob	DICC		פפפ אי	TTACHE	D MAD	±		Domestic Public
17.5		- 1	(SC) 10YR 5/		avev fir	ne-mediu	m coarse	West	SEE A.	ITACHE	DMAP	East		Irrigation Industria
17.0		<u>'</u>	sand (30/70)		ayoy, iii	10 Triodia	in oddioc							Cathodic Protection
19.0		- 1	(SP) 10YR 5/		edium c	narse sa	nd						_	Dewatering
19.3			(SM) 10YR 4/					71						leat Exchange njection
20.0			(SW) 10YR 5				` ,							Monitoring
20.0			with minor s		no moa	idili oodis	o oana							Remediation
22.0		- 1	(ML) 10YR 5/		m sand	v silt (20/	80)						O s	Sparging
23.5			(SM) 10YR 5/			,		- b		South				est Well
20.0			increasing of				a (20/00)		describe distance and attach a map.		roads, building	s, fences,		apor Extraction
25.5		- 1	(CL) 10YR 5/				e sandy	Please be	and attach a map.  accurate and com	Use addition plete.	ial paper if nec	cessary.	00	Other
20.0			clay (20/80)		ic mean	arr coars	Country	Water	Level and	Yield	of Com	pleted V	Vell	
26.0		- 1	(SC-SM) 10Y		ın clave	v silty fir	)A-		to first wate	r			(Fee	et below surface)
20.0		'	medium coa						to Static		(For	ot) Data	Moosi	ured 06/04/2011
Total D	epth of E	Boring	201	aroo oaria	(10/10/1	Feet			ted Yield *					
		_											-	down(Feet)
Total D	epth of (	Complete	ed Well <u>200</u>	$\rightarrow$	$\sim$	Feet			ot be repres					
				Cas	ings							Annul	ar Ma	terial
	n from	Boreho		Mate		Wall	Outside	Screen	Slot Size		th from			
	face to Feet	Diamet (Inches	er	Mate	· ·u·	Thickness (Inches)	S Diameter (Inches)	Туре	if Any (Inches)		rface to Feet	Fil	I	Description
0	175	8	Blank	PVC Sch. 8	0	.276	2.75		(	0	2	Cement		Concrete
175	195	8	Screen	PVC Sch. 8	0	.276	2.75	Milled Slots	0.020	2	145	Cement		Cement/bent. grou
195	200	8	Blank	PVC Sch. 8	0	.276	2.75			145	170	Bentonite	)	Hydrated pellets
										170	201	Filter Pag	ck	#2/12 graded sand
										<u> </u>				
		Attacl	nments						Certificat	ion Sta	tement			
	Geologic								rt is comple	te and a	ccurate t	o the bes	t of my	knowledge and belief
			n Diagram		Name	Boart Lo Person.	ngyear C Firm or Corpo							
	Geophys				1333	W. 9th S	treet		<u>Upla</u>					91786
			ical Analyses Site Map		Signed		Address			Cit	у		<sub>ate</sub> 94686	Zip
	Otner <u>L</u> litional infor				3		ensed Water	Well Contractor	•		Date Si			cense Number
	DE\/ 1/200				IE ADDIT	IONAL CDAG	E IO NIEEDES	LICE NEVI C	ONCECUTIVE	VALUADE	DED FORM			

*The free	Adobe Re	ader may	be used to view	and complet	e this form	. However,	software m	ust be purchas	sed to compl	ete, save	, and reus	e a saved	form.	
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Page 2		of 8			V		mpleti	on Repo	ort					
			uster A Deep	Well			• e01303				Sta	te Well Nu N	mber/S	Site Number
Date Wo						nded <u>6/4/</u>	2011				Latitude			Longitude
			<u>Bernardino</u>									A DNI/	ΓRS/Ot	hor
Permit N	umber <u>2</u>	<u>011040</u>	169		ate <u>4/5/</u>	11							113/01	nei
		<u> </u>		ogic Log	0							Owner		
	entation Method S		tical O Ho	rizontal	O Angle Drilling	-	ty		California				Gam	ne
	from Su			Des	cription				Address <u>4</u>					20544
Feet		eet		cribe materia	l, grain size	e, color, etc		City BI	snop					A z <sub>ip</sub> <u>93514</u>
26.5		(	SM-SC) 10Y		vn silty, i	fine-coars	se sand					Location	า	
07.5			with minor o		U =			1 1	Camp C					
27.5		(	SW) 10YR 6	/4 Light ye	ilowish t	prown fine	e-coarse							San Bernardino
32.5			sand ML) 10YR 5/	2 Brown d	onco cilt			Latitude	34	<u>56</u>	Sec.	N Longitu	ude <u>1</u>	16 37 13 W Deg. Min. Sec.
35.0			SW-SM) 10Y				ium	1 1						cimal Long. <u>-116.6201</u>
00.0			coarse sand			inc mea	idili	APN Bo	ok <u>0541</u>	Pag	e <u>011</u>		Parc	cel <u>19</u>
35.5		(	SC) 10YR 6/			medium d	coarse		ip <u>10N</u>					
00.0			sandy clay				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			ion Sk				Activity
36.0		(	CL) 10YR 6/2	. ,	wnish gi	ray clay		(Sketch	must be drawn	by hand a	after form is	printed.)		lew Well
37.0			SP) 10YR 6/					┧├──		INOILII		4 4		Modification/Repair  Deepen
38.0		(	SW) 10YR 6	/4 Light ye	llowish b	orown fine	e-coarse	TI ./						Other
			sand										0 [	Destroy Describe procedures and materials
45.5		(	SM) 10YR 5/	/3 Brown s	ilty sand	I (40/50) v	with					~		Describe procedures and materials under "GEOLOGIC LOG"
			minor clay (					47						Planned Uses
46.0			ML) 10YR 5/											Vater Supply ]Domestic ☐ Public
51.0		(	SW) 10YR 6	/4 Light ye	llowish b	orown fine	e-coarse	West	SEE AT	TACHEI	D MAP	ast		Irrigation Industria
			sand					_				ш		Cathodic Protection
51.3		(	ML) 10YR 6/		lowish b	rown fine	-coarse	41 -						Dewatering
F1 0			sandy silt (2			s sondu	alavi							leat Exchange
51.8		(	CL) 10YR 5/3 (40/60)	3 Brown III	ie-coars	se sandy (	ciay	41						njection Monitoring
52.3		1	SM-SC) 10Y	P 6/4 Ligh	t vellowi	eh brown	cilty							Remediation
02.0			clayey fine-											Sparging
53.7		(	SM) 10YR 6/			_ `		<i>b</i>		South				est Well
			sand (30/70				,	Illustrate or d	lescribe distance nd attach a map.	of well from r	oads, buildings	s, fences,		/apor Extraction Other
55.0		(	SW) 10YR 6		h yellow	fine-coar	rse sand	Please be a	ccurate and com	plete.				Other
57.0			SM) 10YR 5/						Level and					
			coarse sand	d (40/60)	<b></b>		7	Depth to	o first water				(Fe	et below surface)
					- \			Water L	evel <u>22</u>		(Fee	et) Date	Meas	ured 06/04/2011
Total D	epth of E	Boring	201			Feet								
Total D	epth of C	Complete	ed Well 200		$\langle \rangle$	Feet								down(Feet)
				0				"Iviay no	ot be repres	sentative	or a wer			
Dept	h from	Boreho	le _		ings	Wall	Outside	Screen	Slot Size	Den	th from	Annul	ar ivia	iteriai
Sui	face to Feet	Diamet (Inches	er Type	Mate	erial		Diameter (Inches)		if Any (Inches)	Su	rface to Feet	Fil	I	Description
0	175	8	Blank	PVC Sch. 8	0	.276	2.75			0	2	Cement		Concrete
175	195	8	Screen	PVC Sch. 8		.276	2.75	Milled Slots	0.020	2	145	Cement		Cement/bent. grout
195	200	8	Blank	PVC Sch. 8	0	.276	2.75			145	170	Bentonite		Hydrated pellets
									+	170	201	Filter Pag	ck	#2/12 graded sand
									+	╟──				
		A44: -1							Dawlet	IL	Anus - C			
	Geologic		ments		l the	ndersigner	d certify th		Certificati			n the has	t of my	/ knowledge and belief
			n Diagram			Boart Lo	<u>ngyear C</u>	ompany	. 10 comple	unu a	Journale II	~ ""O DE9	. Or my	, momoage and beller
	Geophys				1333	Person, W. 9th S	Firm or Corpo	oration	Upla	ınd		С	Α	91786
			ical Analyses				Address			Cit	у	St	ate	Zip
	Other <u>D</u> ditional inform		Site Map		Signed		ensed Water	Well Contractor			Date Sig		94680 -57 Lid	6 cense Number
	DEV 1/200		UNIDIO.		LISE NEXT CO	NICECULIN'E	VALUMDE		griou O	O7 LIC	OCTION FRAITING			

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Page 3		of	3		V		mpleti	on Repo	ort					
			luster A Deep	Well		No	• e01303	<b>25</b>			Sta	te Well Nu	mber/S	ite Number W
Date Wo						nded <u>6/4/</u>	2011				Latitude			Longitude
			n Bernardino									A PN/	TRS/Ot	her
Permit N	umber <u>2</u>	01104	0169		ate <u>4/5/</u>	11			L				113/00	nei
				gic Log	<u> </u>							Owner		
1	entation Method S		rtical O Ho	rizontal	O Angle Drilling	-	ty		California				d Gam	ne
	from Su			Des	cription				Address 4					20511
Feet		eet		cribe material				City BI	shop					A z <sub>ip</sub> <u>93514</u>
58.5	_		(SW) 10YR 6	/4 Light yel	lowish b	prown fine	e-coarse					Locatio	n	
00.0	-		sand	0 D	t C			11	Camp C				_	
60.0			(CL) 10YR 5/3	3 Brown Sii	ty fine s	sandy ciay	/						-	San Bernardino
61.5			(20/20/60) (SM/SC) 10Y	D 6/4 Light	vollowi	ch brown	cilty	Latitude	e <u>34</u>	<u>56</u> Min	Sec.	N Longitu	ude <u>1</u>	16 37 13 W Deg. Min. Sec.
01.5			clayey fine-		_		Siity,							cimal Long. <u>-116.6201</u>
61.8	+		(SM-SC) 10Y		,		e-coarse	<b>⊣</b>						cel 19
01.0			sand (30/20		iii olayo	y, only 1111	000100		ip <u>10N</u>					
62.5			(CL) 10YR 5/3		e-medi	um coars	e sandy		Locat	ion Sk	etch			Activity
			clay (30/70)					(Sketch	must be drawn	by hand a	after form is	printed.)		lew Well
65.0			(CL) 10YR 5/3		ty clay (	(20/80)		7 <b>-</b>		NOTH	_	4		Modification/Repair  Deepen
67.5			(SP-SM) 10Y	R 6/3 Pale	brown s	silty fine s	and	II ./						Other
			(10/90)									<b>\</b> .	0 0	Destroy Describe procedures and materials under "GEOLOGIC LOG"
69.5			(ML) 10YR 5/	3 Brown cl	ayey fin	e sandy s	silt					$\sim$	·	
			(30/20/50)										O 1/	Planned Uses
70.0			(CL) 10YR 5/3											Vater Supply  Domestic
71.3	_		(SP-SM) 10Y	R 6/3 Pale	brown s	silty fine s	and	West	SEE AT	TACHE	D MAP	East		Irrigation Industria
70.5			(30/70)	0.0.1.1				_				ш	00	Cathodic Protection
72.5	-		(SC) 10YR 6/		wn claye	ey fine-co	arse	- I					_	Dewatering
75.5			sand (30/70 (CL) 10YR 4/3		2)/	. 1	_	<del>7</del> 1 /						leat Exchange
75.8			(SW-SM) 10Y		•	ish hrown		41					_	njection Monitoring
70.0			fine-coarse										_	Remediation
79.6			(CL) 10YR 5/3				- /							Sparging
80.0			(SM) 10YR 5/		_	sand (20/	80)	1		South			_	est Well
81.5			(SC) 10YR 5/					Illustrate or d	describe distance nd attach a map.	of well from r	roads, building	s, fences, essarv.		/apor Extraction Other
			sand (40/60					Please be a	ccurate and com	plete.			<u>, L</u>	Durici
82.0			(CL) 10YR 5/3	3 Brown fin	e-medi	um coars	e sandy		Level and					
			clay (40/60)		<b></b>			Depth to	o first water o Static				(Fee	et below surface)
								Water L	.evel <u>22</u>					ured 06/04/2011
Total D	epth of E	Boring	201			Feet								
Total D	epth of 0	Complet	ed Well 200		$\leq \Delta$	Feet			ngth ot be repres					down(Feet)
				Cas	inge			IVIAY IIC	ot be repres	Bentative	or a wer	Annul		
Dept	h from	Boreh	ole Time	Mate	ings	Wall	Outside	Screen	Slot Size	Dep	th from	Ailliui	ai ivia	iteriai
	rface to Feet	Diame (Inche		wate	паі	Thickness (Inches)	Diameter (Inches)	Type	if Any (Inches)		rface to Feet	Fi	II	Description
0	175	8	Blank	PVC Sch. 80	)	.276	2.75		(11101103)	0	2	Cement		Concrete
175	195	8	Screen	PVC Sch. 8	0	.276	2.75	Milled Slots	0.020	2	145	Cement		Cement/bent. grou
195	200	8	Blank	PVC Sch. 80	)	.276	2.75			145	170	Bentonite		Hydrated pellets
			- 1/4						1	170	201	Filter Pa	ck	#2/12 graded sand
									+	<u> </u>				
		A	lana and t						0	6:				
	Cooles		hments		I tho	ndereigner	d certify th		Certificati			o the hos	t of m	/ knowledge and belief
	Geologic Well Cor		on Diagram			Boart Lo	<u>ngyear C</u>	ompany	t is comple	o anu a	ocurate t	0 1116 062	t Or IIIy	n knowledge alld bellet
	Geophys				1333	Person, W. 9th S	Firm or Corpo <b>treet</b>	oration	Upla	nd		C	;A :	91786
	Soil/Wat	er Cher	nical Analyses				Address		3,5.0	Cit	у	St	ate	Zip
	Other <u></u> ditional infor		Site Map		Signed		ensed Water	Well Contractor			Date Si		94686 -57 Lic	oense Number
	DEV 1/200		L UAIOLO.		LISE NEXT CO	NICECUTIVE!	V NII IMPE		grica C	OI LIC	JOHN HAITIDOI			

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Page 4		of	8			V			on Repo	ort					
				er A Deep	Well			r to Instruction • e01303				Sta	te Well Nu	ımber/S	Site Number W
Date Wo	_						nded <u>6/4/</u>	2011				Latitude			Longitude
				ernardino (									A DNI	TRS/Ot	hor
Permit N	umber <u>2</u>	<u>20110</u>	4016		Permit D	ate <u>4/5/</u>	11		<u> </u>	L					nei
					gic Log				4				Owner		
	entation Method S		ertica	I O Hor	izontal	O Angle Drilling	-	fy	– Name <u>d</u>	California	Depart	ment of	Fish and	d Gam	ne
	from Su				Des	cription				Address 4					
Feet		eet	1	Desc	cribe material		e, color, etc		City Bi	shop			Sta	ate <u>CA</u>	A <sub>Zip</sub> <u>93514</u>
83.5			1	V-SC/SM)				own fine-					Locatio	n	
05.0			+	parse sand			•	(0.0)	11	Camp C					
85.0			+`-	1) 10YR 5/3				60)	1 1 '					-	San Bernardino
87.0			+	) 10YR 5/3			20/80)		Latitude	34	<u>56</u>	5	N Longite	ude <u>1</u>	16 37 13 W Deg. Min. Sec.
87.3 87.5			+`-	) 10YR 4/1			ov oilty fi	no cond							cimal Long. <u>-116.6201</u>
67.5	-			) GLEY 4/1 25/75)	Dark gre	enish gi	ay Silly II	ne sano						_	cel <u>19</u>
90.0			١,	.3/73) ) GLEY 4/′	1 Dark are	enich a	av clav			ip 10N					
95.0			_	V-SM) GLE				ine-			ion Sk				Activity
33.0				edium coa				1110	(Sketch	must be drawn	by hand a		printed.)		lew Well
97.5			+ -:-	S-SM) GLE				lavev.	┧┝──		North				Modification/Repair  O Deepen
01.0			_	fine-medi					<b>TI</b> /						Other
102.0			+	1) GLEY 4/					71 4					0 5	Destroy
			+ -	10/60)				-						·	Describe procedures and materials under "GEOLOGIC LOG"
102.5			(CL	) GLEY 4/	1 Dark gre	enish gı	ay clay						-		Planned Uses
104.0			(SIV	1-SC) GLE	Y 4/1 Darl	k greeni:	sh gray s	ilty,							Vater Supply
			cl	ayey fine-r	nedium co	arse sa	nd (30/10	0/60)	West	SEE AT	TACHE	D MAP	East		]Domestic □ Public Irrigation □ Industria
105.0			(SV	V) GLEY 4/	'1 Dark gre	eenish g	ray medi	um	×				ш	ll .	Cathodic Protection
			CC	oarse-coar	se sand w	ith some	e gravel								Dewatering
106.0			_	) GLEY 4/1											leat Exchange
106.8				) GLEY 4/		enish g	ray fine-m	nedium	41 (						njection
			_	parse sand											Monitoring
107.5			_	) GLEY 4/1				nedium							Remediation Sparging
400.0			_	parse sand	<u> </u>						0 11				est Well
108.3				) GLEY 4/				and	Illustrate or o	describe distance of	South	roads, building	s, fences.		/apor Extraction
109.0			+	) GLEY 4/1				- T	rivers, etc. a	describe distance of nd attach a map. ccurate and com	Use addition plete.	al paper if nec	essary.	00	Other
110.0 112.0	_			) GLEY 4/ 1) GLEY 4/					Water I	Level and	Yield	of Com	pleted V	Vell	
112.0	-		+`-	1) GLE 1 4/ 10/60)	i Daik gie	eriisii g	ray Silly I	ille Saliu	Depth to	o first water				(Fe	et below surface)
			(4	10/00)	-	_	· <del>V</del>	<del>/</del>	Depth to			<b>(</b> 500	t) Doto	Maga	ured 06/04/2011
Total D	epth of E	Boring		201	_	- 7	Feet								ureu <u>00/04/2011</u>
					<i>-</i>										down(Feet)
Total D	eptn of C	ompie	etea v	Vell 200		$\pm 0$	Feet			ot be repres					
					Cas	ings							Annul	lar Ma	nterial
	h from face	Borel Diam		Туре	Mate	rial	Wall	Outside Diameter	Screen Type	Slot Size if Any		th from	Fi		Description
	to Feet	(Inch			-		(Inches)	(Inches)	туре	(Inches)		to Feet		"	Description
0	175	8		Blank	PVC Sch. 8		.276	2.75			0	2	Cement		Concrete
175	195	8	_	Screen	PVC Sch. 8		.276	2.75	Milled Slots	0.020	2	145	Cement		Cement/bent. grout
195	200	8		Blank	PVC Sch. 8	0	.276	2.75			145 170	170 201	Bentonite Filter Pa		Hydrated pellets #2/12 graded sand
				- 12							170	201	i iitei Fa	CK	#2/12 graded sand
		Atta	chme	onte	l					Certificati	on Sta	tement			
	Geologic		CIIIII(	CIIIO		I, the u	ndersiane	d, certify th					o the bes	t of my	/ knowledge and belief
	Well Cor	nstructi		iagram			Boart Lo	<u>ngyear C</u>	ompany	,					
	Geophys	sical Lo	og(s)	•		1333	W. 9th S		n allOff	Upla			<u>C</u>	CA	91786
				l Analyses		Signed		Address			Cit	у		tate 894686	Zip
	Other <u></u>					Signed		ensed Water	Well Contractor			Date Sid			o cense Number
	additional information, if it exists.  C-57 Licensed Water								LICE NEVI CO	NICECUTIVE!	VALUMDE		<sub>5</sub> C		

*The free	Adobe Re	ader ma	y be used to view	and complete	e this form	. However,	software m	ust be purcha	sed to comple	ete, save	, and reus	e a saved	form.	
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Page 5		of	8		V		mpleti to Instruction	on Repo	ort					
			luster A Deep	Well			• <b>e01303</b>				Sta	te Well Nu	mber/S	ite Number W
Date Wo	_					nded <u>6/4/2</u>	2011				Latitude			Longitude
			n Bernardino									A DNI/	TRS/Otl	hor
Permit N	umber <u>2</u>	01104		Permit Da	ate <u>4/5/</u>	11							113/01	nei
				gic Log	<u> </u>							Owner		
	entation Method S		rtical O Hoi	rizontal	O Angle Drilling	-	ty		California				Gam	ne
	from Su			Des	cription				Address 4					20511
	to F	eet		cribe material	, grain size	e, color, etc		City BI	shop					A z <sub>ip</sub> <u>93514</u>
113.5			(CL) GLEY 4/	1 Dark gre	enish gı	ray silty cl	lay					Locatio	n	
4440			(20/80)	/4 D = = -					Camp C				_	
114.0			(SM) GLEY 4			ray slity f	ine-						-	San Bernardino
116.0			medium coa (CL) GLEY 4/			ray cilty c	lov	Latitude	e <u>34</u>	<u>56</u>	Sec.	N Longitu	ude <u>1</u>	16 37 13 W Deg. Min. Sec.
110.0			(20/80)	i Daik gie	enish gi	ay Silly C	iay							imal Long. <u>-116.6201</u>
120.0			(SM) GLEY 4	/1 Dark gre	enish a	rav silty fi	ine-	APN Bo	ook <u>0541</u>	Pag	e <u>011</u>		Parc	cel 19
120.0			medium coa			ray only n			ip <u>10N</u>					
122.5			(SW) GLEY 4		,	ray fine-c	coarse		Locat	ion Sk	etch			Activity
			sand	<u> </u>		(Sketch	must be drawn	by hand a	after form is	printed.)		lew Well		
125.0			(CL) GLEY 4/	1 Dark gre	enish gı	ray clay		╗		NOTH	_	4		Modification/Repair  Deepen
125.8			(CL) GLEY 4/	1 Dark gre	enish gr	ray fine-m	nedium	/						Other
			coarse sand	ly clay (30	/70)							<b>\</b> .		Destroy Describe procedures and materials under "GEOLOGIC LOG"
127.0			(SP) GLEY 4/	1 Dark gre	enish g	ray fine-m	nedium					$\sim$	ι	
			coarse sand											Planned Uses
127.5			(CL) GLEY 4/											Vater Supply  Domestic
130.0			(SM-SC) GLE			sh gray si	lty	West	SEE AT	TACHEI	D MAP	East		Irrigation Industria
101.0			clayey fine s					_				ш	00	Cathodic Protection
131.0			(CL) GLEY 4/				la.	- 1						Dewatering
135.0			(SM-SC) GLE clayey fine s			sn gray si	ity	H /						leat Exchange
136.3			(SM) GLEY 4			ray eilty f	ine	1					_	njection Monitoring
100.0			sand (40/60		orniori g	ray Silty II	1110							Remediation
137.5			(CL) GLEY 4/	•	enish aı	rav clav								Sparging
138.0			(CL) GLEY 4/				ne	1		South			_	est Well
			sandy clay (					Illustrate or o	describe distance on attach a map.	of well from r	oads, buildings	s, fences, essarv.		/apor Extraction Other
138.5			(SM) GLEY 4	1 Dark gre	enish g	ray silty fi	ine sand	Please be a	ccurate and com	plete.				<u></u>
			(40/60)						Level and					
140.0			(CL) GLEY 4/	1 Dark gre	enish gı	ray fine-m	nedium	Depth to	o first water o Static				(Fee	et below surface)
			coarse sand	ly silty clay	(30/20/	/50)		Water L	.evel <u>22</u>					ured 06/04/2011
Total D	epth of E	Boring	201			Feet								
Total D	epth of C	complet	ted Well 200		$\leq \Delta$	Feet			ngth ot be repres					down(Feet)
				Cas	ings			Iviay no	от ве тергее	Cittative	or a wer	Annul		
Dept	h from	Boreh	ole Type	Mate		Wall	Outside	Screen	Slot Size	Dep	th from	Ailliui	ai ivia	iteriai
	face to Feet	Diame (Inche	ter	Wate	IIdi	Thickness (Inches)	Diameter (Inches)	Type	if Any (Inches)		rface to Feet	Fi	II	Description
0	175	8	Blank	PVC Sch. 80	0	.276	2.75		(	0	2	Cement		Concrete
175	195	8	Screen	PVC Sch. 8	0	.276	2.75	Milled Slots	0.020	2	145	Cement		Cement/bent. grou
195	200	8	Blank	PVC Sch. 8	0	.276	2.75			145	170	Bentonite		Hydrated pellets
							-			170	201	Filter Pa	ck	#2/12 graded sand
										<b> </b>				
		A 11	la mana at di	I .				<u> </u>	0	61	1			
	O = = ! = =: : =		hments		I tho u	ndorsianos	1 cortify th		Certificati			o the bes	t of my	/ knowledge and belief
	Geologic Well Cor		on Diagram			Boart Loi	<u>ngyear C</u>	ompany	r is complet	o and a	ooural <del>e</del> l		t of fliy	mowiedye and beller
	Geophys				1333	Person, I W. 9th S	Firm or Corpo <b>treet</b>	oration	Upla	nd		C	:A :	91786
	Soil/Wat	er Cher	nical Analyses				Address			Cit	у	St	ate	Zip
	Other <u>D</u> litional infor		Site Map		Signed		ensed Water	Well Contractor			Date Si		94686 -57 Lic	oense Number
	DEV 1/200		L GAISIS.				LICE NEVE CO	NICECUTIVE!	VALUADE		griou C	OI LIC	JOHN HAITIDO	

*The free	Adobe Re	eader m	ay be	used to view	and complete	e this form	. However,	software m	ust be purcha	sed to comple	ete, save	, and reus	e a saved	form.	
File Origi	inal with	DWR						ate of Cali		[		DV	VR Use O	nly – Do	Not Fill In
Page 6		of	8			V		mpleti r to Instruction	on Repo	ort					
			Clust	er A Deep	Well			• e01303				Sta	te Well Nu	ımber/S	Site Number W
Date Wo							nded <u>6/4/</u>	2011				Latitude			Longitude
				<u>ernardino (</u>									Δ DNI/	TRS/Ot	her
Permit N	umber <u>2</u>	.01104	4016		Permit D	ate <u>4/5/</u>	11								illei
		<u> </u>			gic Log	<u> </u>							Owner		
	entation Method S		ertica	l O Hori	izontal	O Angle Drilling	-	ty	11	California				d Gam	ne
	from Su		•		Des	cription				Address 4					20511
	to F	eet			ribe material	, grain size	e, color, etc		City BI	shop					A z <sub>ip</sub> <u>93514</u>
141	_			1-SC) GLE									Locatio	n	
444.5	-		_	ayey fine-n						Camp C					
141.5			+`-	.) GLEY 4/1	Dark gre	enisn gi	ray sandy	siity cias						-	San Bernardino
142.5			<u> </u>	20/20/60) .) GLEY 4/1	I Dark gro	onich a	ray clay		Latitude	e <u>34</u>	<u>56</u> Min	Sec.	N Longit	ude <u>1</u>	16 37 13 W Deg. Min. Sec.
142.8			+ -	:) GLE 1 4/1 :-SM) GLE`				lavev							cimal Long. <u>-116.6201</u>
142.0			_	Ity fine-me					APN Bo	ook <u>0541</u>	Pag	e <u>011</u>		Parc	cel 19
145.0			+	.) GLEY 4/			`			ip <u>10N</u>					
1.0.0			_	It (40/60)	. = 9	9	,	۵		Locat	ion Sk	etch			Activity
147.0			_	.) GLEY 4/1	Dark gre	enish gr	ray silty c	lay	(Sketch	must be drawn	by hand a	after form is	printed.)		New Well
			(4	10/60)					╗		NOTH	_	4		Modification/Repair O Deepen
149.0			(CL	.) GLEY 4/1	l Dark gre	enish gr	ray clay		/						Other
151.3			(SN	1) GLEY 4/	1 Dark gre	enish g	ray silty f	ine-						O	Destroy Describe procedures and materials under "GEOLOGIC LOG"
			_	oarse sand	. ,								~		
152.5			1	_) GLEY 4/	1 Dark gre	enish g	ray fine s	andy							Planned Uses
			+-	It (40/60)											Vater Supply ]Domestic ☐ Public
153.0			+ `	.) GLEY 4/1					West	SEE AT	TACHE	D MAP	East	∥ ⊟	Irrigation Industria
154.0			_	S-SM) GLE					_				ш		Cathodic Protection
455.0	_		_	Ity fine-me			<u> </u>		41 .						Dewatering
155.0	-			) GLEY 4/		enish g	ray fine s	andy,	-11 /						Heat Exchange
161.5	+		_	ayey silt (3 .) GLEY 4/1		onich a	rov cilty c	lov	41 _ 1						njection Monitoring
101.5	+		<u> </u>	20/80)	i Daik gie	eriisii gi	ay Silly C	iay							Remediation
162.5			+ ·	.) GLEY 4/1	l Dark gre	enish aı	ray fine sa	andy							Sparging
102.0			_	ay (40/60)		ornori gi	ay iiiio o	array	1		South			II _	Test Well
163.0			+-	) GLEY 4/1		enish gr	ray clay		Illustrate or o	describe distance on distance of the distance	of well from r	roads, building	s, fences,		/apor Extraction Other
163.3			_	S-SM) GLE				layey,	Please be a	ccurate and com	plete.			<u> </u>	Zillei
			si	Ity fine-med	dium coar	se sand	(20/20/6	0)		Level and					
163.6			(CL	.) GLEY 4/1	Dark gre	enish gı	ray fine sa	andy	Depth to	o first water				(Fe	et below surface)
			cl	ay (10/90)		- 1			Water L	evel <u>22</u>		(Fee	et) Date	Meas	ured 06/04/2011
Total D	epth of E	Boring		201			Feet								
Total D	epth of 0	Comple	eted V	Vell 200		$\leq \Delta$	Feet								down(Feet)
				_	Coo	inge			Iviay III	ot be repres	entative	or a wer	Annul		
Dept	h from	Borel	hole	Toma		ings	Wall	Outside	Screen	Slot Size	Dep	th from	Annu	iai ivia	iteriai
	rface to Feet	Diam (Inch		Type	Mate	riai	Thickness (Inches)	Diameter (Inches)	Type	if Any (Inches)		rface to Feet	Fi	II	Description
0	175	8		Blank	PVC Sch. 8	0	.276	2.75		(IIICHES)	0	2	Cement		Concrete
175	195	8		Screen	PVC Sch. 8	0	.276	2.75	Milled Slots	0.020	2	145	Cement		Cement/bent. grou
195	200	8		Blank	PVC Sch. 8	0	.276	2.75			145	170	Bentonit	е	Hydrated pellets
		1									170	201	Filter Pa	ck	#2/12 graded sand
			\	_							<u> </u>	+	-		
			_								<u> </u>				
	0 1 :	Atta	chm	ents		I tha	n d a rai a n a a	d oortify th		Certificati			a tha haa	t of m	the autoday and balist
	Geologic Well Cor		ion Di	iagram			Boart Lo	<u>ngyear C</u>	ompany	LIS COMPLET	. <del>c</del> and a	courate to	o the bes	or or my	y knowledge and belief
	Geophys			g.aiii		1333	Person, I W. 9th S	Firm or Corpo	oration	Upla	nd			CA :	91786
	☐ Soil/Water Chemical Analyses Address										Cit	у	S	tate	Zip
	Other <u></u>					Signed		ensed Water	Well Contractor			Date Si		694686 3-57 Lie	6 cense Number
	ch additional information, if it exists.  C-57 Licensed Water								LICE NEVE CO	NICE CLITIVE	VALUMDE		gri <del>c</del> u C	)-U1 Ll(	COLIDE LAGILIDEI

*The free	Adobe Re	ader ma	ay be used to view	and complete	this form	. However,	software m	ust be purchas	sed to comple	ete, save	, and reus	e a saved	form.	
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Page 7		of	8		V		mpleti r to Instruction	on Repo	ort					
· —		_	Sluster A Deep	Well			• e01303				Sta	te Well Nu	ımber/S	Site Number W
Date Wo	_					nded <u>6/4/</u>	2011				Latitude			Longitude
			n Bernardino									A DNI/	TRS/Ot	her
Permit N	umber <u>2</u>	01104			ate <u>4/5/</u>	11								1161
				gic Log	<u> </u>							Owner		
	entation Method S		ertical O Ho	rizontal	OAngle Drilling	-	ty		California				d Gam	ne
	from Su			Des	cription				Address <u>4</u>					20511
Feet		eet		cribe material,	grain size	e, color, etc		City BI	shop					A <sub>Zip</sub> <u>93514</u>
165			(ML) GLEY 4/	1 Dark gre	enish g	ray claye	y silt	_				Locatio	n	
400.0			(30/70)	4 Daula				1 1	Camp C					
166.0			(CL) GLEY 4/				ina	1 1 '					-	San Bernardino
166.8			(SM) GLEY 4			ray Silly I	ine-	Latitude	. <u>34</u>	<u>56</u>	Sec.	N Longit	ude <u>1</u>	16 37 13 W Deg. Min. Sec.
168.5			medium coa (SM) GLEY 4			ray cilty f	ino	11						cimal Long. <u>-116.6201</u>
100.5			sand (40/60		eriisii <u>y</u>	iay Siity i	IIIE							cel 19
171.5			(CL) GLEY 4/		enish aı	rav siltv c	lav	11	ip 10N	_				
17 1.0			(30/70)	T Bank gro	ornorr gr	ay only o	iay			ion Sk				Activity
173.5			(CL) GLEY 4/	1 Dark gre	enish aı	rav fine-c	oarse	(Sketch	must be drawn		after form is	printed.)		New Well
			sandy, silty cl					┧├──		North				Modification/Repair O Deepen
175.0			(SM) GLEY 4	, ,										O Other
			coarse sand	d (20/80)				11				<b>\</b> .	0 [	Describe procedures and materials
177.5			(CL) GLEY 4/	1 Dark gre	enish gr	ray fine sa	andy,					~		Describe procedures and materials under "GEOLOGIC LOG"
			silty clay (30	0/30/40)										Planned Uses
177.8			(SW-SM) GLE	EY 4/1 Darl	k greeni	ish gray s	silty							Vater Supply ]Domestic ☐ Public
			fine-mediun	n coarse sa	ınd (15/	(85)		West	SEE AT	TACHEI	D MAP	East		Irrigation ☐Industria
180.0			(CL) GLEY 4/	1 Dark gre	enish gr	ray fine-c	oarse	<u> </u>				ш	ll .	Cathodic Protection
			sandy, silty											Dewatering
181.5			(SW) GLEY 4			gray fine-d	coarse							Heat Exchange
400.5			sand with so			-1		41 _ \						njection
182.5			(SC-SM) GLE				layey,							Monitoring Remediation
183.5			silty fine-coa (SW) GLEY 4				nooroo						111	Sparging
103.5			sand with m			gray iiiie-c	Juaise	b .		South			II -	Test Well
187.2			(CL) GLEY 4/			ray silty f	ine	Illustrate or d	lescribe distance on attach a map.		roads, building	s, fences,		/apor Extraction
107.2			sandy clay (		ornorr gr	ay Siity, i	iiie	rivers, etc. ar	nd attach a map. ccurate and com	Use addition plete.	al paper if nec	essary.	00	Other
187.5			(SW) GLEY 4		enish o	rav fine-d	coarse	Water I	_evel and	Yield	of Com	pleted V	Vell	
			sand	3	)		7		first water	·			(Fe	et below surface)
								Depth to Water L	evel 22		(Fee	et) Date	Measi	ured 06/04/2011
Total D	epth of E	Boring	201			Feet								
Total D	epth of (	Complet	ted Well 200			 Feet								down(Feet)
. 010 2	орин он с	, op.o.		_ \				*May no	t be repres	entative	of a wel			
Dont	n from	Boreh	olo	Cas	ings	Wall	Outside	Screen	Slot Size	Don	th from	Annul	ar Ma	aterial
Sur	face to Feet	Diame (Inche	eter Type	Mate	rial		Diameter (Inches)		if Any (Inches)	Su	irface to Feet	Fi	II	Description
0	175	8	Blank	PVC Sch. 80	)	.276	2.75			0	2	Cement		Concrete
175	195	8	Screen	PVC Sch. 80	)	.276	2.75	Milled Slots	0.020	2	145	Cement		Cement/bent. grou
195	200	8	Blank	PVC Sch. 80	)	.276	2.75			145	170	Bentonit		Hydrated pellets
										170	201	Filter Pa	ck	#2/12 graded sand
			$\overline{}$									1		
		A								<u> </u>				
$\vdash$	O = =   = =:		hments		L tho u	ndorsiano	d cortify th		Certificati			o the hee	t of my	y knowledge and belief
	Geologic		on Diagram			Boart Lo	<u>ngyear C</u>	ompany	. is complet	and a	oouralt l	U 111E DES	or III)	y miowiedye and beller
	Geophys				1333	Person, W. 9th S	Firm or Corpo	oration	Upla	nd		(	A :	91786
	Soil/Wat	er Cher	nical Analyses			Address			Cit	у	S	tate	Zip	
			d Site Map		Signed		ensed Water	Well Contractor			Date Si		94686 -57 Lie	6 cense Number
	ach additional information, if it exists.  C-57 Licensed Water W								NICE CLITIVE	VALUMDE		gri <del>c</del> u C	, or FI	COLISE LAGILINE

*The free	Adobe Re	eader m	ay be	used to view	and complete	this form	. However,	software m	ust be purchas	sed to compl	ete, save,	and reus	e a saved f	orm.	
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Page 8		of	8			V	/ell Co	mpleti to Instruction	on Repo	ort					
Owner's	Well Nu	mber <u>C</u>	Cluste	er A Deep	Well		No.	e01303	<b>25</b>				te Well Nu	mber/S	ite Number W
Date Wo							nded <u>6/4/2</u>	2011				Latitude			Longitude
					County DP Permit Da		11						APN/	RS/Otl	her
Citilitati	uniber <u>-</u>				gic Log	<u> </u>						Well	Owner		
Orio	entation	<b>⊙</b> ∨€	ertical		izontal	OAngle	e Specif	y	Name (	California	Departn			l Gam	ne
<u> </u>	Method S					Drilling I	Fluid			Address 4					
	from Su			Desc	Des cribe material	cription arain size	e. color. etc			shop				te <u>C</u> A	<u>z<sub>ip</sub> 93514</u>
193.5		001	(CL)		1 Dark gre								Location		·
			(3	0/70)					Address	Camp C	Cady, Mo	ojave T	rail		
193.8	195				Y 4/1 Dar	k greeni	sh gray s	ilty fine-	City Ne	ewberry S	prings		Co	unty S	an Bernardino
			CO	arse sand	l (15/85)				Latitude	34	<u>56 5</u>	5	N Longitu	ide <u>1</u>	16 37 13 W Deq. Min. Sec.
															imal Long. <u>-116.6201</u>
															el <u>19</u>
										ip 10N	_				
										Locat	ion Ske	tch			Activity
									(Sketch	must be draw	by hand af North	ter form is	printed.)	<b>⊙</b> N	lew Well
											HOILI		4 4		odification/Repair Deepen
									- 1						Other
															Destroy Describe procedures and materials under "GEOLOGIC LOG"
-															Planned Uses
								_							Vater Supply
							-	$\overline{}$	-   +	SEE A	TACHED	MAD	to		Domestic Public
									West	DEE II.	rinendo	11111	Eas		Irrigation Industrial
														_	Cathodic Protection Dewatering
															leat Exchange
							$\overline{}$	$\sim$	41 (					O Ir	njection
															Monitoring Remediation
						-	-	-							Sparging
						-	_		- L		South			От	est Well
						•	-	-	Illustrate or d	escribe distance	of well from ro	ads, building	s, fences,		apor Extraction
					*	1			Please be ac	nd attach a map. ccurate and com	plete.				Other
										_evel and					
								. 7	Depth to	o first water	·			_ (Fee	et below surface)
						$ \forall$			Water L	evel <u>22</u>					ured 06/04/2011
Total D	epth of E	Boring		201		~	Feet								<del> </del>
Total D	epth of (	Comple	eted W	/ell <u>200</u>		$^{\prime}\Delta$	Feet			ngth ot be repres					down(Feet)
					Cas	ings			Iviay ne	t be repres	CHALIVE	or a wer	Annul		
	h from	Borel		Туре	Mate		Wall	Outside	Screen	Slot Size		h from			
	rface to Feet	Diame (Inch		. 71.0			(Inches)	Diameter (Inches)	Туре	if Any (Inches)		face to Feet	Fil	ı	Description
0 175 8 Blank PVC Sch. 80 .								2.75			0	2	Cement		Concrete
175	195	8	_	Screen	PVC Sch. 80		.276	2.75	Milled Slots	0.020	2	145	Cement		Cement/bent. grout
195	200	8	E	Blank	PVC Sch. 80	)	.276	2.75		-	145 170	170	Bentonite		Hydrated pellets
				- 12			<del>                                     </del>	1			170	201	Filter Pac	νr\	#2/12 graded sand
		Attac	chme	ents					. (	Certificat	on Stat	ement			•
	Geologic								at this report				o the bes	of my	knowledge and belief
	Well Cor			agram			Boart Loi Person, I	irm or Corpo	ompany ration						
	Geophys			Analyses		<u>1333</u>	W. 9th S	treet Address		<u>Upla</u>	ind City			A S	91786 Zip
						Signed		Address			City			ate 94686	·
	✓ Other Detailed Site Map  additional information, if it exists.  Signed  C-57 Licensed W							ensed Water	Well Contractor			Date Si	gned C	-57 Lic	cense Number

*The free	Adobe Re	ader m	nay be	e used to view	and complete	this form	. However,	software m	ust be purchas	sed to compl	ete, save,	and reus	e a saved	form.	
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Page 1		of	2			V			on Repo	ort			1 1	$\top$	
				ter A Shall	ow Well			to Instruction				Sta		mber/Si	ite Number
		_		)11			nded <u>6/4/</u>					Latitude	N		Longitude
				Bernardino (											
Permit N	lumber <u>2</u>	0110	<u>4017</u>	71	Permit Da	ate <u>4/5/</u>	′11			L			APN/	TRS/Oth	her
				Geolo	gic Log							Well	Owner		
	entation	_	ertica	al O Hor	izontal	OAngle		fy	– Name <u>(</u>	California	Departr	nent of	Fish and	l Gam	ne
	Method S				D	Drilling			Mailing	Address 4	07 W. L	ine Str	eet		
	from Su			Desc	<b>Des</b> cribe material	cription, grain size			City Bi	shop			Sta	ite <u>CA</u>	<u>zip 93514</u>
0			(MI	L) 10YR 7/3	3 Very pale	brown	silt with s	some				Well	Location	n	
			С	obbles (<1/	/4")				Address	Camp C	Cady, Mo	ojave T	rail		
2.5			(S\	N) 10YR 7/	6 Yellow fi	ne-coar	se sand v	with some						unty S	San Bernardino
			g	ıravel											16 37 13 W Deg. Min. Sec.
4.5			(S\	N) 10YR 6/	3 Pale bro	wn fine-	-medium	coarse							
				and with m											imal Long. <u>-116.6202</u>
5.5				M) 10YR 6/			silty fine	sand			_				el <u>19</u>
			_	vith black lig					Townsh	ip <u>10N</u>				Secti	
6.0			+-	N) 10YR 6/				coarse	(Sketch	Locat must be draw	ion Ske		printed )		Activity
				and with so					(Ontolon	made 20 dram	North	101 10111110	printou.)	O N	lew Well /lodification/Repair
8.0				C) 10YR 4/3					-11				7 4		O Deepen .
10.0			+-	N) 10YR 6					-11 - 1						Other Destroy
			+	oarse-coar		ith some	e gravel a	ind							Describe procedures and materials under "GEOLOGIC LOG"
10.0			+	obbles (<1		- 1	<i>c</i>								Planned Uses
10.8				N) 10YR 7/											Vater Supply
			_	vith some g	ravei, mor	e grave	and cobi	oies							Domestic Public
17.5			+	12.5-13.5'	2 Drown ol	ovev fir	a a madiu	m 000r00	West	SEE A	TTACHE	D MAP	East		Irrigation Industria
17.5				C) 10YR 5/3 and (30/70)		ayey, III	ie-mealur	n coarse	-   >				_	<b>O</b> C	Cathodic Protection
19.0			+	P) 10YR 5/3		odium o	ooreo coi	od							Dewatering
19.0			<u> </u>	м) 10YR 4/3					-11 /						leat Exchange njection
20.0				N) 10YR 5/				-							flection Monitoring
20.0				vith minor s		no moa	idili oodic	o ouria						_	Remediation
22.0			+	L) 10YR 5/3		m sand	v silt (20/	80)							Sparging
23.5			<del>-</del> -	M) 10YR 5/			_		1		South				est Well
				ncreasing c				,	Illustrate or o	describe distance nd attach a map.	of well from ro	oads, building	s, fences,		/apor Extraction Other
25.5			+	_) 10YR 5/3				e sandy	Please be a	ccurate and com	plete.				
			С	lay (20/80)						Level and					
26.0			(SC	C-SM) 10YI	R 5/3 Brow	n claye	y, silty fin	e-	Depth to	o first wate	r			(Fee	et below surface)
			n	nedium coa	rse sand (	15/15/7	0)		Water L	evel 21		(Fee	et) Date	Meası	ured 06/04/2011
Total D	epth of E	Boring		38			Feet								
Total D	Depth of C	Comple	eted '	Well <u>37</u>			Feet			-					down(Feet)
									*May no	ot be repres	sentative	of a wel			
Dont	h from	Bore	holo		Cas	ings	Wall	Outside	Screen	Slot Size	Dont	h from	Annul	ar Ma	terial
Su	rface	Diam	eter	Туре	Mate	rial	Thickness	Diameter	Туре	if Any	Su	rface	Fil	íl .	Description
Feet 0	to Feet	(Inch	nes)	Blank	PVC Sch. 80	`	(Inches) .276	(Inches) 2.75		(Inches)	Feet 0	to Feet	Cement		Concrete
17	32	8		Screen	PVC Sch. 8		.276	2.75	Milled Slots	0.020	2	12	Bentonite		Hydrated pellets
32	37	8		Blank	PVC Sch. 80		.276	2.75		0.020	12	38	Filter Pag		#2/12 graded sand
			Г	1							1				
											<u> </u>				
		Atta	chm	ents						Certificat	ion Stat	tement			
	Geologic									t is comple	te and ac	ccurate t	o the bes	t of my	knowledge and belief
	Well Cor						Boart Lo	Firm or Corpo	orration						
	Geophys Soil/Wat			al Analyses		<u>1333</u>	W. 9th S	treet Address		Upla	nd City	,		tate	91786 Zip
					_	Signed								94686	·
	Other Detailed Site Map  ch additional information, if it exists.  Signed  C-57 Licensed Wa						ensed Water	Well Contractor			Date Si	gned C	-57 Lic	cense Number	

*The free	Adobe R	eader m	nay be	e used to view	and complete	this form	. However,	software n	nust be purchas	sed to compl	ete, save,	and reus	se a saved f	form.	
File Orig	inal with	DWR						ate of Ca				DV	WR Use On	ıly – Do	Not Fill In
Page 2		of	2	<u> </u>		W	/ell Co	mplet	ion Repo	ort				$\Box$	
Owner's	Well Nu	mber _	Clus	ter A Shall	ow Well			to Instructio				Sta	ate Well Nu	mber/Si	ite Number W
				)11			nded <u>6/4/2</u>					Latitude			Longitude
				Bernardino 71			11						APN/I	TRS/Oth	ner
Permit N	iumber <u>2</u>	20110	4017			ale <u>4/3/</u>	11		_			\Mall	l Owner		
Ori	entation	<b>⊙</b> ∨	/ertica		rizontal	OAngle	e Specif	īv	Name (	California	Donartr			l Cam	10
	Method S	_	0.1.0	. • • • • • • • • • • • • • • • • • • •		Drilling		,		Address <u>4</u>				Gain	
	from S			Des		cription	!+-							to CA	
26	to F	eet	(SI	M-SC) 10Y	cribe material R 5/3 Brow			se sand	Oity				Location		
				ith minor c		Oney,	ino odare	o cana	Address	S Camp C	Cady M			•	
27.5				N) 10YR 6		lowish b	rown fine	e-coarse						unty S	an Bernardino
			S	and											16 37 13 W Deg. Min. Sec.
32.5			(MI	L) 10YR 5/	3 Brown de	ense silt									
35.0			(SV	W-SM) 10Y	'R 6/3 Pale	brown	fine-medi	um	11 -						imal Long. <u>-116.6202</u>
				oarse sand											el <u>19</u> ion <u>25</u>
35.5				C) 10YR 6/		wn fine-i	medium d	oarse	Townsn		ion Ske			Sect	
26.0				andy clay	. ,	waiah au	rov olov		(Sketch	must be draw			printed.)	<b>O</b> N	Activity lew Well
36.0 37.0	38			_) 10YR 6/2 P) 10YR 6/					<b>⊣</b>		North	_		ÓΝ	lodification/Repair
37.0	30		(SI	-) 1011 0/-	3 Fale DIO	WII IIIIE S	sariu		-11 /						Deepen Other
														$\bigcirc$ D	estrov
															Describe procedures and materials under "GEOLOGIC LOG"
													-		Planned Uses
															Vater Supply Domestic ☐ Public
									West	SEE A	TTACHE	D MAP	ast		Irrigation Industrial
									_				ш		athodic Protection
						-			<u> </u>						ewatering
			-			~~	-	-	-11 /						leat Exchange
			+				-	-	41 ~						njection Ionitoring
<u> </u>						*									emediation
						7		-							parging
									1		South				est Well apor Extraction
							$\vee$	_ `	rivers, etc. ar	describe distance nd attach a map.	Use additiona	oads, building al paper if nec	js, fences, cessary.		other
							-			Level and		of Com	nleted V	Vell	
-			+		-					o first wate					et below surface)
-					-	-	· (	-	Depth to	o Static					,
Total	Depth of I	Soring		38	_	$ \times$	Feet								ured <u>06/04/2011</u>
															down(Feet)
l otal L	peptn of t	ompi	etea	Well <u>37</u>		$\mathcal{L}$	Feet			ot be repres					
					Cas	ings							Annul	ar Ma	terial
Su	h from rface to Feet	Bore Diam (Inch	neter	Туре	Mate	rial	Wall Thickness (Inches)	Outside Diameter (Inches)		Slot Size if Any (Inches)	Su	h from rface to Feet	Fil	ı	Description
0	17	8	,	Blank	PVC Sch. 80		.276	2.75			0	2	Cement		Concrete
17	32	8	_	Screen	PVC Sch. 8		.276	2.75	Milled Slots	0.020	2	12	Bentonite		Hydrated pellets
32	37	8	/	Blank	PVC Sch. 80	)	.276	2.75			12	38	Filter Pac	:K	#2/12 graded sand
-		-	н	- > 2							╂				
											1				
		Δtta	chm	ents						Certificat	ion Stat	tement			
	Geologic								hat this repor					t of my	knowledge and belief
	Well Co	nstruct				Name .	Boart Loi	ngyear C Firm or Corp	Company oration	-					
	Geophy					<u>1333</u>	W. 9th S	treet		<u>Upla</u>					91786
				al Analyses te Map		Signed		Address			City	1		<sub>ate</sub> 94686	Zip S
	Other Detailed Site Map  dditional information, if it exists.  Signed  C-57 Licensed W							ensed Water	Well Contractor			Date Si	gned C	-57 Lic	ense Number

*The free	Adobe Re	ader ma	ay be used to view	and complet	e this form	. However,	software m	ust be purchas	sed to comple	ete, save	, and reus	e a saved	form.	
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Page 1		of	6		V		mpleti r to Instruction	on Repo	ort				يبا	
			Cluster B Deep	Well			• e01303				Sta	te Well Nu	mber/Si	ite Number W
Date Wo	_					nded <u>6/1/</u>	2011				Latitude			Longitude
			an Bernardino									A DNI/	TRS/Oth	hor
Permit N	umber <u>2</u>	01104	0172		ate <u>4/5/</u>	11								nei
		<u> </u>		gic Log	0							Owner		
	entation Method S		ertical O Ho	rizontal	O Angle Drilling	-	ty		California				<u>l Gam</u>	ne
	from Su			Des	cription				Address <u>4</u>					20511
	to F	eet		cribe materia				City BI	shop					A z <sub>ip</sub> <u>93514</u>
0			(ML) Pale bro	,								Locatio	n	
3.5			(SM-SW) Ver		•		ty fine-	11	Camp C					
F 0			coarse sand				ov vrith	1 1 '					-	San Bernardino
5.0			(CL) Light yel		(2.51 6/	(3) Silly Ci	ay with	Latitude	. <u>34</u>	<u>56</u>	6 Sec	N Longitu	ude <u>1</u>	16 36 48 W Deg. Min. Sec.
6.0			some orang (SM-SW) Red		N (7 5VE	2 6/6) cilt	v fino-							cimal Long. <u>-116.6133</u>
0.0			coarse sand				y IIIIe-							cel 19
6.4			(SM) Very pa				v sand		ip 10N	_				
7.5			(CL) Olive bro			<u> </u>	-			ion Sk				Activity
			orange mot	,	-, -, <u>,</u>			(Sketch	must be drawn		after form is	printed.)		lew Well
11.0			(ML) Light bro		y (10YR	6/2) fine	sandy			North		4 4		Modification/Repair  Deepen
			silt		-	•								Other
13.0			(SM-SW) Pale	e brown (1	0YR 6/3	s) silty fine	e-coarse					<b>\</b> .	OD	Destroy Describe procedures and materials
			sand with so	ome grave	I									Describe procedures and materials under "GEOLOGIC LOG"
15.0			(ML) Pale bro	wn (10YR	6/3) cla	yey silt								Planned Uses
17.5			Missing											Vater Supply  Domestic
20.0			(SW) Light ye	llowish bro	wn (10\	/R 6/4) fii	ne-	West	SEE AT	TACHE	D MAP	East		Irrigation ☐Industria
			medium coa					<u> </u>				ш	ll .	Cathodic Protection
20.6			(SW) Yellowis		10YR 5/	4) fine-m	edium							Dewatering
			coarse sand											leat Exchange
22.0			(SW) Light ye		wn (10)	/R 6/4) fii	ne-	4						njection
00.5			medium coa		0)/D 0/0	\ ''' ('								Monitoring Remediation
22.5			(SW-SC) Pale	•			<del>)</del> -						18	Sparging
23.7			medium coa (SC) Yellowis					b .		South				est Well
23.1			fine-mediun			+) Silly Cla	iyey	Illustrate or d	lescribe distance on attach a map.		oads, building:	s, fences,		apor Extraction
25.0			(ML) Dark gra			4/2) mic:	aceous	rivers, etc. ar	nd attach a map. ccurate and com	Use addition plete.	al paper if nec	essary.	00	Other
20.0			silt	tyloli blow	1(1011	4/2) IIIIO	200003	Water I	_evel and	Yield	of Com	pleted V	Vell	
27.5			(SW) Light br	ownish gra	v (10YF	R 6/2) fine	e-medium	Depth to	first water	·			(Fee	et below surface)
			coarse sand		J ( -	,	,	— Depin i			(Fee	et) Date	Meası	ured 06/01/2011
Total D	epth of E	Boring	185		_~~	Feet								
Total D	enth of (	omnle	ted Well 184			— Feet		Test Le	ngth		(Hou	ırs) Total	Drawo	down(Feet)
Total B	орит от с	Jompie	10d Well _101					*May no	ot be repres	entative	of a wel	l's long te	rm yie	eld.
Daniel		Danel	-1-	Cas	ings	Wall	Outside	0	Olat Cias	David No.	th form	Annul	ar Ma	iterial
Sur	h from face	Boreh	eter Type	Mate	rial		Outside Diameter	Screen Type	Slot Size if Any	Su	th from	Fi	11	Description
0	to Feet 159	(Inche	es) Blank	PVC Sch. 8	n	(Inches)	(Inches)		(Inches)	0	to Feet	Cement		Concrete
159	179	8	Screen	PVC Sch. 8		.276	2.75	Milled Slots	0.020	2	139	Cement		Cement/bent. grou
179	184	8	Blank	PVC Sch. 8	0	.276	2.75			139	154	Bentonite	Э	Hydrated pellets
										154	185	Filter Pa	ck	#2/12 graded sand
			hments						Certificati					
	Geologic		5.			ndersigned Boart Lo			t is complet	te and a	ccurate to	o the bes	t of my	knowledge and belief
	Well Cor Geophys		on Diagram			Person,	Firm or Corpo			اء ما				04700
			g(s) mical Analyses		<u>1333</u>	W. 9th S	treet Address		<u>Upla</u>	ind Cit	у		tate	91786 Zip
			d Site Map		Signed							6	94686	6 '
	ach additional information, if it exists.  C-57 Licensed Wate										Date Si	gned C	-57 Lic	cense Number

			ay be used to view	and complet	e this form			-	sed to compl —	ete, save				
File Origi	nal with	DWR					ate of Cal				DV	VR Use Or	nly – Do	Not Fill In
Page 2		of	6		V		mpleti r to Instruction	on Repo	ort					
· —		-	Cluster B Deep	Well			• e01303				Sta	te Well Nu N	mber/Si	ite Number
Date Wo		_			Work Er	nded <u>6/1/</u>					Latitude	IN		Longitude
			n Bernardino	County DF	H EHS									
Permit N	umber <u>2</u>	<u>201104</u>	0172	Permit D	ate <u>4/5/</u>	11			L			APN/	TRS/Oth	her
			Geolo	gic Log							Well	Owner		
Orie	entation	<b>⊙</b> ∨e	ertical O Ho	rizontal	OAngle	e Speci	fy	Name (	California	Departr	ment of	Fish and	d Gam	ne
	Method S				Drilling			Mailing	Address 4	07 W. I	Line Str	eet		
	from St	urface eet	Doo	Des cribe material	cription			City Bi		0			<sub>ite</sub> CA	<u>zip 93514</u>
37.5	io r	eet	(SM) Dark gre					- City -			Wall	Location		
07.0			silty fine-me				caccous	Λ al al va a a	S Camp C	'adv M				
40.0			(SM) Dark gra				ium						. 0	San Bernardino
40.0			coarse sand	-	7 1 / Silty	mic mea	idiii	11 '						
41.0			(SM) Grayish		YR 5/2)	silty fine.	coarse	Latitude	9 <u>34</u> Deg.	56 Min.	Sec.	N Longitu	de <u>1</u>	16 36 48 W Deq. Min. Sec.
71.0			sand	OI) IIWOId	11( 0/2)	Silty IIIIC	coarse	1 1						imal Long. <u>-116.6133</u>
42.5			(SM-SC) Gray	/ish hrown	(10YR	5/2) silty	clavev	APN Bo	ok <u>0541</u>	Pag	e <u>011</u>		Parc	el <u>19</u>
12.0			fine-medium			0/ <i>L</i> ) 011ty,	olayoy	Townsh	ip <u>10N</u>	Rang	e <u>03E</u>		Secti	ion <u>25</u>
47.5			(ML) Dark gra			sandy di	avev silt			ion Sk				Activity
49.5			(SM-SC) Gray					(Sketch	must be drawr	by hand a		printed.)	<b>⊙</b> N	lew Well
73.5			fine-mediun		•	orz) siity	ciaycy	┨┝──		North	-	-		Modification/Repair
50.5			(SM) Grayish			cilty fina	sand	$\exists \vdash$						O Deepen O Other
00.0			(50/50)	DIOWII (10	11( 5/2)	Silty IIIIC	Sand	H 4					OD	Destrov
51.5			(ML) Grayish	brown (10	VP 5/2)	fine sand	ly cilt	+					U	Describe procedures and materials under "GEOLOGIC LOG"
31.3			(30/70)	OI) IIWOIG	11( 3/2)	iiie saiic	iy Siit							Planned Uses
55.0			(SW) Light bro	nwnieh ars	v (10VF	2 6/2) fine	-coarse						Οv	Vater Supply
55.0			sand	JWIIISII YIZ	y (TOTE	(0/2) 11116	-coarse	H				_		Domestic Public
57.5			(CL) Brown (7	FVD 4/2\	olov.			West	SEE AT	TACHE	D MAP	East		Irrigation Industria
62.5			(ML) Brown (7			ody cilt (5	0/50)	-11-					_	Cathodic Protection
63.2								HI 1					_	Dewatering
03.2			(SM) Brown (	7.51K 4/3)	Silty III	e-mealun	Coarse	-11 /						leat Exchange
GE E			sand	up /7 EVD	F/2\ alay	vov. oiltv	fino	41\						njection Monitoring
65.5			(SM-SC) Brov			yey, silly	iine-							Remediation
70.5			coarse sand		•		(50/50)	7 I					_	Sparging
72.5			(ML) Dark gra		_			- L		South			_	est Well
74.0			(CL) Dark gra		(1) Silty,	iine-med	lum	Illustrate or o	lescribe distance		oads, building	s, fences,		apor Extraction
75.5			coarse sand	, ,	(4) =:16 -	<i>C</i>		rivers, etc. a	lescribe distance of nd attach a map. ccurate and com	Use addition	al paper if ned	essary.	00	Other
75.5			(SM) Dark gra	• `	/1) Slity	Tine-mea	ium	Water I	Level and	Yield (	of Com	pleted V	Vell	
76 F			coarse sand		/4 \ f:	: 14:	u alau		o first water					et below surface)
76.5			(CL) Dark gra					Depth to	o Static					,
77.5		Sender or	(CL) Dark gre	enish gray	(GLE )		у		.evel <u>22</u> ed Yield *					ured 06/01/2011
	epth of E	/	185	_		Feet								down(Feet)
Total D	epth of 0	Comple	ted Well <u>184</u>		$^{4}$	Feet			ngin ot be repres					
				Cas	inge			Iviay no	or bo repres	Citative	or a wer	Annul		
Depti	n from	Boreh	ole _		ings	Wall	Outside	Screen	Slot Size	Dept	th from	Alliul	ai ivia	iteriai
Sur	face	Diame	eter Type	Mate	rial	Thickness	Diameter		if Any	Su	rface	Fil	I	Description
0	5 Feet 159	(Inch	es) Blank	PVC Sch. 8	n	(Inches) .276	(Inches) 2.75		(Inches)	0	to Feet	Cement		Concrete
159	179	8	Screen	PVC Sch. 8		.276	2.75	Milled Slots	0.020	2	139	Cement		Cement/bent. grou
179	184	8	Blank	PVC Sch. 8		.276	2.75		0.020	139	154	Bentonite	<del></del>	Hydrated pellets
						1 1				154	185	Filter Pag	ck	#2/12 graded sand
		1												3
		Attac	hments				•		Certificati	on Sta	tement	•		
	Geologic		iiiciita		I, the u	ndersianea	d, certify th					o the best	t of mv	knowledge and belief
			on Diagram			Boart Lo	<u>ngyear C</u>	ompany					,	
	Geophys				1333	Person, W. 9th S	Firm or Corpo	oration	Upla	nd		С	:A 9	91786
			mical Analyses				Address			City	у	St	ate	Zip
			d Site Map		Signed		ensed Water	Well Contractor			Dota O		94686	
	ach additional information, if it exists.								NICE CLITIVE	V NII IN 10 E	Date Si	gnea C	-5/ LIC	cense Number

*The free	Adobe Re	eader m	nay be u	sed to view	and complete	e this form	. However,	software m	ust be purchas	sed to comple	ete, save	, and reus	e a saved	form.			
File Origi	inal with	DWR					State of California					DWR Use Only – Do Not Fill In					
Page 3		of	6			V۱	Well Completion Report Refer to Instruction Pamphlet										
			Cluste	r B Deep	Well			• e01303				Sta	te Well Nu	mber/S	Site Number W		
Date Wo							nded <u>6/1/</u>	2011				Latitude			Longitude		
					County DF								Δ DN/	TRS/Otl	her		
Permit N	umber <u>2</u>	201104	40172		Permit Da	ate <u>4/5/</u>	11							113/01	nei		
		<u> </u>			gic Log	<u> </u>							Owner				
	entation Method S		ertical	O Hori	zontal	OAngle Drilling		ty		California				Gam	ne		
	from Su		•		Des	cription				Address <u>4</u>					20511		
	to F	eet			ribe material	, grain size			City BI	Bishop State CA zip 93514							
80					y (10YR 4	/1) silty	fine-med		Well Location								
04.0			_	arse sand		(OL E)/	4 4/4) -1		Address Camp Cady, Mojave Trail  City Newberry Springs County San Bernardino								
81.0 82.5					enish gray				11 '								
62.5	+		+	ndy silt	enish gray	(GLE )	1 4/1) Cla	yey iirie	Latitude	. <u>34</u>	<u>56</u>	6 Sec	N Longitu	ude <u>1</u>	16 36 48 W Deg. Min. Sec.		
86.5					enish gray	(GLEY	1 4/1) silts	v clav							cimal Long. <u>-116.6133</u>		
00.0				)/80)	ornori gray	(OLL I	1 4/1/ 5110	y ciay	APN Bo	ok <u>0541</u>	Pag	e <u>011</u>		Parc	cel 19		
87.5			,		enish grav	(GLEY	1 4/1) silt	v clav	Townsh	ip <u>10N</u>	Rang	<sub>je</sub> <u>03E</u>		Sect	tion <u>25</u>		
0.10		(CL) Dark greenish gray (GLEY1 4/1) silty clay  (50/50)  Township 10N Range 03E  Location Sketch											Activity				
90.0			_ `		enish gray	(GLEY	1 4/1) silt	y, fine	(Sketch	must be drawn	by hand a	after form is	printed.)		lew Well		
			· /	ndy clay (2				, ,	1		NOTH		4 4		Modification/Repair  Deepen		
91.0			(SM-	SC) Dark	greenish	gray (Gl	LEY1 4/1	) silty,	T /						Other		
			cla	yey fine s	and (20/2	0/60)						<b>\</b> .	0 0	Destroy Describe procedures and materials			
91.5			(CL)	Dark gree	enish gray	(GLEY	1 4/1) silty	y, fine					$\sim$	ι	Describe procedures and materials under "GEOLOGIC LOG"		
				ndy clay (2											Planned Uses		
92.0			+		enish gray	/ (GLEY	1 4/1) silt	ty fine							Vater Supply ]Domestic ☐ Public		
				nd (30/70)					West	SEE AT	TACHE	D MAP	East		Irrigation Industria		
92.5			+		enish gray								ш	00	Cathodic Protection		
93.5	_		+	_	enish gray	(GLEY	1 4/1) Silty	y, fine	4						Dewatering		
04.0				ndy clay	onioh ara	, (CLEV	/1 //1\ ail4	hy fino							leat Exchange		
94.0				Dark gre nd (40/60	enish gray	(GLEY	1 4/1) SIII	ly line						_	njection Monitoring		
95.0			_		onish gray	(CLEV	(1 3/1) cilt	ty fine							Remediation		
33.0			+	nd (20/80)		(OLL I	1 0/1/ 311	ly IIIIC	O Sparging								
96.3					enish gray	(GLFY	1 3/1) cla	V	South O Test Well								
98.3					enish gray				Illustrate or describe distance of well from roads, buildings, fences.								
			1	nd (30/70)		(	, .,	.,	Please be accurate and complete.								
104.0					enish gray	(GLEY	1 3/1) silty	y clay	Water Level and Yield of Completed Well								
			(40	)/60)				7	Depth to	o first water				(Fee	et below surface)		
									Water L	evel <u>22</u>		(Fee	t) Date	Measu	ured 06/01/2011		
Total D	epth of E	Boring		185			Feet										
Total D	epth of (	Comple	eted We	ell 184			Feet								down(Feet)		
					0				"May no	t be repres	entative	or a wer					
Dept	h from	Bore	hole	_		ings	Wall	Outside	Screen	Slot Size	Den	th from	Annul	ar ivia	iteriai		
Sur	face	Diam	eter	Type	Mate	rial	Thickness	Diameter	Туре	if Any	Su	ırface	Fi	II	Description		
0	to Feet 159	(Inch		lank	PVC Sch. 80	n	(Inches)	(Inches) 2.75		(Inches)	0	to Feet	Cement		Concrete		
159	179	8		creen	PVC Sch. 8		.276	2.75	Milled Slots	0.020	2	139	Cement		Cement/bent. grou		
179	184	8	ВІ	lank	PVC Sch. 80	0	.276	2.75			139	154	Bentonite	Э	Hydrated pellets		
				1							154	185	Filter Pa	ck	#2/12 graded sand		
									<u> </u>		<u></u>				<u> </u>		
			chmer	nts						Certificati							
	Geologic		: F:				ndersigned Boart Lo			t is complet	e and a	ccurate to	o the bes	t of my	knowledge and belief		
	Well Cor Geophys			ıgram		l '	Person, I	Firm or Corpo	orporation								
				Analyses				Address	Upland CA 91786 City State Zip								
<b>7</b>	Other <u></u>	<u> Detaile</u>	d Site	Мар		Signed		oppod \\/	Mall Canter - t -			D. ( . 2)		94686			
Attach additional information, if it exists.  C-57 Licensed Water Well C									NICECULTIVE:	V NII INADE	Date Sig	gned C	-5/ Li	cense Number			

*The free	Adobe Re	ader ma	y be used to view	and complete	e this form	. However,	software m	ust be purchas	sed to compl	ete, save	, and reus	e a saved	form.		
File Origi	nal with	DWR					ate of Cali							Not Fill In	
Page 4		of 6	3		V			ion Report  pn Pamphlet  State Well Number/Site Number							
Owner's	Well Nur	nber C	luster B Deep	Well			· e01303				Sta	te Well Nu	ımber/S	ite Number	
Date Wo						nded <u>6/1/</u>	2011				Latitude			Longitude	
			n Bernardino									APN/	TRS/Ot	her	
Permit N	umber <u>2</u>	011040	0172		ate <u>4/5/</u>	11									
0		O 1/-		gic Log	O A I		,			_		Owner			
	entation Method S		ticai O Hoi	rizontal	O Angle Drilling	-	ту	Name California Department of Fish and Game Mailing Address 407 W. Line Street							
	from Su			Des	cription									00544	
	to F	eet		cribe material				City BI	snop					A z <sub>ip</sub> <u>93514</u>	
105		(	(SM) Dark gre		/ (GLEY	1 3/1) silt	ty fine	$\dashv$				Locatio	n		
407.0			sand (30/70	,	(OL E)/	4 0/4) -:!!		Address Camp Cady, Mojave Trail  City Newberry Springs County San Bernardino							
107.2			(CL) Dark gre	enisn gray	(GLEY	1 3/1) SIIT	y ciay	11 '					-		
107.5			(30/70)	onich ara	, (CLEV	/1 2/1\ ails	hy fino	Latitude	e <u>34</u>	<u>56</u>	6 Sec	N Longit	ude <u>1</u>	16 36 48 W Deg. Min. Sec.	
107.5		- '	(SM) Dark gre sand (30/70		(GLE )	1 3/1) 811	ıy ime	1 1						cimal Long. <u>-116.6133</u>	
108.5			(CL) Dark gre	,	(GLEV	v clav							cel 19		
100.5			(30/70)	eriisir gray	(OLL I	1 0/1/ 3111	y ciay		ip 10N	_					
108.8			, ,	enish grav	/ (GLFY	′1 3/1) silt	ty fine							Activity	
100.0		(SM) Dark greenish gray (GLEY1 3/1) silty fine sand (30/70)  Location Sketch (Sketch must be drawn by hand after form is printed)										printed.)		lew Well	
109.5			(CL) Dark gre		(GLEY	1 3/1) silt	v clav	┨├──		North				Modification/Repair  Deepen	
			(20/80)				, ,	11 /						Other	
110.8		(	(SM) Dark gre	(GLEY	1 3/1) silt						0 [	Describe procedures and materials			
			medium coa	10/90)						<b>&gt;</b> /		Describe procedures and materials under "GEOLOGIC LOG"			
111.9		(	(CL) Dark gre	enish gray	1 3/1) cla	у					~		Planned Uses		
113.0		(	(SC) Dark gre	enish gray	(GLEY	1 3/1) cla							Vater Supply		
			fine-medium	n coarse sa	and (20/	(08		West	SEE AT	TACHE	- В МАР	East	∥∺	]Domestic	
113.3			(CL) Dark gre					Š	OLL / ()	.,		Щ		Cathodic Protection	
114.7		(	(SM-SC) Darl	_									Dewatering		
			clayey fine-											leat Exchange	
117.0		(	(SM-SC) Dark					41						njection	
			clayey fine-											Monitoring Remediation	
120.0		(	(SM) Dark gre		(GLEY	1 3/1) silt	ty fine							Sparging	
404.0			sand (30/70)		(OL E)(	4 0/4) =:!!:		South						est Well	
121.0		- 1	(CL) Dark gre	enish gray	(GLEY	1 3/1) SIIt	y clay	South						apor Extraction	
123.0			(10/90) (SM) Dark gre	onich gro	(CLEV	/1 2/1\ ails	hy fino	Illustrate or describe distance of well from roads, buildings, fences, rivers, etc. and attach a map. Use additional paper if necessary.  Please be accurate and complete.							
123.0			sand (20/80)	enish gray	(GLE)	1 3/1) 811	ly line	Water Level and Yield of Completed Well							
124.0		_	(CL) Dark gre	enich arav	(GLEV	1 3/1) cla	V		o first water				(Fee	et below surface)	
12 1.0			(OL) Dark gro	Criisir gray	(OLL I	1 0/1/014	у	Depth to			(Foo	ut) Date	Meaci	ured 06/01/2011	
Total D	epth of E	Borina	185		-	Feet								urcu <u>00/01/2011</u>	
				-										down(Feet)	
Total D	epin or c	ompiet	ed Well <u>184</u>		-	Feet			ot be repres						
				Cas	ings							Annu	lar Ma	nterial	
	n from face	Boreho	IVno	Mate	rial	Wall Thickness	Outside Diameter	Screen Type	Slot Size if Any		th from irface	Fi	ili.	Description	
Feet	to Feet	(Inche	s)			(Inches)	(Inches)	-71	(Inches)	Feet	to Feet				
0	159	8	Blank	PVC Sch. 80		.276	2.75	NATIO LOUGE	0.000	0	2	Cement		Concrete	
159 179	179 184	8	Screen Blank	PVC Sch. 80		.276	2.75	Milled Slots	0.020	2 139	139 154	Cement		Cement/bent. grou Hydrated pellets	
179	104	0	DidIIK	F VC 3cm. oc		.276	2.73			154	185	Filter Pa		#2/12 graded sand	
			. "								1.00	oi i a		"" - 12 graded salld	
												1			
		Attack	nments				•		Certificati	on Sta	tement				
	Geologic							nat this repor				o the bes	t of my	/ knowledge and belief	
	Well Cor	structio	n Diagram		Name .	Boart Lo	ngyear C Firm or Corpo		-						
	Geophys				1333	W. 9th S	treet	<u>Upland</u> <u>CA</u> <u>91786</u>							
			nical Analyses Site Map		Signed		Address			Cit	у		<sup>tate</sup> 894686	Zip 6	
	Otner <u>L</u> litional infor				]		ensed Water	Well Contractor			Date Sig			cense Number	
	DEV/ 1/200				IE ADDITI	IONAL CDAC	E IC NEEDER	LICE NEVT CO	NICECUTIVE	VALUMDE					

		-	be used to view	and complete	e this form	. However,	software m	ust be purchas	sed to compl	ete, save	, and reus	e a saved f	form.		
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Page 5		of 6			V			tion Report							
· —			uster B Deep	Well			r to Instruction • e01303				Sta		mber/Si	ite Number	
		1 <u>05/23/2</u>				nded <u>6/1/</u>		20			Latitude	N		Longitudo	
			Bernardino				2011				Lautude	1	1 1	Longitude	
		011040		Permit D								APN/	ΓRS/Oth	her	
				gic Log							Wall	Owner			
Orio	ntation	<b>⊙</b> Verti		rizontal	OAngle	e Speci	fv	<b></b>	California	Danası			1.00		
	Method S		Cai OTTO	iizoiitai	Drilling		· y		<u>California</u>				Gam	ie	
	from Su			Des	cription				Address <u>4</u>	07 VV. I	_ine Stre			00511	
Feet		eet	Des	cribe material	, grain size	e, color, etc		City Bi	snop			Sta	ite <u>CA</u>	Zip <u>93514</u>	
124.7		(8	SC-SM) Dark	k greenish	gray (G	LEY1 3/1	) clayey	_			Well	Location	า		
			silty fine sar					Address Camp Cady, Mojave Trail							
125.0			CL) Dark gre				City Newberry Springs County San Bernardino								
125.8			SC-SM) Dark			LEY1 3/1	) clayey	,							
			silty fine sar	-		Deq. Min. Sec. Deq. Min. Sec.									
126.0			CL) Dark gre		(GLEY	1 3/1) silt	y sandy	Datum NAD83 Decimal Lat. 34.935029 Decimal Long116.613							
			clay (40/20/	40)				11	ook <u>0541</u>			$\cup$		el <u>19</u>	
126.6		(CL) Dark greenish gray (GLEY1 3/1) clay Township 10N Range 03E											Secti	ion <u>25</u>	
127.0		(8	SC-SM) Dark	k greenish	gray (G	LEY1 3/1	) clayey	(Skotob		ion Sk		printed )		Activity	
	silty fine sand (20/20/60)  (Sketch must be drawn by hand after form is printed.)  North  North  Modification/Repair														
128.0		((	CL) Dark gre	enish gray	(GLEY	1 3/1) silt	y clay					4		Deepen	
			(10/90)											Other	
128.5 (SC-SM) Dark greenish gray (GLEY1 3/1) clayey														Destroy Describe procedures and materials under "GEOLOGIC LOG"	
silty fine sand (30/30/40)															
131.0		(0	CL) Dark gre	1 3/1) cla							Planned Uses				
131.3		(8	SC-SM) Dark	k greenish	gray (G	LEY1 3/1							Vater Supply		
			silty fine sar	nd (30/30/4	10)			sst	SEE AT	ТАСНЕ	:П МАР	East		Domestic ☐ Public Irrigation ☐ Industria	
132.5		(5	SM) Dark gre	enish gray	/ (GLEY	1 3/1) silt	ty fine	West	Cathodic Protection						
			sand (20/80							_	Dewatering				
135.0		(0	CL) Dark gre	enish gray	(GLEY	1 3/1) cla							leat Exchange		
140.6		(5	SM) Dark gre	enish gray	(GLEY	1 3/1) silt	ty fine-	71 (						njection	
			medium coa	arse sand (	(20/80)								<b>⊙</b> №	Nonitoring	
142.0		((	CL) Dark gre	enish gray	(GLEY	1 3/1) fine	9-	O Remediation							
			medium coa	arse sandy	, silty cla	ay (30/30	/40)	O Sparging							
142.5		(5	SP-SM) Dark	greenish	gray (Gl	LEY1 3/1	) fine-	South O Test Well O Vapor Extraction							
			medium coa	_			•	rivers, etc. and attach a map. Use additional paper if necessary.							
144.5		((	CL) Dark gre	enish gray	(GLEY	1 3/1) cla	У	Please be accurate and complete.							
146.0		(5	SW) Dark gre	eenish gra	y (GLEY	′1 3/1) fin	ie-	Water Level and Yield of Completed Well							
			coarse sand	d with som	e gravel		7	Depth to	o first water	·			(Fee	et below surface)	
							/				(Fee	et) Date	Measi	ured 06/01/2011	
Total D	epth of E	Borina	185		_ ~	Feet			ed Yield *						
		/		- A										down(Feet)	
Total D	epth of t	Jompiete	d Well <u>184</u>		-	Feet			ot be repres						
				Cas	ings							Annul	ar Ma	terial	
	n from	Borehol		Mate	rial	Wall	Outside	Screen	Slot Size		th from	F		Description	
	face to Feet	Diamete (Inches)				(Inches)	S Diameter (Inches)	Type	if Any (Inches)		rface to Feet	Fil	II.	Description	
0	159	8	Blank	PVC Sch. 8	0	.276	2.75			0	2	Cement		Concrete	
159	179	8	Screen	PVC Sch. 8	0	.276	2.75	Milled Slots	0.020	2	139	Cement		Cement/bent. grou	
179	184	8	Blank	PVC Sch. 8	0	.276	2.75			139	154	Bentonite	9	Hydrated pellets	
			- 1							154	185	Filter Pag	ck	#2/12 graded sand	
			-						-			-			
										<u> </u>		<u> </u>			
		Attach	ments						Certificati						
	Geologic								t is complet	te and a	ccurate t	o the bes	t of my	knowledge and belief	
		nstruction			II .	Person,	Firm or Corpo	r Company forporation							
		sical Log(: er Chemi	s) cal Analyses		<u>1333</u>	W. 9th S	Address	Upland City State Zip							
			Site Map		Signed		. 1001000	694686							
		mation, if it e					ensed Water	Well Contractor			Date Si			cense Number	
DWP 109 DEV 1/2006									<del></del>						

*The free	Adobe Re	ader m	ay be used to	view	and complete	e this form	. However,	software m	ust be purch	nased to d	comple	ete, save,	and reus	e a saved	form.		
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Page 6		of	6			V		mpleti r to Instruction	on Report								
· —			Cluster B D	еер	Well			r to Instruction - e01303					Sta	te Well Ni	umber/S	Site Number W	
Date Wo							nded <u>6/1/</u>	2011					Latitude	1 1.1		Longitude	
			an Bernard								-			ADN	/TRS/Ot	har	
Permit N	umber <u>2</u>	01104	10172			ate <u>4/5/</u>	11				L					riei	
		-			gic Log									Owner			
	entation Method S		ertical C	) Hoi	rizontal	O Angle Drilling	-	ify	Name	Califo	rnia I	Departr	ment of	Fish an	<u>d Gam</u>	ne	
	from Su				Des	cription				Mailing Address 407 W. Line Street  City Bishop State CA zip 93514							
Feet		eet			cribe material	, grain size	e, color, etc			Bishop				St	ate <u>C</u>	A Zip <u>93514</u>	
147.5					enish gray	(GLEY	1 3/1) cla	yey fine-	Well Location								
4.40.0					1 (30/70)	(0) 5)	4.0/4)			Address Camp Cady, Mojave Trail  City Newberry Springs County San Bernardino							
148.2					enish gray	(GLEY	1 3/1) cla	ayey fine-	_    , -						-		
140 5			<b>+</b>		d (10/90)	1 2/1) ailt	v olov	Latitu	de <u>34</u>	<u> ;</u>	56 Min	<u>6</u>	N Longit	ude <u>1</u>	16 36 48 W Deg. Min. Sec.		
149.5				gre	enish gray	1 3/1) SIII	y ciay								cimal Long. <u>-116.6133</u>		
151.5	(20/80) (SW-SM) Dark greenish gray (GLEV1 3/1) fine-															cel 19	
101.0		(SW-SM) Dark greenish gray (GLEY1 3/1) fine- coarse sand with some silt and gravel														tion 25	
154.2								v clav				ion Ske				Activity	
	(Sketch must be drawn by hand after form is printed.)											printed.)		New Well			
155.0		enish gray	1 3/1) cla	╗			North				Modification/Repair O Deepen						
	.0 (ML) Dark greenish gray (GLEY1 3/1) clayey, sandy silt (30/30/40)															Other	
155.5															O	Destroy Describe procedures and materials	
	medium coarse sand															Describe procedures and materials under "GEOLOGIC LOG"	
157.5		enish gray		47							Planned Uses						
159.0	, , , , , , , , , , , , , , , , , , , ,															Vater Supply ]Domestic ☐ Public	
	clayey sand (30/10/60)  (SM) Dark greenish gray (GLEY1 3/1) silty fine									SEE	E AT	TACHE	D MAP	East	∥ ⊨	Irrigation Industria	
162.5					1 3/1) sili	ty fine	West					ш		Cathodic Protection			
405.0	sand (20/80)  (SM-SC) Dark greenish gray (GLEY1 3/1) silty															Dewatering	
165.0			-													Heat Exchange	
166.5					medium co enish gray				4L _							njection Monitoring	
167.5					enish gray eenish gray			-								Remediation	
107.0			coarse			y (OLL I	1 0/1) 1111									Sparging	
169.0					enish gray	(GLEY	1 3/1) cla	V	South O Test Well								
172.5					enish grav												
			sand		9		· ·		Please be accurate and complete.  Water Level and Yield of Completed Well								
179.0			(CL) Dark	gre	enish gray	(GLEY	1 3/1) silt	y clay									
179.5	185		(SW) Dar	k gre	eenish gra	y (GLEY	'1 3/1) fin	ne-coarse		to first v to Stati					(Fe	et below surface)	
			sand			- 1							(Fee	t) Date	Meas	ured <u>06/01/2011</u>	
Total D	epth of E	Boring	_18	35			Feet										
Total D	epth of C	Comple	ted Well 18	34		$\leq \Delta$	Feet									down(Feet)	
			_		Cas	ings			iviay	not be re	epres	entative	of a wel			aterial	
Deptl	n from	Borel	nole			ings	Wall	Outside	Screen	Slot	Size	Dept	h from	Annu	iai ivia	iteriai	
	face to Feet	Diam (Inch		!	Mate	riai	Thickness (Inches)	Diameter (Inches)	Type	if A	Any		rface to Feet	F	ill	Description	
0	159	8	Blank		PVC Sch. 80	)	.276	2.75	Ι	(IIICI	103)	0	2	Cement		Concrete	
159	179	8	Screen		PVC Sch. 8	0	.276	2.75	Milled Slot	s 0.02	20	2	139	Cement		Cement/bent. grou	
179	184	8	Blank		PVC Sch. 80	)	.276	2.75				139	154	Bentonit	ie	Hydrated pellets	
												154	185	Filter Pa	ick	#2/12 graded sand	
			$\overline{}$					-	-								
	<u> </u>																
	<u> </u>		hments			l the	n do roi an o	ط ممسئٹ دیا	at this ron				tement	0 th 0 h 0	at of ma	the autoday and halist	
	Geologic		on Diagram				Boart Lo	<u>ngyear C</u>	ompany	ort is col	inpiet	e and a	curate to	uie bes	or or 111)	y knowledge and belief	
	Geophys					1333	Person, W. 9th S	Firm or Corpo									
	Soil/Wate	er Che	mical Analy					Address	City State Zip								
			d Site Map			Signed		ensed Water	Well Contracto	or			Date Si		594680	6 cense Number	
Attach additional information, if it exists.  C-57 Licensed Water Well  DWR 188 REV 1/2006										ITIV/C: \	VALUADE		gri <del>c</del> u (	J-U1 L (	COLIDE LAGILIDEI		

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Page 1		of (	4		V	Vell Co	mpleti	ion Repo	ort						
			: Iuster B Interr	mediate W	ell		r to Instruction				Sta		ımber/Si	ite Number	
Date Wo						nded <u>6/1/</u>					Latitude	N		Longitude	
			n Bernardino				2011				Latitude		1 1		
Permit N	lumber <u>2</u>	<u>01104</u>	0173	Permit D	ate <u>4/5/</u>	/11		APN/TRS/Other							
			Geolo	gic Log							Well	Owner			
Ori	entation	O Ve		rizontal	OAngle	e Speci	ify	Name California Department of Fish and Game							
	Method _				Drilling			Mailing Address 407 W. Line Street							
	from Su		Dos	Des cribe material	cription								ate CA	Zip <u>93514</u>	
0	10 1		(ML) Pale bro					0.1.5				Locatio			
3.5			(SM-SW) Ver				ty fine-	Address	· Camp C	'adv M			''		
			coarse sand				-,	Address Camp Cady, Mojave Trail  City Newberry Springs County San Bernardino							
5.0			(CL) Light yel				lay with								
			some orang			, ,		Lalliude	Deq.	Min.	Sec.	N Longit	ude <u>-</u>	16 36 48 W Deq. Min. Sec.	
6.0			(SM-SW) Red		и (7.5YF	R 6/6) silt	y fine-							imal Long. <u>-116.6133</u>	
			coarse sand				-							el <u>19</u>	
6.4			(SM) Very pa	le brown (1	0YR 7/	4) fine sil	ty sand	Townsh	nip <u>10N</u>	Rang	e <u>03E</u>		Secti	ion <u>25</u>	
7.5			(CL) Olive bro	wn (2.5Y	5/3) silty	clay with	n some	(2)		ion Ske				Activity	
			orange mot	tling				(Sketch	must be drawr	North	fter form is	printed.)		lew Well	
11.0			(ML) Light bro	ownish gra	y (10YR	8 6/2) fine	sandy					4		Modification/Repair  Deepen	
			silt											Other	
13.0			(SM-SW) Pal			3) silty find	e-coarse							Destroy Describe procedures and materials under "GEOLOGIC LOG"	
			sand with so									~			
15.0			(ML) Pale bro	wn (10YR	6/3) cla	yey silt	4						Planned Uses		
17.5			Missing											Vater Supply  Domestic ☐ Public	
20.0			(SW) Light ye		YR 6/4) fi	ne-	West	SEE AT	TACHE	D MAP	ast		Irrigation Industria		
	_		medium coa					_				ш	II	Cathodic Protection	
20.6	_		(SW) Yellowis		10YR 5/	4) fine-m	edium							Dewatering	
	_		coarse sand		( (	(D a (1) (I		-						leat Exchange	
22.0			(SW) Light ye		wn (10)	YR 6/4) fi						njection			
00.5	-		medium coa		0)/D 0/0	· · · · · · · ·					Monitoring     Remediation				
22.5			(SW-SC) Pale				<u>e-</u>						O Sparging		
22.7			medium coa				21/21/	O Test Well							
23.7			(SC) Yellowis			4) Silty Cla	ayey	Ullustrate or describe distance of well from roads buildings fences							
25.0			fine-mediun (ML) Dark gra			1/2) mio	0000110	nd attach a map. ccurate and com	Use additiona plete.	Ise additional paper if necessary.  O Other					
25.0			silt	tylsii biowi	1(1011	4/2) 11110	aceous	Water Level and Yield of Completed Well							
27.5			(SW) Light br	ownish ara	v (10YF	2 6/2) fine	2-	Depth to first water (Feet below surface)							
27.0			medium coa		iy (1011	( 0/2) 11110		Depth to			(Foo	t) Data	Mooci	ured <u>06/01/2011</u>	
Total C	epth of E	Boring	110	aroo oarra	- 7	Feet								ured <u>00/01/2011</u>	
				_				Test Le	ngth		(Hou	ırs) Total	l Drawo	down(Feet)	
Total L	eptn of C	omplei	ed Well 109		-	Feet			ot be repres						
				Cas	ings							Annul	lar Ma	iterial	
	h from rface	Boreh Diame	IVne	Mate	rial	Wall	Outside s Diameter		Slot Size if Any		h from rface	Fi		Description	
	to Feet	(Inche				(Inches)	(Inches)	туре	(Inches)		to Feet		"	Description	
0	94	8	Blank	PVC Sch. 8		.276	2.75			0	2	Cement		Cement	
94	104	8	Screen	PVC Sch. 8		.276	2.75	Milled Slots	0.020	2	74	Cement		Cement/bent. grout	
104	109	8	Blank	PVC Sch. 8	0	.276	2.75			74	89	Bentonit		Hydrated pellets	
		<del>                                      </del>							-	89	110	Filter Pa	UK	#2/12 graded sand	
				1		+		<del>                                     </del>							
		Attoo	hmonte	1					Certificati	on Sta	tomont				
	Geologic		hments		I, the II	ndersigne	d. certify th						t of my	knowledge and helief	
			on Diagram			Boart Lo	<u>ngyear C</u>	y that this report is complete and accurate to the best of my knowledge and belief r Company							
	Geophys	ical Lo	g(s)		_1333	Person, W. 9th S	Firm or Corpo Street	<u>Upland</u> <u>CA</u> <u>91786</u>							
			nical Analyses				Address	- ,							
✓ Other <u>Detailed Site Map</u> Attach additional information, if it exists      C-57 Licensed Water Wel						ter Well Contractor Date Signed C-57 License Number									
Audul add	Attach additional information, if it exists.  C-57 Licensed Water V										Date Of	griou C	י טו בול	JOHNO HAITIBUT	

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Page 2		of	4			V			on Repo	ort			1 1	$\top$			
				ter B Intern	nediate We	ell		to Instruction				Sta		mber/Si	ite Number		
	rk Begar	-					nded <u>6/1/2</u>		23			Latitude	N		Longitude		
				Bernardino (								Latitudo					
				73									APN/	TRS/Oth	her		
				Geolo	gic Log							Well	Owner				
Ori	entation	<b>⊙</b> ∨	ertic:		izontal	OAngle	e Specif	y	Name (	California	Departn	nent of	Fish and	d Gam	ne		
Drilling	Method S	onic				Drilling	Fluid										
	from Su			Door	Des cribe material	cription			Mailing Address 407 W. Line Street  City Bishop State CA zip 93514								
37.5	io F	eet	(\$1	M) Dark gre					Oity _	Well Location							
01.0			$\overline{}$	nicaceous s				nd	\	Address Camp Cady, Mojave Trail							
40.0				M) Dark gra													
10.0				coarse sand		, i y only	Timo Timodi			try Newberry Springs County San Bernardino  Attitude 34 56 6 N Longitude 116 36 48  Dea. Min. Sec. Dea. Min. Sec.							
41.0			+ -	M) Grayish		YR 5/2)	silty fine-	coarse	Latitude	Deq.	Min.	Sec.	N Longiti		16 36 48 W Deg. Min. Sec.		
				and		0, _,	oyo		Datum_	NAD83	Decimal	Lat. 34	.935011	_ Dec	imal Long. <u>-116.6133</u>		
42.5			+	M-SC) Gray	ish brown	(10YR	5/2) siltv.	clavev	APN Bo	ok <u>0541</u>	Page	e <u>011</u>		Parc	el <u>19</u>		
			+	ine-medium		•	, - · <b>J</b> ,	,,	Townsh	ip <u>10N</u>	Rang	e <u>04E</u>		. Secti	ion <u>25</u>		
47.5			+	L) Dark gra			sandy, cla	avev silt			ion Ske				Activity		
49.5			+-	M-SC) Gray	• •				(Sketch	must be drawr	by hand at North	fter form is	printed.)	<b>⊙</b> N	lew Well		
			<del></del>	ine-medium			, ,		<b>ऻ</b> ├──		NOILII	<i></i>	4 4		Nodification/Repair  Deepen		
50.5			(SI	M) Grayish	brown (10	YR 5/2)	silty fine	sand							Other		
				50/50)	,	,								Οp	Describe procedures and materials		
51.5			(M	L) Grayish	brown (10)	YR 5/2)	fine sand	y silt					->/	_	Describe procedures and materials under "GEOLOGIC LOG"		
			$\overline{}$	30/70)		-							~		Planned Uses		
55.0			(SI	W) Light bro	ownish gra	y (10YF	R 6/2) fine	-coarse							Vater Supply		
			,	sand					ts.	SEE AT	TACHE	MAP	st		Domestic		
57.5			(CI	L) Brown (7	'.5YR 4/2)	clay			West	OLL / (I	7.0112	5 IVI/ (I	П		Cathodic Protection		
62.5			(M	L) Brown (7	7.5YR 4/3)	fine sar	ndy silt (5	0/50)							Dewatering		
63.2			(SI	M) Brown (7	7.5YR 4/3)	silty fin	e-medium	coarse							O Heat Exchange		
			S	and			_ 7								njection		
65.5			(SI	M-SC) Brov	vn (7.5YR	5/3) cla	3) clayey, silty fine-							_	Monitoring		
			С	coarse sand	1 (20/20/60	)									Remediation		
72.5			(M	L) Dark gra	y (10YR 4	(1) fine :	sandy silt	(50/50)							Sparging		
74.0			(CI	L) Dark gra	y (10YR 4/	1) silty,	fine-med	ium	South  South  Vapor Extraction								
			С	coarse sand	ly clay				rivers, etc. and attach a map. Use additional paper if necessary.								
75.5			(SI	M) Dark gra	y (10YR 4	/1) silty	fine-medi	ium	Please be accurate and complete.  Water Level and Yield of Completed Well								
			_	coarse sand											at halaw aurfaga		
76.5				L) Dark gra					Depth to	o first water o Static				_ (Fee	et below surface)		
77.5			(CI	L) Dark gre	enish gray	(GLEY	1 4/1) clay	У	Water L	evel 23		(Fee	et) Date	Meası	ured 06/01/2011		
Total D	epth of E	Boring		110			Feet		Estimated Yield * (GPM) Test Type Test Length (Hours) Total Drawdown								
Total D	epth of 0	Comple	eted	Well 109		$\langle \rangle$	Feet			-							
									"iviay no	t be repres	entative	or a wei					
Dent	h from	Bore	hole			ings	Wall	Outside	Screen	Slot Size	Dent	h from	Annul	ar ivia	iteriai		
Su	rface	Diam	neter	Type	Mate	rial	Thickness	Diameter	Туре	if Any	Sui	rface	Fil	il	Description		
0	to Feet 94	(Incl	nes)	Blank	PVC Sch. 80	`	(Inches)	(Inches) 2.75		(Inches)	0	to Feet	Cement		Cement		
94	104	8		Screen	PVC Sch. 8		.276	2.75	Milled Slots	0.020	2	74	Cement		Cement/bent. grout		
104	109	8		Blank	PVC Sch. 80		.276	2.75			74	89	Bentonite	<del></del>	Hydrated pellets		
											89	110	Filter Pag	ck	#2/12 graded sand		
		Atta	chm	nents					(	Certificati	on Stat	ement					
	Geologic	Log				I, the u	ndersigned	l, certify th	at this repor					t of my	knowledge and belief		
	Well Cor						Person, I	irm or Corpo	Company poration								
	Geophys					<u>1333</u>	W. 9th S	treet	Upland City State 2ip								
				al Analyses ite Map		Signed		Address	City State Zip 694686								
✓ Other Detailed Site Map  Attach additional information, if it exists.  Signed  C-57 Licensed Water						ensed Water											

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			Cluster B Inter	mediate W	ell.		to Instruction				Sta		mber/Si	ite Number	
		_	5/2011			nded <u>6/1/</u>					Latitude	N		Longitude W	
			an Bernardino								Latitudo				
Permit N	lumber <u>2</u>	01104	10173	Permit D	ate <u>4/5/</u>	11			L			APN/	TRS/Oth	ner	
			Geol	ogic Log							Well	Owner			
Ori	entation	<b>⊙</b> ∨€	ertical O Ho	rizontal	OAngle	e Speci	fy	Name (	California	Departr	nent of	Fish and	Gam	е	
	Method S		•		Drilling			Mailing	Address 4	07 W. L	ine Stre	eet			
	from Su		Des		cription grain size, color, etc  City Bishop										
80		001			4/1) silty fine-medium						Well Location				
			coarse san	-	, , , , , , , , , , , , , , , , , , , ,			Address	Camp (	adv M			•		
81.0			(CL) Dark gre	enish gray	(GLEY	1 4/1) cla	V	Address Camp Cady, Mojave Trail  City Newberry Springs County San Bernardino							
82.5			(ML) Dark gre					City Newberry Springs County San Bernardino  Latitude 34 56 6 N Longitude 116 36 48 W  Dea. Min. Sec.							
			sandy silt			,		Latitude	Deq.	Min.	Sec.	N Longitt	- and	Deg. Min. Sec.	
86.5			(CL) Dark gre	enish gray	(GLEY	1 4/1) silty	y clay							imal Long. <u>-116.6133</u>	
			(20/80)							_				el <u>19</u>	
87.5			(CL) Dark gre	enish gray	(GLEY	1 4/1) silt	y clay	Townsh	<sub>ip</sub> <u>10N</u>	Rang	e <u>04E</u>		Secti	ion <u>25</u>	
			(50/50)					(0)		ion Ske		a aire to al X		Activity	
90.0			(CL) Dark gre	enish gray	(GLEY	1 4/1) silty	y, fine	(Sketch	must be draw	North	fter form is	printed.)	Ø N	lew Well Iodification/Repair	
			sandy clay	(20/20/60)								4		Deepen	
91.0			(SM-SC) Dar	k greenish	gray (G	LEY1 4/1	) silty,							Other	
			clayey fine	•									OD	Destroy Describe procedures and materials under "GEOLOGIC LOG"	
91.5			(CL) Dark gre		(GLEY	1 4/1) silty	y, fine							Planned Uses	
			sandy clay	· ,											
92.0			(SM) Dark gr		(GLEY	1 4/1) silt	y fine							Vater Supply Domestic ☐ Public	
			sand (30/70	,				West	SEE AT	TACHE	O MAP	ast		Irrigation Industria	
92.5			(CL) Dark gre					_				ш	<b>O</b> C	athodic Protection	
93.5			(CL) Dark gre	enish gray	(GLEY	1 4/1) silt	y, fine	-						ewatering	
04.0			sandy clay		(0) 5)	4 4 4 4 \ 114		Heat Exc						leat Exchange	
94.0			(SM) Dark gr		(GLEY	1 4/1) SIII	y fine	41					_	•	
05.0			sand (40/60	,	. (CL EV	(GLEY1 3/1) silty fine								Ionitoring Lemediation	
95.0					(GLE )	1 3/1) SIII	y ime	71						parging	
96.3			sand (20/80 (CL) Dark gre		(GLEV	1 3/1) cla		b .		South				est Well	
98.3			(SM) Dark gr					Ullustrate or describe distance of well from roads buildings fences							
90.5			sand (30/7)		(GLL I	1 3/1) 5111	y iiie	rivers, etc. and attach a map. Use additional paper if necessary.  Please be accurate and complete.  O Other							
104.0			(CL) Dark gre	,	(GLEY	1 3/1) silt	v clav	Water Level and Yield of Completed Well							
101.0			(40/60)	Jornor gray	(OLL I	1 0/1/ 0110	y olay	Depth to	o first water	r			_ (Fee	et below surface)	
			(10/00)	1			<i>†</i>	Depth to	o Static		(Fee	t) Date	Measi	ired 06/01/2011	
Total D	Depth of E	Borina	110		_ ~	Feet		Water Level 23 (Feet) Date Measured 06/0 Estimated Yield * (GPM) Test Type						310d <u>00/01/2011</u>	
		J	ted Well 109	7										down(Feet)	
Total L	Depth of C	omple	ted Well 103		-	Feet		*May no	ot be repres	sentative	of a wel	l's long te	rm yie	ld.	
				Cas	ings							Annul	ar Ma	terial	
	h from rface	Boreh		Mate	rial	Wall Thickness	Outside	Screen Type	Slot Size if Any		h from rface	Fil	il	Description	
	to Feet	(Inch				(Inches)	(Inches)	Турс	(Inches)		to Feet				
0	94	8	Blank	PVC Sch. 8		.276	2.75			0	2	Cement		Cement	
94	104	8	Screen	PVC Sch. 8		.276	2.75	Milled Slots	0.020	2	74	Cement		Cement/bent. grout	
104	109	8	Blank	PVC Sch. 8	)	.276	2.75			74 89	89	Bentonite		Hydrated pellets #2/12 graded sand	
									+	OB	110	Filter Pac	,r\	#Z/ 12 graueu sano	
										1	<u> </u>				
		Attor	hmonto				<u> </u>		Cortificati	ion Stat	lomont				
	Geologic		hments		I, the m	ndersigner	d. certify th		Certificati				t of my	knowledge and helief	
			on Diagram			Boart Lo	ngvear C	that this report is complete and accurate to the best of my knowledge and belief Company							
	Geophys				_1333	W. 9th S	Firm or Corpo	<u>Upland CA 91786</u>							
			mical Analyses		Signed		Address			City	,	St	ate	Zip	
Other Detailed Site Map Attach additional information, if it exists.  Signed C-57 Licensed W						ensed Water	Well Contractor			Date Si		94686	cense Number		
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Page 4		of _	4		V		mpleti	on Repo	ort				<u> </u>	
Owner's	Well Nur	mber <u>C</u>	luster B Interr			No.	e01303	29			Sta	ite Well Nu N	mber/Si	ite Number
			5/2011			ided <u>6/1/2</u>	2011				Latitude			Longitude
			n Bernardino 0173									APN/	TRS/Oth	her
Permit N	umber <u>z</u>	.01104			ale <u>4/3/</u>	11					\Mall	Owner		
Orio	entation	<b>⊙</b> \/e		ogic Log rizontal	OAngle	e Specif	fv		California	Donarto			1 Com	
	Method S		Tilicai OTIO	nzontai	Drilling I		· y						Gam	ie
Depth	from Su	ırface			cription			Mailing A	Address <u>4</u>	07 VV. L	ine Str		CΔ	Zip <u>93514</u>
Feet 105	to F			cribe material				City Di	shop		\A/ - II			<u>Zip 33314</u>
103			(SM) Dark gre sand (30/70		(GLET	1 3/1) 511	y iiie	A dalara sa	Camp C	'ody M		Location	1	
107.2			(CL) Dark gre	,	(GLEY	1 3/1) silt	v clav						untu S	San Bernardino
			(30/70)	<u> </u>	(	,	,,							
107.5			(SM) Dark gre	eenish gray	(GLEY	1 3/1) silt	y fine							16 36 48 W Deq. Min. Sec.
			sand (30/70	))										imal Long. <u>-116.6133</u>
108.5			(CL) Dark gre	enish gray	(GLEY	1 3/1) silty	y clay			_				el <u>19</u>
			(30/70)					Townsh	ip <u>10N</u>				Secti	
108.8			(SM) Dark gre		(GLEY	1 3/1) silt	y fine	(Sketch	Locat must be drawr	ion Ske		printed.)		Activity lew Well
100.5	440		sand (30/70	,	(0) 5) (	4.0/4) '!!				North		,	ÓΜ	Modification/Repair
109.5	110		(CL) Dark gre	enish gray	(GLEY	1 3/1) silty	y clay	-11 /				1		O Deepen
			(20/80)					- 1					$\bigcirc$ D	Other Destroy
								+					U	Describe procedures and materials under "GEOLOGIC LOG"
													_	Planned Uses
														Vater Supply_
								- I ts	SEE ATT	ΓΔΟΗΕΙ	Э МАР	st		Domestic ☐ Public Irrigation ☐ Industrial
								West	OLL /(I	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	J 1717 (1	Е		Cathodic Protection
													_	Dewatering
													Он	leat Exchange
							$\overline{}$	41						njection
					$\smile$	_								Monitoring Remediation
					-		-							Sparging
					$\overline{}$	_		1		South				est Well
					•	<del>-</del>	-	Illustrate or d	escribe distance and attach a map.		pads, building	s, fences,		apor Extraction
				*			•	Please be ac	id attach a map. curate and com	plete.	ai paper if ned	essary.	00	Other
									evel and					
					<b>&gt;</b>	0		Depth to	first water				_ (Fee	et below surface)
					- \			Water L	evel <u>23</u>					ured 06/01/2011
Total D	epth of E	Boring	110		_~~	Feet								
Total D	epth of C	Complet	ed Well 109		$\langle \rangle$	Feet								down(Feet)
				0				"May no	t be repres	sentative	or a wei			
Dept	h from	Boreh	ole _		ings	Wall	Outside	Screen	Slot Size	Dept	h from	Annul	ar ivia	teriai
Sui	face	Diame	ter lype	Mate	rial	Thickness	Diameter	Туре	if Any	Su	rface	Fil	l .	Description
0	to Feet 94	(Inche	Blank	PVC Sch. 80	)	(Inches)	(Inches) 2.75		(Inches)	0	to Feet	Cement		Cement
94	104	8	Screen	PVC Sch. 8		.276	2.75	Milled Slots	0.020	2	74	Cement		Cement/bent. grout
104	109	8	Blank	PVC Sch. 80	)	.276	2.75			74	89	Bentonite	÷	Hydrated pellets
										89	110	Filter Pag	ck	#2/12 graded sand
										<u> </u>				
<u></u>										<u> </u>				
	Coalcat		hments		I the in	ndersians	1 cortifu th		Certificati				t of m	knowledge and belief
	Geologic Well Cor		n Diagram		Name .	Boart Loi	navear C	ompany	i is comple	and al	ouralt l	o uie bes	. Or illy	Milowieuge and belief
	Geophys				1333	Person, I W. 9th S	Firm or Corpo	oration	Upla	nd		C	<u>A</u> 9	91786
	Soil/Wat	er Chen	nical Analyses				Address			City	'	St	ate	Zip
	Other <u>L</u> litional infor		I Site Map		Signed		ensed Water	Well Contractor			Date Si		94686 -57 Lic	cense Number
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				ter B Shall	ow Well			to Instruction • e01303				Sta		mber/Si	ite Number
		-		)11			nded <u>6/1/</u>					Latitude	N		Longitude
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				74									APN/	ΓRS/Oth	her
				Geolo	gic Log							Well	Owner		
Ori	entation	<b>⊙</b> ∨	/ertica		izontal	OAngle	e Speci	fy	Name (	California	Departr			I Gam	ne
Drilling	Method S	Sonic				Drilling	Fluid			Address 4					
	from Su		<b>:</b>	Door		cription				shop				te CA	<u>zip</u> <u>93514</u>
0	10 F	eet	[/N/I	L) Pale bro	cribe material				Oity _				Location		
3.5				<u> </u>	-			v fine-	A .1.1	Camp C	Cody M			<u>'</u>	
0.0			1	oarse sand		•	•	.y 11110						9	San Bernardino
5.0				_) Light yell				av with							
0.0			+	ome orang		(=:0:0/	o, o, o.	<u>~,</u>	Latitude	Deg.	Min.	Sec.	N Longitu		16 36 48 W Deg. Min. Sec.
6.0				и-SW) Red		v (7.5YF	R 6/6) silt	v fine-	Datum_	NAD83	Decimal	Lat. <u>34</u>	.934995	_ Dec	imal Long. <u>-116.6133</u>
-				arse sand v	-			,	APN Bo	ok <u>0541</u>	Page	e <u>011</u>		Parc	el <u>19</u>
6.4				И) Very pal			4) fine silt	v sand	Townsh	ip <u>10N</u>	Rang	e <u>03E</u>		Secti	ion <u>25</u>
7.5				_) Olive bro						Locat	ion Ske	etch			Activity
				range mott		· · · · · · · · · · · · · · · · · · ·			(Sketch	must be draw	n by hand a	fter form is	printed.)	<b>⊙</b> N	lew Well
11.0			+	L) Light bro		/ (10YR	6/2) fine	sandy	<b>ऻ</b> ──		NOILII	<i></i>	4 4		Nodification/Repair  Deepen
			1	ilt											Other
13.0			(SN	И-SW) Pale	e brown (1	OYR 6/3	s) silty fine	e-coarse						Οp	Describe procedures and materials
			+	and with so	-								~		Describe procedures and materials under "GEOLOGIC LOG"
15.0			(MI	L) Pale bro	wn (10YR	6/3) cla	yey silt						-		Planned Uses
17.5			Mis	ssing											Vater Supply
20.0			(SV	N) Light ye	llowish bro	wn (10\	/R 6/4) fir	ne-	ts.	SEE ATT	ACHE	MAP	st		Domestic
			n	nedium coa	rse sand			7	West	OLL / (I	, (01.122	. 1415 (1	Е		Cathodic Protection
20.6			(SV	N) Yellowis	h brown (1	0YR 5/	4) fine-me	edium							Dewatering
			С	oarse sand											leat Exchange
22.0			(SV	N) Light ye	llowish bro	wn (10)	/R 6/4) fir	ne-							njection
			n	nedium coa	rse sand										Monitoring
22.5			(SV	N-SC) Pale	brown (10	YR 6/3	) silty fine	<del>)</del> -							Remediation
				nedium coa											Sparging Test Well
23.7			(SC	C) Yellowish	h brown (1	0YR 5/4	4) silty cla	iyey			South				apor Extraction
				ne-medium			~		rivers, etc. ar	lescribe distance nd attach a map.	Use additiona	oads, building al paper if nec	s, fences, essary.		Other
25.0			(MI	L) Dark gra	yish browr	(10YR	4/2) mica	aceous		_evel and		of Com	plotod V	Vall	
				ilt				_		o first wate					et below surface)
27.5			1	N) Light bro		y (10YF	R 6/2) fine	-	Depth to	Static					,
			-	nedium coa	rse sand				Water L	evel <u>25</u>		(Fee	et) Date	Meası	ured 06/01/2011
Total D	Depth of E	Boring		53			Feet								
Total D	epth of 0	Comple	eted \	Well <u>52</u>		$^{\prime}$	Feet			ngth ot be repres					down(Feet)
				_	Coo				IVIAY IIC	t be repres	senialive	oi a wei			
Dept	h from	Bore	hole	72		ings	Wall	Outside	Screen	Slot Size	Dept	h from	Annul	ar ivia	iteriai
Su	rface	Diam	neter	Туре	Mate	rial	Thickness	Diameter		if Any	Su	rface	Fil	I	Description
0	to Feet	(Incl	hes)	Blank	PVC Sch. 80	`	(Inches)	(Inches)		(Inches)	Peet 0	to Feet	Cement		Cement
37	47	8		Screen	PVC Sch. 8		.276	2.75	Milled Slots	0.020	2	32	Bentonite	<del></del>	Hydrated pellets
47	52	8		Blank			.276	2.75			32	53	Filter Pag	ck	#2/12 graded sand
				7											J
		Atta	chm	ents					(	Certificat	ion Stat	tement			
	Geologic	Log							nat this report					t of my	knowledge and belief
	Well Cor					l '	Boart Lo	Firm or Corpo	oration						
	Geophys					<u>1333</u>	W. 9th S	treet		<u>Upla</u>					91786
	Other <u>D</u>			al Analyses te Map		Signed		Address			City	,		<sup>ate</sup> 94686	Zip 6
	ditional infor							ensed Water	Well Contractor			Date Si			cense Number

*The free	Adobe Re	eader m	nay be	used to view	and complete	e this form	. However,	software m	nust be purchas	sed to compl	ete, save	, and reus	se a saved f	form.	
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Page 2		of	2			V	Vell Co	mplet to Instruction	ion Repo	ort				TI	
Owner's	Well Nu	mber	Clus	ter B Shall	ow Well			• e01303				Sta	ate Well Nu N	mber/Si	ite Number
				11			nded <u>6/1/</u>	2011				Latitude			Longitude
				ernardino ( '4									APN/	TRS/Oth	her
Permit N	iumber <u>2</u>	20110	4017			ale <u>4/3/</u>	11		-			Wal	I Owner		
Ori	entation	@\/	/ertics		gic Log rizontal	OAngle	e Speci	fv	-	California	Donorte				
	Method S		Ortioc	21 01101	12011(4)	Drilling		· y		<u>California</u>				<u>ı Gam</u>	le .
	from S			_		cription				Address <u>4</u> shop					Zip <u>93514</u>
37.5	to F	eet	(C)		cribe material				City Di	31100					<u>Zip 30014</u>
37.0				//) Dark gre nicaceous s		_		nd	$\dashv$	Comp	Sady M		Location	1	
40.0			_	//i) Dark gra						Camp C				. 0	Can Bornardina
40.0				oarse sand		/ 1 / Silty	nne mea	idili							San Bernardino
41.0				//) Grayish		YR 5/2)	silty fine-	coarse	Latitude	9 <u>34</u> Deg.	00 Min.	Sec.	N Longiti	ide <u>T</u>	16 36 48 W Dea. Min. Sec.
11.0				and	D10W11 (10	111 0/2/	Only in o	000.00							imal Long. <u>-116.6133</u>
42.5				/I-SC) Gray	ish brown	(10YR	5/2) silty,	clayey							el <u>19</u>
			+	ne-medium		•			Townsh	ip <u>10N</u>	Rang	<sub>je</sub> <u>03E</u>		. Secti	ion <u>25</u>
47.5			(ML	_) Dark gra	y (10YR 4	/1) fine	sandy, cla	ayey silt			ion Sk				Activity
49.5			(SN	/I-SC) Gray	ish brown	(10YR	5/2) silty (	clayey	(Sketch	must be draw	n by hand a North	after form is	printed.)		lew Well
			fi	ne-medium	n coarse sa	and							4 4		odification/Repair Deepen
50.5			(SN	/I) Grayish	brown (10	YR 5/2)	silty fine	sand	/						Other
			<b>—</b> `	50/50)											Destroy Describe procedures and materials under "GEOLOGIC LOG"
51.5	53			_) Grayish	brown (10)	YR 5/2)	fine sand	ly silt							Planned Uses
			(3	30/70)											Vater Supply
								-							Domestic Public
-			-						West				East		Irrigation Industrial
-			-						_   >						Cathodic Protection
-						-		-							ewatering
						ďΥ	-		F1 /						leat Exchange njection
									41.					_	flection flonitoring
						_								_	Remediation
								7							sparging
									1		South				est Well
							$\overline{}$		Illustrate or d	lescribe distance nd attach a map.	of well from r	oads, building	gs, fences, cessarv.		apor Extraction Other
									Please be a	ccurate and com	plete.				
										Level and			•		- t h - l
								<u> </u>	— Depth to	o first wate o Static				_ (Fee	et below surface)
					_	_4									ured 06/01/2011
Total D	Depth of E	Boring		53			Feet			ed Yield *					
Total D	Depth of (	Comple	eted \	Nell <u>52</u>		<u> </u>	Feet			ngth ot be repres					down(Feet)
				_	Cas	ings			Iviay ne	or be repres	- Cintative	, or a we	Annul		
Dept	h from	Bore	hole	Time	Mate		Wall	Outside	Screen	Slot Size	Dept	th from	Ailliui	ai ivia	Iteriai
	rface to Feet	Diam (Inch		Туре	Wate	IIdi	Thickness (Inches)	Diameter (Inches)	т Туре	if Any (Inches)		rface to Feet	Fil	1	Description
0	37	8	103)	Blank	PVC Sch. 80	)	.276	2.75		(mones)	0	2	Cement		Cement
37	47	8		Screen	PVC Sch. 8	)	.276	2.75	Milled Slots	0.020	2	32	Bentonite	Э	Hydrated pellets
47	52	8		Blank			.276	2.75			32	53	Filter Pad	ck	#2/12 graded sand
				/											
-	-		`	_						+	<b> </b>	+	-		
	<u> </u>										<u></u>	<u> </u>	<u> </u>		
	0		chm	ents		1 44-	ndore!	d nemiteral		Certificati				t of	denouglades as the first
	Geologic Well Cor		ion D	iagram			Boart Lo	ngyear C	company	i is comple	ie and a	ccurate t	to the desi	t or my	knowledge and belief
	Geophys							Firm or Corp		Upla	ınd			:A <u>s</u>	91786
	Soil/Wat	er Che	emica	l Analyses				Address		<u>Opia</u>	City	у	St	ate	Zip
	Other _					Signed		oneod Mater	Well Contractor			Data C		94686	
Attach add	ditional infor	mation, i	if it exis	its.		<u> </u>	U-5/ LIC	eriseu vvater	vven contractor			Date Si	igned C	-5/ LIC	cense Number

		-	be used to viev	v and complete	e this form	. However,	software m	oust be purchas	sed to compl	ete, save	, and reus	e a saved	form.	
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Page 1		of 5			V			ion Repo	ort					
			ıster C Dee	o Well			to Instruction • e01303				Sta	te Well Nu	ımber/Si	ite Number
		06/04/2				nded <u>6/7/2</u>	2011				Latitude			Longitude
			Bernardino									Δ DNI/	TRS/Oth	her
Permit N	lumber <u>2</u>	011040		Permit D	ate <u>4/5/</u>	11		-			\A/ II			
0		(A) / a = t		ogic Log	O A == ==1	- 0	,	4				Owner		
	Method S		icai Onc	rizontal	O Angle Drilling	-	ry		<u>California</u>				<u>ı Gam</u>	<u>1e</u>
	from Su			Des	cription			Mailing	Address <u>4</u>	<u>07 W. I</u>				00544
	to F			scribe material				City BI	shop					A z <sub>ip</sub> <u>93514</u>
0		(8	SW) 10YR 5		h browr	fine-coa	rse sand	4				Locatio	n	
0.5			with minor		***	<i>.</i>	1 (00 (00)	11	Camp C					
6.5	-		SM) 10YR 7											San Bernardino
7.5	-	((	CL) 10YR 4/	2 Dark gra	yısn bro	wn silty c	ıay	Latitude	34	<u>56</u>	10	N Longite	ude <u>1</u>	16 35 59 W Deg. Min. Sec.
0.5		10	(40/60)	/O. D	16. 6									cimal Long. <u>-116.5998</u>
8.5		(3	SM) 10YR 5		ity fine-	medium d	coarse							cel 19
10.0		- //	sand (30/70	,	116	-1			ip <u>10N</u>					
10.0		(3)	SM-SC) 10Y	R 5/3 Brov	vn siity,	ciayey fin	e sana	TOWNSH		ion Ske			. 3601	Activity
11.5		- //	(20/10/70)	2 Prous oi	ltv. olov. i	(20/00)		(Sketch	must be drawr			printed.)	<b>⊙</b> N	New Well
12.5			CL) 10YR 5/						_	North			OM	/lodification/Repair
15.0		<u> </u>	SP) 10YR 7/					-11 /						O Deepen O Other
13.0		(	CL) GLEY 1 clay (20/80		reemsn	gray Suit	Silty	- 1					OD	Destrov
16.5		//	Clay (20/60 SC) GLEY 1		roonich	arov olov	ov fino	+					, c	Describe procedures and materials under "GEOLOGIC LOG"
10.5		(,	sand (50/50		reemsn	gray clay	rey line							Planned Uses
17.5		((	CL) GLEY 1		raanish	aray day							ΟV	Vater Supply
25.0			ML) GLEY 1					- 1				+		Domestic Public
23.0		(1	(50/50)	3/ I Daik g	i eei iisi i	gray clay	ey siit	West	SEE AT	ГАСНЕ	D MAP	Eas		Irrigation Industria
28.0		((	CL) GLEY 1	3/1 Dark n	reenish	gray clay								Cathodic Protection
28.5			SM) GLEY 1											Dewatering
20.0			sand (30/70		greeriisii	gray Silty	/ IIIIC	-11 /						leat Exchange
30.0			SW) GLEY '	,	rreenish	aray fine	-medium	<del>,</del> []						Monitoring
00.0		- (	coarse san			r gray iiiic	modium							Remediation
32.0		((	CL) GLEY 1			gray fine	-medium							Sparging
02.0		- (	coarse san				modium	<i>b</i>		South				est Well
32.5		(9	SC) GLEY 1	,			ev fine-	Illustrate or d	lescribe distance	of well from r	oads, building	s, fences,		/apor Extraction
02.0		10	medium co			gray olay	oy iiio	Please be a	nd attach a map. ccurate and com	plete.	ai paper ii ned	essary.	00	Other
32.8		(5	SW) GLEY 1		,	gray fine	e-medium		_evel and					
			coarse san			3 - 7	7	Depth to	first water				(Fee	et below surface)
							/	Depth to	evel 24		(Fee	t) Date	Measu	ured 06/08/2011
Total D	Depth of E	Boring	205		_~	Feet								
Total	enth of (	Complete	d Well 200	-		— Feet								down(Feet)
Total	optil of t	Jonnpiete		$\rightarrow$	$-\Box$			*May no	t be repres	entative	of a wel	l's long te	erm yie	eld.
				Cas	ings							Annul	ar Ma	iterial
	h from rface	Borehol Diamete		Mate	rial	Wall Thickness	Outside Diameter	Screen Type	Slot Size if Any		th from rface	Fi	.II	Description
	to Feet	(Inches)	1	D) (0, 0, 1, 0		(Inches)	(Inches)	<u> </u>	(Inches)	Feet 0	to Feet	Cement		Congrete
0 175	175 195	8	Blank Screen	PVC Sch. 8 PVC Sch. 8		.276 .276	2.75	Milled Slots	0.020	2	145	Cement		Concrete Cement/bent. grout
195	200	8	Blank	PVC Sch. 8		.276	2.75	Willied Olots	0.020	145	170	Bentonite		Hydrated pellets
133	200	U	Diame			.210	2.70			170	200	Filter Pa		#2/12 graded sand
	<u> </u>		- ) "							200	205	Fill		Native Cuttings
														J
		Attach	ments						Certificati	on Sta	tement			
	Geologic							nat this repor				o the bes	t of my	knowledge and belief
			Diagram			Boart Loi		ompany	·					-
		sical Log(			<u>1333</u>	W. 9th S	treet	Janon	<u>Upla</u>					91786
			cal Analyses		Signed		Address			City	у		<sup>tate</sup> 894686	Zip 6
		mation, if it e	Site Map		J.ig.100		ensed Water	Well Contractor			Date Si			cense Number
	DEV. 4/6													

*The free	Adobe R	eader m	nay be	e used to view	and complet	e this form	. However,	software m	ust be purchas	sed to compl	ete, save	e, and reus	e a saved	form.	
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Page 2		of	5			V			on Repo	ort			1 1		
				ter C Deep	Well		Refe	r to Instruction • e01303	n Pamphlet <b>32</b>			Sta		mber/Si	ite Number
		_		)11			nded <u>6/7/</u>					Latitude	N		Longitude
				<u>Bernardino (</u> 75									APN/	TRS/Oth	ner
Citilitati	Tarribor _				gic Log	<u>., e, </u>	•					Well	Owner		
Ori	entation	<b>⊙</b> ∨	ertica		rizontal	OAngle	e Speci	fy	Namo (	California	Denart			d Gam	Α
	Method S					Drilling	-			Address <u>4</u>				<u> </u>	
	from S			D		cription			City Bi	shop	OT VV.			to CA	<u>zip 93514</u>
35	to F	-eet	(SC	C) 10YR 5/	cribe material				Oity				Locatio		ip
				and (30/70		aycy IIII	C mcaian	ii coarse	Addross	S Camp C	adv M				
36.8				L) 10YR 5/3	•	ne-medi	um coars	e sandy	1 1					unty S	an Bernardino
			1	lay (30/70)											
38.0			(SC	C) 10YR 5/3	3 Brown cl	ayey fin	e-mediur	n coarse	1 1						16 35 59 W Deq. Min. Sec.
			S	and (40/60	)										imal Long. <u>-116.5998</u>
40.5			(CI	L) 10YR 5/3	Brown fir	ne-medi	um coars	e sandy							el <u>19</u>
			+	lay (20/80)					Townsh	ip <u>10N</u>				. Secti	
41.5			<u> </u>	C-SM) 10Y	R 5/3 Brov	n claye	y, silty fin	e sand	(Sketch	Locat must be drawr	ion Sk		printed.)		Activity lew Well
			,	30/30/40)					— (Ontoion	maer se aram	North		printed.)		lew vveii lodification/Repair
42.5			_	N) 10YR 5/		ne-med	ium coars	se sand	-11 /				7 4		Deepen .
42.0			+	vith minor s			: 14 / 40/	00)	-11 -1						Other estroy
43.0 44.3			+ -	L) 10YR 5/3				-	+					) _	Describe procedures and materials under "GEOLOGIC LOG"
44.3				L) 10YR 5/3 30/30/40)	DIOMII III	ie sandy	, Silly Cla	ıy							Planned Uses
45.8			<b>—</b> `	L) 10YR 5/	3 Brown cl	avev sili	1 (20/80)							O v	Vater Supply
46.8			+ -	L) 10YR 5/3						2			#		Domestic Public
47.5			_	M) 10YR 5/				coarse	West	SEE AT	ACHE	D MAP	East		Irrigation Industria
			_	and (20/80		,								_	athodic Protection
48.1			+	L) 10YR 5/3	•	ty clay (	(20/80)	7							ewatering leat Exchange
50.0			_	L) 10YR 5/				silt	71 (						njection
			(;	30/20/50)										_	lonitoring
51.0			(CI	L) 10YR 5/3	Brown cl	ay									emediation
52.5				C) 10YR 5/3	3 Brown cl	ayey fin	e-coarse	sand							parging est Well
			(;	30/70)					_		South				apor Extraction
54.5			+ -	L) 10YR 5/3				_ `	rivers, etc. ar	lescribe distance of nd attach a map. ccurate and com	Use addition	roads, building nal paper if ned	s, fences, cessary.		other
55.0			+ -	L) GLEY1 4				some		Level and		of Com	nleted V	Vell	
00.0			+	ine-medium				_		o first water					et below surface)
60.0			(CI	L) 10YR 3/2	2 Very dar	k grayisi	n brown d	clay	Depth to	o Static				_ `	,
Total	South of I	Darina		205	_	$\rightarrow$	Foot								ured <u>06/08/2011</u>
	Depth of I	·		205	-		Feet								down(Feet)
Total E	Depth of (	Comple	eted	Well <u>200</u>	$\rightarrow$	$\sim$	Feet			ot be repres					
					Cas	ings							Annul	ar Ma	terial
Su	h from rface	Bore	eter	Туре	Mate	rial		Outside Diameter	Screen Type	Slot Size if Any	Si	th from	Fi	II	Description
0	to Feet	(Inch	ies)	Blank	PVC Sch. 8	0	(Inches) .276	(Inches) 2.75		(Inches)	0	to Feet	Cement		Concrete
175	195	8		Screen	PVC Sch. 8		.276	2.75	Milled Slots	0.020	2	145	Cement		Cement/bent. grou
195	200	8	P	Blank	PVC Sch. 8	0	.276	2.75			145	170	Bentonite	е	Hydrated pellets
											170	200	Filter Pa	ck	#2/12 graded sand
	1		ν.								200	205	Fill		Native Cuttings
			chm	ents		Lither		d a suit of		Certificati				(	Landada and hallafa
	Geologic Well Cor		ion F	liagram		i, the ui	Boart Lo	<u>ngyear C</u>	ompany	t is complet	e and a	ccurate t	o tne bes	t of my	knowledge and belief
	Geophy					ll '		Firm or Corpo		Upla	nd			;A 9	91786
	Soil/Wat	er Che	mica	al Analyses				Address		<u></u>	Cit	ty	Si	ate	Zip
	Other _					Signed		ensed Mater	Well Contractor			Dots O		94686	cense Number
Attach add	ditional info	mation, i	t it exis	SIS.		<u> </u>	0-37 LIC		Jonitaciol			Date Si	gnea C	,-5/ LIC	CHSC INUITIDEL

*The free	Adobe Re	eader ma	ay be used to view	v and complet	e this form	. However,	software m	ust be purchas	sed to compl	ete, save	e, and reus	e a saved	form.	
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Page 3		of	5		V			on Repo	ort			1 1		
			Cluster C Dee	o Well		Refer <b>No</b> .	to Instruction • e01303	n Pamphlet <b>32</b>			Sta		mber/Si	ite Number
Date Wo						nded <u>6/7/2</u>					Latitude	N		Longitude
Local Pe	rmit Age	ncy <u>Sa</u>	an Bernardino											
Permit N	lumber <u>2</u>	<u>201104</u>	0175	Permit D	ate <u>4/5/</u>	11		<u>.                                      </u>	L			APN/	TRS/Oth	ner
				ogic Log							Well	Owner		
	entation		ertical O Ho	rizontal	OAngle	-	fy	_ Name <u>(</u>	California	Depart	ment of	Fish and	d Gam	е
	Method S			Dos	Drilling cription			Mailing	Address 4	07 W.	Line Str			
		eet	Des	scribe materia				City Bis	shop			Sta	<sub>tte</sub> <u>CA</u>	<u>Zip 93514</u>
65			(CL) GLEY1	4/1 Dark gı	eenish (	gray clay;	some				Well	Locatio	n	
			fine-mediur						Camp C					
72.0			(SM) GLEY1	4/1 Dark g	reenish	gray fine	silty							an Bernardino
			sand					Latitude	34	56	10	N Longitu	ude <u>1</u>	16 35 59 W Deg. Min. Sec.
73.0			(CL) GLEY1		eenish (	gray fine s	sandy							imal Long. <u>-116.5998</u>
74.5			clay (30/70											el <u>19</u>
74.5 75.5			(SP) GLEY1				sand		ip 10N					
85.0			(CL) GLEY1 (SM) GLEY1			<u> </u>	fino	Townsh		ion Sk			0000	Activity
65.0			sand (40/60		reemsn	gray Silly	IIIIE	(Sketch	must be drawn	by hand		printed.)	<b>⊙</b> N	lew Well
86.0			(CL) GLEY1	,	eenish (	aray clay		<b>∃</b>		North	-	-	ŎМ	lodification/Repair
90.0			(SC) GLEY1				ev fine-	11 /				. 1		O Deepen O Other
00.0			coarse san		COINCIT	gray olay	oy iiio	1 4					OD	estroy
92.0			(CL) GLEY1	, ,	eenish o	arav clav						->/		Describe procedures and materials under "GEOLOGIC LOG"
92.5			(SC) GLEY1			<u> </u>	ey fine-							Planned Uses
			coarse san											Vater Supply
95.0			Sample cann	ot be recov	ered (di	riller comi	ment:	st	SEE AT	тлсы		East		Domestic ☐ Public Irrigation ☐ Industria
			probably re	latively hig	h sand c	content)		West	SEL AT	IACIIL	LD IVIAF	Е		athodic Protection
105.0			(SM) GLEY1	4/1 Dark g	reenish	gray silty	fine-							ewatering
			medium co											leat Exchange
108.0			(SM) GLEY1		reenish	gray silty	fine	41 (					_	njection
			sand (50/50	,										Monitoring
109.0			(CL) GLEY1											temediation parging
111.3			(SM) GLEY1		reenish	gray silty	fine							est Well
110.0			sand (30/70			- 11		Illustrate or d	lescribe distance	South	roads, building	s. fences.	O V	apor Extraction
112.0			(CL) GLEY1	4/1 Dark gi	eenish g	gray silty	cıay	rivers, etc. ar	nd attach a map.	Use addition	nal paper if neo	essary.	00	other
112.5			(30/70) (SM) GLEY1	1/1 Dark a	roonich	arov oilty	fino	Water I	Level and	Yield	of Com	pleted V	Vell	
112.3			sand (30/70		reemsn	gray Silly	ille	Depth to	o first water			•	(Fee	et below surface)
			Sand (50/7)	J)	-		<i>)</i>	Depth to			(Foo	ot) Doto	Magai	ured 06/08/2011
Total C	Depth of E	Roring	205	_	- 7	Feet								ned <u>00/00/2011</u>
														down(Feet)
I otal L	epth of C	Jomple	ted Well 200		$\rightarrow$	Feet			ot be repres					
				Cas	ings							Annul	ar Ma	terial
	h from rface	Boreh		Mate	rial	Wall	Outside Diameter	Screen Type	Slot Size if Any		th from	Fi	II .	Description
Feet	to Feet	(Inch				(Inches)	(Inches)	Турс	(Inches)	Feet	to Feet			
0	175	8	Blank	PVC Sch. 8		.276	2.75			0	2	Cement		Concrete
175	195	8	Screen	PVC Sch. 8		.276	2.75	Milled Slots	0.020	2	145	Cement		Cement/bent. ground
195	200	8	Blank	PVC Scn. 8	U	.276	2.75			145 170	170 200	Bentonite Filter Pa		Hydrated pellets #2/12 graded sand
			·						+	200	205	Fill		Native Cuttings
														i taure eatinge
		Attac	hments						Certificati	on Sta	tement			
	Geologic				I, the u	ndersigned	d, certify th						t of my	knowledge and belief
	Well Cor	nstructio	on Diagram			Boart Loi		ompany	•					-
	Geophys				1333	W. 9th S	treet	nauun	<u>Upla</u>					91786
			mical Analyses d Site Map		Signed		Address			Cit	ty		ate 94686	Zip S
	Other <u>L</u>				1.9.100		ensed Water	Well Contractor			Date Si			cense Number
	DEV 4/6													

*The free	Adobe Re	eader ma	ay be used to vie	w and complet	e this form	. However,	software m	ust be purchas	sed to comple	ete, save	, and reus	e a saved	form.	
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Page 4		of	5		V			on Repo	ort			1 1		
			Cluster C Dee	p Well		Refer <b>No</b>	r to Instruction • e01303	n Pamphlet <b>32</b>			Sta	te Well Nu	mber/Si	te Number
Date Wo						nded <u>6/7/</u>					Latitude	14		Longitude
			an Bernardino									Δ DN/	TRS/Oth	ner.
Permit N	lumber <u>2</u>	201104		. Permit D	ate <u>4/5/</u>	11							113/01	iei
0**	entation	@\/a		ogic Log orizontal	O A n al	0	<i>t.</i> .					Owner		
	Method S		erticai Ono	mzoniai	O Angle Drilling	-	ту		<u>California</u>				Gam	<u>e</u>
	from Su				cription			Mailing	Address <u>4</u>	07 W.			<u> </u>	- 02544
	to F	eet		scribe materia				City Bis	shop					
113.5			(CL) GLEY1	4/1 Dark gi	eenish	gray silty	clay	_				Location	n	
114.5			(30/70)	EV1 4/1 Do	rk aroor	ioh grov	oilt.		Camp C					D
114.5			(SM-SC) GL clayey fine											an Bernardino
116.5			(CL) GLEY1			•	700)	Latitude	34 Deg.	56 Min.	10 Sec.	N Longitu	ude <u>1</u>	16 35 59 W Deg. Min. Sec.
119.0			(CL) GLEY1				clav	Datum 1	NAD83	Decima	l Lat. <u>34</u>	.936206	_ Deci	imal Long. <u>-116.5998</u>
11010			(40/60)	., a g.		g. wy oy	<i>-</i> ,	APN Bo	ok <u>0541</u>	_ Pag	je <u>011</u>		Parce	el <u>19</u>
120.0			(CL) GLEY1	4/1 Dark gi	eenish	gray clay;	some	Townsh	ip <u>10N</u>	Rang	ge <u>04E</u>		. Secti	on <u>30</u>
			fine sand @							ion Sk				Activity
123.0			(CL) GLEY1	4/1 Dark gı	eenish	gray fine	medium	(Sketch	must be drawn	by hand a	after form is	printed.)		ew Well
			coarse san	dy clay (30	/70)							4		lodification/Repair Deepen
125.7			(CL) GLEY1											Other
126.2			(CL) GLEY1		eenish	gray fine	sandy							estroy Describe procedures and materials nder "GEOLOGIC LOG"
			silty clay (2										_	Planned Uses
128.5			(ML) GLEY1		reenish	gray clay	ey							/ater Supply
100.0			micaceous				and allower							Domestic Public
132.0			(CL) GLEY1 coarse san			gray fine-	mealum	West	SEE AT	TACHE	ED MAP	East		Irrigation Industria
132.5			(SM) GLEY1		-	aray silty	/ fine							athodic Protection
102.0			sand (40/6		reciliari	gray siits	, iiie							ewatering
133.5			(CL) GLEY1	,	eenish	grav clav		71 (						eat Exchange ijection
134.2			(SC-SM) GL										_	lonitoring
			silty fine-m					a ( )						emediation
135.0			(CL) GLEY1	4/1 Dark gı	eenish	gray fine-	medium							parging
			coarse san	dy clay (20	/80)			1		South				est Well apor Extraction
135.5			(CL) GLEY1	4/1 Dark gı	eenish	gray clay	_ \	rivers, etc. ar	escribe distance on attach a map.	Use addition	roads, building nal paper if ned	s, fences, cessary.		ther
136.3			(SW) GLEY1	4/1 Dark g	reenish	gray fine	-coarse		evel and		of Com	nloted V		
			sand			_~			o first water					et below surface)
138.5			(CL) GLEY1				ey, silty	Depth to	Static				_ `	,
			fine-mediu	m coarse s	and (20/									ired 06/08/2011
	epth of E		205			Feet								down(Feet)
Total D	epth of (	Comple	ted Well 200	$\rightarrow$	<u>*/)</u>	Feet			t be repres					
				Cas	ings				•			Annul	ar Ma	terial
	h from	Boreh		Mate		Wall	Outside	Screen	Slot Size		th from			
	rface to Feet	Diame (Inch				(Inches)	Diameter (Inches)	Туре	if Any (Inches)		rface to Feet	Fil	II	Description
0	175	8	Blank	PVC Sch. 8		.276	2.75			0	2	Cement		Concrete
175	195	8	Screen	PVC Sch. 8		.276	2.75	Milled Slots	0.020	2	145	Cement		Cement/bent. grou
195	200	8	Blank	PVC Sch. 8	0	.276	2.75			145 170	170 200	Bentonite Filter Pag		Hydrated pellets #2/12 graded sand
			1							200	205	Fill		Native Cuttings
														go
		Attac	hments					(	Certificati	on Sta	tement	•		
	Geologic				I, the u	ndersigned	d, certify th	at this report					t of my	knowledge and belief
	Well Co	nstructio	on Diagram		Name	Boart Lo	ngyear C Firm or Corpo	ompany						
	Geophys				<u>1333</u>	W. 9th S	treet		<u>Upla</u>					91786
			mical Analyses d Site Map		Signed		Address			Cit	y		ate 94686	Zip <b>3</b>
	ditional infor			-		C-57 Lic	ensed Water	Well Contractor			Date Si			ense Number
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Page 5		of	5			V	Vell Co	mpleti	on Repo	ort					
				ter C Deep	Well		No.	• e01303	1 Pampniet <b>32</b>			Sta	ate Well Nu	mber/Si	ite Number
Date Wo							nded <u>6/7/</u>					Latitude			Longitude
Local Pe Permit N				ernardino 75	County DF Permit D								APN/	TRS/Oth	ner
Cillicia	uniber <u>-</u>	.0110	1011		gic Log	atc <u>1707</u>				_		Wel	l Owner		
Orio	entation	<b>⊙</b> ∨	'ertica		rizontal	OAngle	e Speci	fv	Nome (	California	Denart			1 Gam	Α
	Method S					Drilling				Address <u>4</u>				<u>. Oum</u>	
	from Su			D		cription				shop		Line Ou		to CA	Zip <u>93514</u>
140.5	to F	eet	(CI	Des _) GLEY1 4	cribe material				Oity			Wall	Location		ip
1.00				lay (10/90)		COMBIT	gray iiic	Janay	Addross	S Camp C	adv M				
141.5			_	_) GLEY1 4		eenish	gray clay		1 1	•				unty S	an Bernardino
172.0				_) GLEY1 4				medium							
			C	oarse sand	dy clay (40	/60)									16 35 59 W Deg. Min. Sec.
172.0			(CL	_) GLEY1 4	I/1 Dark gr	eenish	gray fine-	medium							imal Long. <u>-116.5998</u>
			C	oarse sand	dy clay (40	/60)									el <u>19</u>
175.0			_	L) GLEY1 4					Townsh	ip <u>10N</u>				Sect	
			_	oarse sand	•			•	(Sketch	Locat must be drawn	ion Sk		printed.)		Activity
177.5	_		+	И-SC) GLE		rk greer	nish gray	silty fine	— (Ontoion	made bo aram	North		printou.)		lew Well Iodification/Repair
400.5			_	and (20/80	-			***	-11 /				7 4		O Deepen .
182.5	-			C-SM) GLE					-11 -1						Other
185.0	-		_	yey fine sa	-			-	_   \					) [	Describe procedures and materials under "GEOLOGIC LOG"
165.0	+			<i>I</i> I) GLEY1 - 20/80) with					u l						Planned Uses
			1	ecovered	Tillior Ga	/ (1076),	, 50 /6 Sai	пріє						O v	Vater Supply
199.5	+		+ -	DCK) Indur	ated cem	ented co	onglomer	ate					±		Domestic Public
100.0				oulder (ap					West	SEE ATT	ACHE	D MAP	East		Irrigation Industria
200.5	205		_	И) No sam											athodic Protection
			<u> </u>	ample likel											ewatering leat Exchange
			_	ignificant s			A 7		71 (						njection
															lonitoring
						$\mathbf{x}$									emediation
															parging est Well
									_		South				apor Extraction
					4		~	_ `	rivers, etc. ar	lescribe distance on nd attach a map.	Use addition	roads, building nal paper if ned	gs, fences, cessary.		other
	_						-			Level and		of Com	nleted V	Vell	
					_		-0	_		o first water					et below surface)
-	-			-	-	<u> </u>		<i>-</i>	Depth to	o Static					,
Total D	epth of E	) o rin a		205	_	$\rightarrow$	Foot								ured <u>06/08/2011</u>
1		J		205	-		Feet							-	down(Feet)
Total D	epth of (	Comple	eted \	Well <u>200</u>	$\rightarrow$	$\sim$	Feet			ot be repres		•	,		
					Cas	ings							Annul	ar Ma	terial
Sui	h from rface	Borel Diam	eter	Туре	Mate	rial		Outside Diameter	Screen Type	Slot Size if Any	Si	th from urface	Fi	II	Description
Feet 0	to Feet 175	(Inch	nes)	Blank	PVC Sch. 8	2	(Inches) .276	(Inches)	1	(Inches)	Feet 0	to Feet	Cement		Concrete
175	195	8		Screen	PVC Sch. 8		.276	2.75	Milled Slots	0.020	2	145	Cement		Cement/bent. grou
195	200	8		Blank	PVC Sch. 8		.276	2.75		0.020	145	170	Bentonite	9	Hydrated pellets
							<u>L</u>				170	200	Filter Pa	ck	#2/12 graded sand
											200	205	Fill		Native Cuttings
													<u> </u>		
		Atta	chm	ents						Certificati					
	Geologic		io	lio ave			ndersigned Boart Lo			t is complet	e and a	ccurate t	to the bes	t of my	knowledge and belief
	Well Cor Geophys			nagram		I		Firm or Corpo		Upla	nd			٠٨ ،	01786
				al Analyses				Address		<u></u>	<u>na</u> Cit	ty	St	ate	91786 Zip
<b>V</b>	Other <u></u>	<u>etaile</u>	d Sit	te Map		Signed		oneod Meta-	Wall Cantrasta			D-1: C:		94686	
Attach add	ditional infor	mation, if	f it exis	sts.		<u> </u>	U-5/ LIC	ensea water	Well Contractor			Date Si	gned C	-57 Lic	cense Number

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Dana 1			2		V			on Repo	ort		1	1 1	T	
Page 1			<u>z</u> luster C Shal	low Well			r to Instruction				Sta		mber/S	ite Number
		_	7/2011				• <b>e01303</b> /2011	-			Lotitudo	N		Langitude W
			n Bernardino				2011				Latitude	1	1 1	Longitude
Permit N				Permit Da								APN/	TRS/Otl	her
				ogic Log							Well	Owner		
Orie	entation	<b>⊙</b> Ve		rizontal	OAngle	e Spec	ifv	Nama	California	Denartr				10
Drilling	Method S	Sonic			Drilling	-	<i></i>						<u>a Carri</u>	
	from Su				cription				Address 4				CA	0351 <i>/</i>
	to F			cribe material				City Di	shop					<u>Zip</u> <u>93514</u>
0			(SW) 10YR 5			tine-coa	irse	+				Locatio	n	
0.5			sand with n			<i>r</i> .	1 (00 (00)		Camp C					
6.5			(SM) 10YR 7											San Bernardino
7.5			(CL) 10YR 4/	2 Dark gray	ish bro	wn silty c	lay	Latitude	34	56	10	N Longite	ude <u>1</u>	16 36 60 W Deg. Min. Sec.
			(40/60)					11						Deg. Min. Sec. imal Long. <u>-116.599</u> 9
8.5			(SM) 10YR 5		Ity fine-	medium (	coarse	- 1 1 -						
			sand (30/70	,					ook <u>0541</u>	_				
10.0			(SM-SC) 10Y	R 5/3 Brow	n silty,	clayey fir	ne sand	Townsh	ip <u>10N</u>				Sect	
			(20/10/70)					(Sketch	Locat must be drawr	ion Ske		nrinted )		Activity
11.5			(CL) 10YR 5/					(Olloton)	muot be diawi	North	ater form is	printed.)		lew Well Iodification/Repair
12.5			(SP) 10YR 7/					4				,		O Deepen
15.0			(CL) GLEY 1	3/1 Dark g	reenish	gray soft	silty							O Other
			clay (20/80)	)								\.		Destroy Describe procedures and materials under "GEOLOGIC LOG"
16.5			(SC) GLEY 1	3/1 Dark g	reenish	gray clay	yey fine					~	_	
			sand (50/50	))										Planned Uses
17.5			(CL) GLEY 1	3/1 Dark g	reenish	gray clay	/							Vater Supply
25.0			(ML) GLEY 1	3/1 Dark g	reenish	gray clay	yey silt	ß	SEE AT	TACHE	ЕД МАР	East		Domestic ☐ Public Irrigation ☐ Industria
			(50/50)				$\mathcal{A}$	West	OLL /(I	17.0112	_D IVI/ (I	Е	ll	Cathodic Protection
28.0			(CL) GLEY 1	3/1 Dark g	reenish	gray clay	/							Dewatering
28.5			(SM) GLEY 1	3/1 Dark g	reenish	gray silt	y fine							leat Exchange
			sand (30/70			A 7		71 (						njection
30.0			(SW) GLEY 1	3/1 Dark	greenish	gray find	e-							, Nonitoring
			medium co	arse sand v	vith min	or clay		4 ( )						Remediation
32.0			(CL) GLEY 1	3/1 Dark g	reenish	gray fine	2 /							parging
			medium co					1		South				est Well
32.5			(SC) GLEY 1	3/1 Dark g	reenish	gray clay	vey fine-	Illustrate or o	describe distance nd attach a map.	of well from re	oads, building	s, fences,		apor Extraction Other
			medium coa			<u> </u>		Please be a	ccurate and com	plete.		•		
32.8			(SW) GLEY 1	3/1 Dark 0	reenish	gray fine	9-	Water I	Level and	Yield (	of Com	pleted V	Vell	
			medium co				7		o first water	·			(Fee	et below surface)
							/	<ul> <li>Depth to Water I</li> </ul>	o Static evel 17		(Fee	et) Date	Measi	ured 06/08/2011
Total D	epth of E	Borina	39		- 77	Feet		Estimat	ed Yield *		— (F GP)	M) Test	Type	3104 <u>007007</u> 20::
		J		- A										down(Feet)
Total D	eptn of C	omplet	ed Well 38		-	Feet			ot be repres					
				Cas	ings							Annul	ar Ma	terial
	from	Boreh		Mate		Wall	Outside	Screen	Slot Size		th from			
	face to Feet	Diame (Inche	ter	mate		(Inches)	S Diameter (Inches)	Type	if Any (Inches)		rface to Feet	Fi	II	Description
0	13	8	Blank	PVC Sch. 80	)	.276	2.75			0	2	Cement		Concrete
13	18	8	Screen	PVC Sch. 8		.276	2.75	Milled Slots	0.020	2	8	Bentonite	e	Hydrated pellets
18	28	8	Blank	PVC Sch. 80		.276	2.75			8	39	Filter Pa	ck	#2/12 graded sand
28	33	8	Screen	PVC Sch. 8	0	.276	2.75	Milled Slots	0.020					
33	38	8	Blank	PVC Sch. 80	)	.276	2.75							
										<u> </u>				
		Attac	hments						Certificati	on Sta	tement			
	Geologic							nat this repor				o the bes	t of my	knowledge and belief
	Well Cor	nstructio	n Diagram		Name		ngyear C							
	Geophys				1333	W. 9th S	Street	nauon	<u>Upla</u>					91786
			nical Analyses		Signed		Address			City	у		tate 594686	Zip
	Other <u>L</u> itional infor		Site Map		Signed		ensed Water	Well Contractor			Date Si			cense Number
/auti auu	onai illiUl	uuvii, II I	CAIDIO.								_ 4.0 01	gu C	LIC	

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Owner's	Well Num	<u>۔                                    </u>	uster C Shall	ow Well			to Instruction				Sta	-	ımber/S	ite Number
			2011		Work En	ided <u>6/7/2</u>					Latitude	N		Longitude
			Bernardino (									A DNI/	TRS/Otl	hor
Permit No	umber <u>20</u>	11040 <sup>-</sup>	177		ate <u>4/5/</u>	11								nei
Orio	ntation	(A)/ort		gic Log izontal	OAngle	Coosil			0 1:4 :			Owner		
1	Method So		icai O noi	IZUIIIai	Drilling F		У		California				<u>i Gam</u>	<u>1e</u>
	from Sur				cription			City Bi	Address <u>4</u>	-07 VV. L	ine Stre		oto CA	A z <sub>ip</sub> 93514
Feet 35	to Fe		Desc SC) 10YR 5/3	cribe material			<u> </u>	City <u>S</u>	101100		Wall	Locatio		<u> </u>
-			coarse sand		ayey iii k	c median		Address	s Camp C	adv Mo			11	
36.8		((	CL) 10YR 5/3		e-mediu	ım coarse	e sandy						unty S	San Bernardino
			clay (30/70)											16 36 60 W Deg. Min. Sec.
38.0		(8	SC) 10YR 5/3		ayey fine	e-mediun	n coarse	11						
			sand (40/60						NAD83 ook <u>0541</u>					cimal Long. <u>-116.5999</u>
38.0	39		SC) 10YR 5/3		ayey fine	e-mediun	n coarse		nip <u>10N</u>		e <u>04E</u>			tion 30
			sand (40/60	)				TOWNST		ion Ske			. 0000	Activity
								(Sketch	must be draw	n by hand af		printed.)		lew Well
								1		North	<i></i>	- (		Modification/Repair  Deepen
														Other
														Destroy Describe procedures and materials under "GEOLOGIC LOG"
-												~		Planned Uses
							_						ΟV	Vater Supply
						- 1	$\overline{}$	-	055.47	TAOLIE	·D 144D			Domestic Public
								West	SEE AT	TACHE	:D MAP	Eas	ll .	Irrigation Industrial
														Cathodic Protection Dewatering
								<b>D</b>						Heat Exchange
								41						njection
	_				$\smile$									Monitoring Remediation
					$\leftarrow$	-	-						O s	Sparging
					7		-	1		South				est Well
								Illustrate or o	describe distance and attach a map.	of well from ro Use additiona	ads, building	s, fences, essarv.		/apor Extraction Other
								Please be a	ccurate and com	plete.				Julio1
									Level and o first wate					et below surface)
	_							Depth t	o Static				_ `	,
Total D	epth of Bo	rin a	20	-	$ \times$	Foot					,	,		ured 06/08/2011
		J	39		/3	Feet								down (Feet)
Total D	epth of Co	omplete	d Well <u>38</u>		$\mathcal{H}$	Feet			ot be repres					
				Cas	ings			_				Annul	ar Ma	nterial
	from face	Borehol Diamete		Mate	rial	Wall Thickness	Outside Diameter	Screen Type	Slot Size if Any		h from rface	Fi	II	Description
Feet t	o Feet 13	(Inches)	) Blank	D) (C C-b 0)	`	(Inches)	(Inches) 2.75		(Inches)	Feet 0	to Feet	Cement		Concrete
13		8	Screen	PVC Sch. 80 PVC Sch. 80		.276	2.75	Milled Slots	0.020	2	8	Bentonit		Hydrated pellets
18		8	Blank	PVC Sch. 80		.276	2.75		0.020	8	39	Filter Pa		#2/12 graded sand
28		8	Screen	PVC Sch. 80		.276	2.75	Milled Slots	0.020					
33	38	8	Blank	PVC Sch. 80	)	.276	2.75			<u> </u>				
		A				<u> </u>			0.40	<u> </u>			_	
	Geologic I	Attach	ments		I the ur	ndersigner	Certify th		Certificat			n the hee	t of my	/ knowledge and belief
			Diagram			Boart Loi	<u>ngyear C</u>	ompany ·	oomple	.o unu di	Jourale II			, moviedge and belief
	Geophysic	cal Log(	s)		1333	W. 9th S		ration	Upla					91786
			cal Analyses Site Map		Signed		Address			City			tate 694686	Zip
	tional information				2.9.700	C-57 Lice	ensed Water	Well Contractor			Date Sig			cense Number

*The free	Adobe Re	eader m	nay be	used to view	and complete	e this form	n. However,	software m	ust be purchas	sed to compl	ete, save	, and reus	e a saved	form.	
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Page 1		of	4			V			on Repo	ort		1	1 1	$\top$	
				er D Shall	ow Well			r to Instruction • e01303				Sta		mber/S	ite Number W
Date Wo		_					nded <u>6/10</u>					Latitude	N		Longitude
Local Pe	rmit Age	ncy <u>S</u>	an B	ernardino (											
Permit N	umber <u>2</u>	<u>20110</u> 4	<u>4018</u>	0	Permit D	ate <u>4/5/</u>	/11		<u>.                                      </u>	L			APN/	TRS/Oth	her
					gic Log							Well	Owner		
	entation		'ertica	I O Hor	izontal	OAngle	-	fy	_ Name <u>(</u>	California	Depart	ment of	Fish and	d Gam	ne
	Method S				Dos	Drilling cription			Mailing	Address 4	07 W.				
	to F			Desc	cribe material				City Bis	shop			Sta	ate <u>CA</u>	A z <sub>ip</sub> <u>93514</u>
0			(SV	V) 10YR 7/	3 Very pal	e browr	n fine-coa	rse sand				Well	Locatio	n	
				ith some g						Camp C					
4.5	_		1	) 10YR 5/2	2 Grayish I	orown si	ilty micac	eous							San Bernardino
	_		_	ay (40/60)					Latitude	34	56	20	N Longitu	ude <u>1</u>	16 35 23 W Deg. Min. Sec.
5.0			+ -	V) 10YR 7/											beg. Min. Sec. simal Long. <u>-116.5897</u>
6.0	-		_	) 10YR 4/3	Brown fir	e-coars	se sandy (	clay							cel <u>19</u>
C 4	-		,	30/70)	Dala has	fina				ip <u>10N</u>					
6.4	_			) 10YR 6/3				ov oilt	TOWNSH		ion Sk			. 0000	Activity
10.0	+		1	.) GLEY1 3 40/60)	b/ i Daik gi	eenisn	gray clay	ey Siit	(Sketch	must be drawn			printed.)	<b>O</b> N	New Well
10.7			,	) GLEY1 3	1/1 Dark or	eenish	aray day		┪┝──	_	North	<u> </u>	-	ÓΝ	/lodification/Repair
11.2				.) GLEY1 3				ev silt	H /						O Deepen O Other
111.2			1	0/60)	or i Dark gi	CCITISIT	gray clay	Cy Siit	اه ا					OD	Destroy
12.5			١,	) GLEY1 3	1/1 Dark gr	eenish (	grav clav		+					L L	Describe procedures and materials under "GEOLOGIC LOG"
14.0				) GLEY1 3				sandv							Planned Uses
			1	ayey silt (4			9.0.7								Vater Supply_
15.0			_	) GLEY1 4		eenish	gray clay;	sandy	T l	SEE ATT		D MAD	st		Domestic Public
			1	ay @22-22			<u> </u>		West	SEE AT	ACHE	DIVIAR	East	II	Irrigation Industria
22.5			(SIV	1-SC) GLE	Y1 4/1 Da	rk greer	nish gray	silty,)							Cathodic Protection Dewatering
			cl	ayey sand	(30/10/60										leat Exchange
24.5			(CL	) GLEY1 4	/1 Dark gr	eenish	gray clay								njection
25.0			(CL	) GLEY1 4	/1 Dark gr	eenish	gray fine	sandy							Monitoring
			_	ay (30/70)											Remediation Sparging
26.8				1-SC) GLE				silty,							est Well
			1	ayey fine s				_ \	Westerle en d	lescribe distance	South				/apor Extraction
27.5	_			/) GLEY1	4/1 Dark g	reenish	gray fine	-coarse	rivers, etc. ar	nd attach a map.	Use addition	nal paper if nec	essary.	<b>O</b> 0	Other
0.5.0			+	and			1 (00	(2.2)		_evel and		of Com	pleted V	Vell	
35.0	-		,	) 10YR 4/3				/80)		o first water					et below surface)
38.8			(CL	) GLEY1 4	71 Dark gr	eenisn	gray clay	<i>}</i>	Depth to	Static				_ `	,
Total	Nameth of F	O rin a		105	_	$\rightarrow$	Foot								ured <u>06/12/2011</u>
	epth of E	·		195			Feet							-	down(Feet)
Total D	epth of 0	Comple	eted V	Vell <u>40</u>	-	~	Feet			ot be repres		•	,		
					Cas	ings							Annul	ar Ma	iterial
	h from	Borel		Туре	Mate		Wall	Outside	Screen	Slot Size		th from			
	rface to Feet	Diam (Inch		. 7   2	1		(Inches)	Diameter (Inches)	Type	if Any (Inches)		urface to Feet	Fi	11	Description
0	25	8		Blank	PVC Sch. 8	0	.276	2.75			0	2	Cement		Concrete
25	35	8		Screen	PVC Sch. 8		.276	2.75	Milled Slots	0.020	2	20	Bentonite	Э	Hydrated pellets
35	40	8		Blank	PVC Sch. 8	0	.276	2.75			20	41	Filter Pa	ck	#2/12 graded sand
		-											-		
				_						1					
		1	_							1 .151					
	01	Atta	chme	ents		I that	ndoroicas	d contiferati		Certificati				t of m	knowledge and hali-f
	Geologic Well Cor		ion D	agram			Boart Lo	ngyear C	ompany	i is complet	.e and a 	ccurate t	o the bes	ι or my	knowledge and belief
	Geophys			agram		I		Firm or Corpo		Upla	nd			CA S	91786
				Analyses				Address		<u></u>	Cit	ty	St	tate	Zip
	Other <u></u>					Signed		oneod Meta-	Wall Contracts			D-1: C:		94686	
Attach add	ditional infor	mation, if	f it exist	ts.		<u> </u>	U-5/ LIC	enseu water	Well Contractor			Date Si	gned C	,-5/ Lic	cense Number

*The free	Adobe Re	eader m	nay b	e used to view	and complete	e this form	. However,	software m	ust be purchas	sed to comple	ete, save	, and reus	e a saved	form.	
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Page 2		of	4			V			on Repo	ort			1 1		
				ter D Shall	ow Well			r to Instruction • e01303				Sta		mber/Si	ite Number
Date Wo						Work Er	nded <u>6/10</u>					Latitude	N		Longitude
Local Pe	rmit Age	ncy <u>S</u>	an E	<u>Bernardino (</u>											
Permit N	umber <u>2</u>	<u>20110</u>	4018	30	Permit D	ate <u>4/5/</u>	11		<u>.                                      </u>	L			APN/	TRS/Oth	her
					gic Log							Well	Owner		
	entation		'ertic	al O Hor	izontal	OAngle	-	fy	_ Name <u>(</u>	California	Depart	ment of	Fish and	d Gam	ie
	Method S				Des	Drilling <b>cription</b>	Fluid			Address 4		Line Stre			
		eet		Desc	cribe material		e, color, etc		City Bi	shop			Sta	<sub>ite</sub> <u>CA</u>	<u>zip 93514</u>
42.5				L) GLEY1 4								Well	Locatio	n	
				CL) GLEY1						Camp C					
43.0			+ -	C) GLEY1 4			gray clay	ey fine-							San Bernardino
40.0			+	nedium coa				***	Latitude	34	<u>56</u>	20	N Longitu	ude <u>1</u>	16 35 23 W Deg. Min. Sec.
43.8				L) GLEY1 4 race fine sa		eenish (	gray clay	with	1 1						imal Long. <u>-116.5897</u>
47.1				L) 10YR 4/3		o condi	, alay (20	/90\							el <u>19</u>
55.0	-			L) GLEY1 4				700)		ip 10N					
57.5			+,	L) GLETT4 L) GLEY1 4			, , ,	sandy			ion Sk				Activity
07.0				silty clay (30		CCIIISIT	gray mic	oarray,	(Sketch	must be drawn	by hand a		printed.)		lew Well
58.8				L) GLEY1 4		eenish o	grav clav		┧├──		North		4 .		odification/Repair Deepen
67.5				L) GLEY1 4				medium	TI /						Other
			+	oarse sand									<b>\</b> .	Op	Describe procedures and materials
68.0			(CI	L) GLEY1 4	/1 Dark gr	eenish (	gray clay							_	Describe procedures and materials under "GEOLOGIC LOG"
77.5			(S	C-SW) GLE	Y1 4/1 Da	rk greer	nish gray	clayey							Planned Uses
			f	ine-medium	coarse sa	and (30/	70)								Vater Supply Domestic ☐ Public
78.5				L) GLEY1 4	/1 Dark gr	eenish (	gray fine	sandy	West	SEE ATT	TACHE	D MAP	East		Irrigation Industria
			-	lay (30/70)									ш		Cathodic Protection
81.5			<del></del>	C-SW) GLE				clayey	<u> </u>					O D	ewatering
00.0	_		_	ine-medium		,		C							leat Exchange
83.0			+ -	L) GLEY1 4		eenisn	gray clay	ey fine	41 _ \					_	njection Monitoring
85.0	-		_	sandy silt (3 L) GLEY1 4		oonich (	arov cilty	fino							Remediation
00.0				andy clay (		eemsn (	gray Silty,	IIIIC	$\exists \cup$					O s	parging
90.5				M-SW) GLE		rk greei	nish grav	siltv	<i>b</i>		South				est Well
00.0				ine-medium				J	Illustrate or d	lescribe distance on attach a map.	of well from r	roads, building	s, fences,		apor Extraction Other
92.5				L) GLEY1 4				sandy,	Please be a	ccurate and com	plete.				Milei
			S	silty clay (20	)/20/60)					Level and					
93.5			(SI	M) GLEY1 4	4/1 Dark g	reenish	gray silty	fine-	Depth to	o first water				(Fee	et below surface)
			r	nedium coa	rse sand (	20/80)						(Fee	et) Date	Measu	ured 06/12/2011
Total D	epth of E	Boring		195			Feet								
Total D	epth of 0	Comple	eted	Well 40		$\langle \rangle$	Feet								down(Feet)
				_	Coo	la se			Iviay no	ot be repres	entative	e or a wer			
Dept	h from	Bore	hole	-7		ings	Wall	Outside	Screen	Slot Size	Dep	th from	Annul	ar ivia	teriai
Sui	face	Diam	neter	Туре	Mate	rial	Thickness	Diameter		if Any	Su	ırface	Fi	II	Description
0	to Feet 25	(Incl	165)	Blank	PVC Sch. 8	)	(Inches) .276	(Inches)		(Inches)	0	to Feet	Cement		Concrete
25	35	8		Screen	PVC Sch. 8		.276	2.75	Milled Slots	0.020	2	20	Bentonite	Э	Hydrated pellets
35	40	8		Blank	PVC Sch. 8	)	.276	2.75			20	41	Filter Pa	ck	#2/12 graded sand
				- 1						ļ					
			•										-		
	<u> </u>		_								<u> </u>				
	01		chm	nents		l tha	odoroicas	d cortificati		Certificati			o the be-	t of m	knowledge and belief
	Geologic Well Cor		ion F	)iagram			Boart Lo	navear C	ompany	LIS COMPLET	. <del>c</del> and a	ccurate t	o the bes	t or my	knowledge and beller
	Geophys					1333	Person, W. 9th S	Firm or Corpo	oration	Upla	nd			;A 9	91786
	Soil/Wat	er Che	emica	al Analyses				Address			Cit	у	St	ate	Zip
						Signed		ensed Water	Well Contractor			Date Si		94686	cense Number
Attach add	Other Detailed Site Map  ch additional information, if it exists.  Signed  C-57 Licensed Wat											Date Of	gri <del>c</del> u C	OI LIC	CHOC NUMBER

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Page 3		of	4		V			ion Repo	ort					
			Cluster D Shal				to Instruction • e01303				Sta	ite Well Nur	mber/Si	ite Number
Date Wo	rk Begar	06/0	8/2011	Date	Work Er	nded <u>6/10</u>					Latitude	111		Longitude
			an Bernardino			4.4						APN/T	TRS/Oth	ner
Permit N	lumber <u>2</u>	201104	0180		ate <u>4/5/</u>						\A/ . II		110/01	
0**	entation	@\/		ogic Log orizontal	OAngle	0	<i>t.</i> .	+	0 117 1			Owner		
	Method S		erticai Onc	IIIZUIIIai	Drilling		ıy		California				Gam	<u>e</u>
	from Su			Des	cription				Address 4	07 W. I	_ine Str			-: 02E14
	to F	eet		scribe material				City Bi	SHOP					Zip <u>93514</u>
95.5			(CL) GLEY1			gray fine-	medium	┨┝				Location	1	
98.5			coarse san (SC-SW) GL			nich grav	clavov		Camp C					'an Darnardina
30.5			fine-coarse s			lisir gray	ciaycy							San Bernardino
99.0			(CL) GLEY1	•		gray fine s	sandy	Latitude	34 Deg.	56 Min.	Sec.	N Longitu	1de <u>1</u>	16 35 23 W Deg. Min. Sec.
00.0			clay (30/70		00111011 5	gray iiio	ouridy	Datum_	NAD83	Decima	l Lat. <u>34</u>	.938804	_ Dec	imal Long. <u>-116.5897</u>
99.5			(CL) GLEY1	,	eenish (	gray clay								el <u>19</u>
100.8			(SW-SM) GL				silty fine	Townsh	ip <u>10N</u>	Rang	e <u>04E</u>		Secti	ion <u>20</u>
			sand (30/7	0)				(0)		ion Ske				Activity
103.2			(CL) GLEY1	4/1 Dark gr	eenish (	gray clay		(Sketch	must be draw	North	itter form is	printed.)		lew Well Iodification/Repair
109.0			(ROCK) 2.5Y	R 7/3 Light	reddish	n brown ro	ock					4		Deepen
			(indurated,	·										Other
110.0			(SC-SW) GL				layey							Destroy Describe procedures and materials under "GEOLOGIC LOG"
110.5			fine-mediu											Planned Uses
112.5			(CL) GLEY1		eenish (	gray fine-	coarse						_	Vater Supply
115.0			sandy clay (ROCK) GLE	-	and C	I EV1 E/1	$\overline{}$	H						Domestic Public
115.0			Greenish g					West	SEE AT	TACHE	D MAP	Eas		Irrigation Industrial
			olivine-rich		ny mara,	, comonic	, , , , , , , , , , , , , , , , , , ,							athodic Protection
122.5			(CL) GLEY1		eenish o	grav fine-	coarse							ewatering leat Exchange
			sandy clay			9. 4.9		71 (						njection
125.0			(CL) 10YR 4	, ,	ne-medi	um coars	e sandy						M	Ionitoring
			clay											temediation
127.5			(ROCK) 10Y		n cemer	nted sand	l (very							parging est Well
			hard; friable	,			\			South				apor Extraction
135.0			(ROCK) GLE				_ `	rivers, etc. ar	describe distance nd attach a map. ccurate and com	Use additiona	oads, building al paper if ned	s, fences, cessary.		Other
			Greenish g						Level and		of Com	nleted W	/ell	
135.5			(SC-SC) GLE						o first wate					et below surface)
			silty fine-m	edium coar	se sand	(30/30/4)	0)	Depth to	o Static					ŕ
Total	epth of E	Poring	105	_	$\rightarrow$	Feet								ured 06/12/2011
			195	-										down(Feet)
Total D	epth of 0	Comple	ted Well 40	$\rightarrow$	$\sim$	Feet			ot be repres					
				Cas	ings							Annula	ar Ma	terial
Su	h from rface	Boreh	eter Type	Mate	rial	Wall Thickness			Slot Size if Any	Su	th from rface	Fill	ı	Description
0	to Feet 25	(Inch	es) Blank	PVC Sch. 8	<u> </u>	(Inches) .276	(Inches)		(Inches)	0	to Feet	Cement		Concrete
25	35	8	Screen	PVC Sch. 8		.276	2.75	Milled Slots	0.020	2	20	Bentonite	<del></del>	Hydrated pellets
35	40	8	Blank	PVC Sch. 8	0	.276	2.75			20	41	Filter Pac	k	#2/12 graded sand
										-				
					ı					<u></u>				
	01		hments		l tha	ndoraicas	1 continue		Certificat				t of m	knowledge and hali-f
	Geologic Well Cor		on Diagram			Boart Lo	ngyear C	company	r is comple	ie and a	courale I	o me best	. Or ITIY	knowledge and belief
	Geophys				1333	Person, I W. 9th S	Firm or Corpo	oration	Upla	nd		C	A_ 9	91786
	Soil/Wat	er Che	mical Analyses				Address			City	/	Sta	ate	Zip
			d Site Map		Signed		ensed Water	Well Contractor			Date Si		94686	Sense Number
Attach add	n additional information, if it exists.  C-57 Licensed W							. ,			Date 31	grica C	37 LIC	OCTION LANGINGE

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					ow Well			to Instruction				Sta	ite Well Nui	mber/Si	ite Number
				1			nded <u>6/10</u>					Latitude	IN		Longitude
Local Pe	rmit Age	ncy <u>S</u>	an Be	rnardino (	County DP	H EHS							A DNI/I	TRS/Oth	
Permit N	lumber <u>2</u>	20110	40180	)	Permit Da	ate <u>4/5/</u>	11			L				K3/Oli	iei
		0			gic Log	<u> </u>							Owner		
	entation		ertical	O Hor	izontal	OAngle		y	– Name <u>(</u>	California	<u>Departr</u>	ment of	Fish and	<u>Gam</u>	e
	Method St				Des	Drilling <b>cription</b>				Address 4	07 W. I	_ine Stre			
	to F				cribe material	grain size	e, color, etc		City Bi	shop			Sta	te <u>CA</u>	<u>zip 93514</u>
1388					/1 Dark gr		gray fine-	medium				Well	Locatior	1	
					ly clay (20/					Camp C					
141.0					Y1 4/1 Da			clayey,	City Ne	ewberry S					an Bernardino
					arse sand (				Latitude	34 Deg.	56	20	N Longitu	ıde <u>1</u>	16 35 23 W Deg. Min. Sec.
141.8			<u> </u>		Y1 4/1 Da		nish gray	silty							Deg. Min. Sec. imal Long. <u>-116.5897</u>
			_	<del></del>	and (30/20										el <u>19</u>
142.5			+		/1 Dark gr	eenish (	gray silty	clay		ip <u>10N</u>					
1 10 0				0/80)	// 0/\\/!:	1.0	15)/4.5/4		Townsh					Secu	
143.0			+		/1 8/ White				(Sketch	must be draw	ion Ske by hand a		printed.)	● N	Activity lew Well
-					ay cement	ed fine-	medium d	coarse			North			ŎМ	lodification/Repair
144.0				nd and gr		ooniob 4	arov olove	ov fine	-11 /					5	Deepen Other
144.0					/1 Dark gr	eenisn (	gray claye	ey iine-	- 1					$\bigcirc$ D	estrov
145.0			+	arse sand	ented sand	and ar	avol: vorv	hard:	$\dashv$					U	Describe procedures and materials under "GEOLOGIC LOG"
145.0					lomerate			ilaiu,							Planned Uses
160.0			_		ish cemen			dated						0 %	Vater Supply
100.0			+ `		d dark gree			_	-   [	<u> </u>		-/-			Domestic Public
175.0	195				greenish/v				West	SEE AT	IACHE	D MAP	Eas		Irrigation Industrial
170.0	100				nd siltstone										athodic Protection
			1	atrix		Gty	cana) co								ewatering leat Exchange
			1			<i></i>	_ 7		71 (						njection
															onitoring
						77			a ( )						temediation
						1									parging
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					4		~	_	rivers, etc. ar	lescribe distance nd attach a map.	Use additiona	oads, building al paper if nec	s, fences, cessary.	00	apor Extraction Other
										ccurate and com		-f C	nloto d M		
										Level and					-t b - l
									Depth to	o first wate o Static				_ (Fee	et below surface)
					_	$ \times$			Water L	.evel <u>28</u>					ured 06/12/2011
Total D	epth of E	Boring		195			Feet								
Total D	epth of 0	Comple	eted W	/ell 40		$\langle \rangle$	Feet								down(Feet)
				_	Coo	nac			Iviay no	ot be repres	entative	or a wer	Annula		
Dept	h from	Bore	hole			ings	Wall	Outside	Screen	Slot Size	Dept	h from	Allilui	ai ivia	teriai
Sui	rface to Feet	Diam (Inch		Туре	Mate	riai	Thickness (Inches)	Diameter (Inches)	Туре	if Any (Inches)	Su	rface to Feet	Fil	I	Description
0	25	8		Blank	PVC Sch. 80	)	.276	2.75		(mones)	0	2	Cement		Concrete
25	35	8	S	Screen	PVC Sch. 80		.276	2.75	Milled Slots	0.020	2	20	Bentonite	,	Hydrated pellets
35	40	8	Е	Blank	PVC Sch. 80	)	.276	2.75			20	41	Filter Pac	k	#2/12 graded sand
					<u> </u>			<u> </u>							
			chme	nts						Certificati					
	Geologic						ndersigned Boart Loi			t is comple	te and a	ccurate t	o the best	of my	knowledge and belief
	Well Cor Geophys			agram		l '	Person, I	irm or Corp			nd			^ _	21796
				Analyses		1333	W. 9th S	treet Address		Upla	I <b>nd</b> City	/		ate	91786 Zip
						Signed								94686	·
Attach add	Other Detailed Site Map  additional information, if it exists.  C-57 Licensed W							ensed Water	Well Contractor			Date Si	gned C	-57 Lic	cense Number

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				ometer 1 (I				· e01290				Sta	ate Well Nu	ımber/Si	ite Number
	ork Begar						nded <u>4/20</u>	)/2011				Latitude			Longitude
				<u>sernardino</u> 31									APN/	TRS/Oth	her
Pelilliki	uniber <u>z</u>	.0110-	7010			11e <u>-1/3/</u>			-			Wall	l Owner		
Ori	entation	(a) \/	ertics		gic Log	OAngle	e Speci	fv	٠,,	California	Donortr				20
				Auger		Drilling		· y	11 -	California				<u>ı Gaiii</u>	ie
Depth	from Si	ırface	_		Des	cription				Address 4				- L- CA	0351/
	to F	eet	1/05		cribe material				City D	isilop					A z <sub>ip</sub> <u>93514</u>
0 5	10			P) Pale yell V) Pale bro				ac cond	_				Locatio	n	
3	10		-	w/ occasio						s Camp (					`an Darnardina
10	15		_	W) Greyish											San Bernardino
10	10		+	sand w/ fin		11( 5/2)	Time to co	Jaise	Latitude	e <u>34</u> Deg.	55 Min.	35 Sec.	N Longit	ude <u>1</u>	16 38 20 W Deq. Min. Sec.
15	20			V) Brown (		fine to (	coarse sa	nd w/							cimal Long. <u>-116.6389</u>
H			+	some fine		11110 10 1	<u> </u>	na w	APN B	ook <u>0541</u>	Pag	e <u>011</u>		Parc	cel <u>19</u>
20	30		+	V) Greyish		YR 5/2	fine to co	parse	Townsh	nip <u>10N</u>	Rang	e <u>04E</u>		Sect	ion <u>19</u>
				sand w/ so							ion Ske				Activity
30	43			V) Brown (	_				(Sketch	must be draw	n by hand a North	fter form is	printed.)		lew Well
				some fine					1		NOTH			ON	Modification/Repair  Deepen
43	46		_	Л) Dark gre					11					7	Other
	İ			coarse) sa	nd w/ mind	r clay	-							Op	Describe procedures and materials
46	50		(CL	_) Brown (1	0YR 4/3) r	noderat	tely stiff si	ilty clay							Describe procedures and materials under "GEOLOGIC LOG"
															Planned Uses
															Vater Supply  Domestic ☐ Public
									West				East		Irrigation ☐Industrial
									Š				ш		Cathodic Protection
										a a + +	aab	~ ~	270		Dewatering
						_0			_   56	ee att	aciie	ea III	ap		leat Exchange
							<u> </u>	$\sim$	41						njection
															Monitoring Remediation
															Sparging
											0 11				est Well
-			-		-		<b>~</b>		Illustrate or	describe distance	South	nads huilding	ns fences	O v	apor Extraction
					4	-		_	rivers, etc. a	and attach a map.	Use additiona	al paper if neo	cessary.	00	Other
							-		Water	Level and	l Yield	of Com	pleted V	Vell	
										o first wate	r			(Fee	et below surface)
					7			<i>)</i>		o Static		(For	ot) Doto	Mooci	ured 04/20/2011
Total [	Depth of E	Boring		50		- 7	Feet								ureu <u>04/20/2011</u>
		·			<i>-</i>										down(Feet)
Total L	Depth of (	Jompie	etea v	vveii <u>43</u>		$\Xi$	Feet			ot be repres					
					Cas	ings							Annul	ar Ma	iterial
Su	th from rface to Feet	Borel Diam (Inch	eter	Туре	Mate	rial	Wall Thickness (Inches)	Outside Diameter (Inches)	Screen Type	Slot Size if Any (Inches)	Su	th from rface to Feet	Fi	II	Description
0	33	6	103)	Blank	PVC Sch. 40	)	0.154	2.375		(IIICIICS)	0	5	Bentonit	<u>—</u>	Hydrated pellets
33	43	6		Screen	PVC Sch. 4		0.154	2.375	Milled Slots	0.010	5	50	Filter Pa	ck	#2/12 graded sand
											1				
				1.											
		_ \									<b>!</b>				
											<u> </u>				
		Atta	chm	ents						Certificat					
	Geologic					I, the u	ndersigned Gregg D	d, certify th	nat this repor	rt is comple	te and a	ccurate t	to the bes	t of my	knowledge and belief
	Well Cor Geophys						Person, I	Firm or Corpo	oration	<u> </u>	-1 1 120				00755
				l Analyses		<u>2726</u>	Walnut A	Address		Sign	ial Hill City	/		tate	90755 Zip
	Other <u>L</u>					Signed							/2011 4		5
Attach ad	additional information, if it exists.  C-57 Licensed Wa						ensed Water	Well Contractor			Date Si	igned C	:-57 Lic	cense Number	

*The free	Adobe R	eader m	ay be used to view	and complete	e this form	n. However,	software m	ust be purchas	sed to compl	ete, save,	and reus	se a saved	form.	
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Page 1		of	1		V	Vell Co	mpleti r to Instruction	on Repo	ort					
			Piezometer 2 (				· e01290				Sta	ate Well N	umber/S	ite Number
	ork Bega					nded <u>4/20</u>	)/2011				Latitude			Longitude
			an Bernardino									APN	/TRS/Ot	her
Permit N	Number _	201104	10182		ate <u>4/5/</u>	11		-			\A/ - II			
Ori	entation	- O V/		rizontal	OAngl	e Speci	f.,		) - I''( ! -	D t		l Owner		
			Stem Auger		Drilling	-	·y		California				<u>a Garr</u>	<u>ie</u>
Depth	from S	urface	-	Des	cription				Address <u>4</u> shop				ata CA	A z <sub>ip</sub> <u>93514</u>
Feet 0	to 1	Feet	(SP) Pale yel	cribe material					shop			Locatio		<u> Zip <u>30014</u></u>
	-		to 1/2-inch		) IIIIe S	and w/ co	ppies up		Camp C	adv M			n	
5	10		(SW) Greyish		YR 5/2	fine to m	edium	1 1					Supty S	San Bernardino
			<u> </u>	nd with sor										
10	20		(SW) Greyish	brown (10	YR 5/2)	fine to m	edium	1 1						16 37 60 W Deq. Min. Sec.
			coarse sai	nd with cob	bles up	to 1.5-ind	ch							cimal Long. <u>-116.6333</u>
			•	with depth										cel <u>19</u>
20	28		(SW) Dark gr					Townsh	ip <u>10N</u>				Sect	
			<del> </del>	nd w/ cobb				(Sketch	Locat must be drawn	ion Ske		printed.)		Activity New Well
28	30		(SW) Dark br				_		North			٥١	Modification/Repair	
30	38		(SW) Brown		fine to	coarse sa	and w/	-11 /						O Deepen
38	40		some fine (CL) Brown (		modera	taly etiff e	ilty clay	ام ا					0 0	Other Destroy
30	40		(CL) BIOWII (	1011( 4/3) 1	nouera	iciy siiii s	iity ciay	+					Į.	Describe procedures and materials under "GEOLOGIC LOG"
														Planned Uses
														Vater Supply
								St St				st		Domestic □Public □Irrigation □Industrial
								West				Ë	II .	Cathodic Protection
														Dewatering
								_  Se	ee att	cache	ed m	ap	0+	leat Exchange
						4	$\overline{}$	41						njection
-						_								Monitoring Remediation
					<del>-</del>		-						_	Sparging
					-		-	-		South				est Well
						-	-	Illustrate or d	lescribe distance nd attach a map.		oads, building	gs, fences,		/apor Extraction
					1		/	Please be a	ccurate and com	plete.	ai paper ii ned	cessary.		Other
								Water I	_evel and	Yield o	of Com	pleted \		
							7	Depth to	o first water				(Fe	et below surface)
					- 1			Water L	evel <u>22</u>					ured 04/20/2011
Total [	Depth of	Boring	40			Feet		Estimate	ed Yield *		(GP	M) Test	Type _	
Total [	Depth of	Comple	eted Well 38		<u> </u>	Feet								down(Feet)
				Cas	Ingo			lviay no	ot be repres	sentative	or a wer			
Dept	th from	Borel	nole _		ings	Wall	Outside	Screen	Slot Size	Dept	h from	Annu	lar Ma	iteriai
Su	rface to Feet	Diame (Inch		Mate	rıaı	Thickness (Inches)	Diameter (Inches)	Type	if Any (Inches)	Su	rface to Feet	F	ill	Description
0	28	6	Blank	PVC Sch. 4	)	0.154	2.375		(ITICITES)	0	5	Bentoni	te	Hydrated pellets
28	38	6	Screen	PVC Sch. 4	0.154	2.375	Milled Slots	0.010	5	40	Filter Pa	ack	#2/12 graded sand	
		-								<b> </b>				
		-	$\overline{}$						1	-				
		A 4.1 -	a la ma a rat a			1			]	on Circ	 			
	Geologi		chments		I, the u	ndersigne	d. certify th		Certificati				st of my	/ knowledge and belief
			on Diagram			Gregg D	rilling and	d Testing	30.11010				J. 111y	,
	Geophy	sical Lo	og(s)		2726	Walnut A		oration	Sign	al Hill				90755
			mical Analyses d Site Map		Signed		Address			City			State	Zip 5
	_				2.9.100		ensed Water	Well Contractor						cense Number
	additional information, if it exists.  C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57 Licensed William C-57											_		

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Page 1		of ´	1				mplet I r to Instruction	ion Repo	ort					
			iezometer 3				- e01290				Sta	ite Well Nur	mber/S	ite Number
			/2011			Ended <u>4/20</u>	0/2011				Latitude			Longitude
			<u>n Bernardin</u> 0183		DPH EH Date <u>4</u>							APN/T	RS/Ot	her
Permit N	number <u>z</u>	71104				73/11		-			\Mall	Owner		
Ori	ientation	<b>⊙</b> \/e		logic Log Iorizontal	O An	igle Speci	ify	+	California	Doportr			Com	
	Method Ho			ionzontai		ng Fluid	y						Gan	ie
	n from Su				escription	on		City Bi	Address 4	O7 VV. L			to CA	<u>Zip 93514</u>
Feet 0	to Fe	et	(SW) Pale y			size, color, etc		City <u>S</u>	опор			Location		<u></u>
	3		coarse s		1/3) 11116	e to medium	1	A dalue e	S Camp C	adv M			1	
5	10		(SW) Brown		3) fine to	o medium d	oarse						t. S	San Bernardino
						to 1/2-inch								
10	40		(SM) Brown				se) sand	Latitude						16 37 44 W Deq. Min. Sec.
		ĺ	w/ cobble	es up to 1.	/2-inch									imal Long. <u>-116.6289</u>
40	45		(SC) Very p	ale brown	(10YR	7/3) silty cla	ayey							el <u>19</u>
			(fine) saı					Townsh	nip <u>10N</u>				Sect	
45	49		(ML) Light y	ellowish b	rown (1	0YR 6/4) cl	ayey	(Sketch	Locat must be drawn	ion Ske		nrinted )	0.1	Activity
			sandy si					(OKCIOII	must be drawi	North	iter form is	printed.)		lew Well /lodification/Repair
49	50		(CL) Brown	(10YR 4/	3) mode	rately stiff s	ilty clay	41				7 4		O Deepen
								-11 -1						Other Destroy
													اً ا	Describe procedures and materials under "GEOLOGIC LOG"
														Planned Uses
														Vater Supply
						1		—   <sub>to</sub>				, t		Domestic Public
								West				East		Irrigation Industrial
										7,			_	Cathodic Protection Dewatering
								Se	ee att	cache	ed m	ap		leat Exchange
						A 7								njection
														Monitoring
														Remediation Sparging
							(							est Well
				_			_ \	Illustrate or s	describe distance	South	odo buildina	n fancas	O v	apor Extraction
				4	-		_	rivers, etc. a	nd attach a map. ccurate and com	Use additiona	al paper if neo	cessary.		Other
				-		~ 4	-		Level and		of Com	pleted W	/ell	
						-		Depth to	o first wate	r		•	_ (Fee	et below surface)
					Υ.,	$\cup \leftarrow$	<i>)</i>		o Static		(Foo	ot) Doto	Mooci	ured 04/20/2011
Total F	Depth of B	orina	50			Feet								urea <u>0-7/20/2011</u>
					$\sim$	_		Test Le	ngth		(Hou	urs) Total	Draw	down(Feet)
Total L	Depth of C	ompiet	ed Well <u>37</u>		V.	Feet			ot be repres					
				С	asings							Annula	ar Ma	terial
Su	th from rface to Feet	Diame (Inche	ter Type	М	aterial	Wall Thickness (Inches)	Outside Diameter (Inches)	Screen Type	Slot Size if Any (Inches)	Su	h from rface to Feet	Fill	I	Description
0	27	6	Blank	PVC Sch	. 40	0.154	2.375			0	5	Bentonite	;	Hydrated pellets
27	37	6	Screen	PVC Sch	1. 40	0.154	2.375	Milled Slots	0.010	5	50	Filter Pac	k	#2/12 graded sand
		-					1			<b>!</b>				
		(	- , "				1	+				1		
			_							1				
	ı	Attac	hmonte				1		Cortificati	ion Stat	lomont	1		
	Geologic		hments		I, the	undersigne	d. certify th		Certificati				of my	knowledge and belief
			n Diagram			e Gregg D	rilling and	d Testing						
	Geophysi	cal Log	g(s)		<u>27</u> 2	Person, 26 Walnut <i>A</i>		oration	Sign	al Hill				90755
			nical Analyses	S	Sign	<u>_</u>	Address			City	04/26/	Sta	ate 8516	Zip
	Other _De		I Site Map t exists.		-    3.911		ensed Water	Well Contractor						cense Number
DIMED 455														

*The free	e Adobe R	eader ma	ay be used to view	and complete	this form. H	However,	, software m	ust be purchas	sed to compl	ete, save,	and reus	e a saved f	orm.	
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Page 1	l	of	1		We			on Repo	ort					
			Piezometer 4 (				r to Instruction • e01290				Sta		nber/S	ite Number W
	ork Begai	_			— Work Ende						Latitude	N		Longitude
Local Pe	ermit Age	ncy <u>Sa</u>	n Bernardino	County DF	H EHS							A DNI/T	RS/Oth	
Permit N	Number <u>-</u>	201104	0184		ate <u>4/5/11</u>				L				13/01	nei
				ogic Log								Owner		
	ientation			rizontal	OAngle		ify	– Name <u>√</u>	California	Departn	nent of	Fish and	Gam	ne
	h from Si		tem Auger		Drilling Flu	<u></u>		Mailing	Address 4	07 W. L				
	t to F		Des	cribe material		color, etc	:	City Bi	shop			Sta	te <u>CA</u>	A z <sub>ip</sub> <u>93514</u>
0	5		(SW) Pale ye	llow (2.5Y	7.4) fine s	and w/	some				Well	Location	1	
			med. coar	se sand an	d cobbles	up to '	1/2-inch	Address	S Camp C	Cady, Mo	ojave T	rail		
5	15		(SP) Greyish	brown (10)	/R 5/2) fin	e sanc	d w/ some	City Ne	ewberry S	prings		Cou	unty S	San Bernardino
			medium co	oarse sand					34 Deq.					16 37 23 W Deq. Min. Sec.
15	17		(SW) Greyish	brown (10	YR 5/2) fii	ne san	d w/ som							
			med. coars	se sand, cl	ay, cobble	s up to	3/4-inch	- 1 1 -						cimal Long. <u>-116.6229</u>
17	27.	5	(SC) Dark gre	eyish browr	10YR 4	/2) silty	clayey							el <u>19</u>
			(fine to coa	arse) sand	with some	cobbl	es up	Townsh	<sub>iip</sub> <u>10N</u>				Sect	
			to 1/2-inch	1				(Cleatab		ion Ske		muinted \		Activity
27.5	30		(CL) Brown (1	10YR 4/3) r	noderately	y stiff s	ilty clay	(Sketch	must be draw	North	iter ionn is	printed.)		lew Well Modification/Repair
								╛						O Deepen
								41 ./						Other
													ין ט	Destroy Describe procedures and materials under "GEOLOGIC LOG"
														Planned Uses
														Vater Supply  Domestic ☐Public
								West				East		Irrigation Industrial
								_				Ш	00	Cathodic Protection
									e att	agha	.d m	an	_	Dewatering
					A. P.	_		-	e all	aciie	ea illa	ap		leat Exchange
					<b>7.</b> 9	$\sim$	$\sim$	41						njection
													_	Monitoring
					ж_									Remediation Sparging
														est Well
										South				apor Extraction
				4		~	_	rivers, etc. ar	describe distance nd attach a map. ccurate and com	Use additiona	ads, building	essary.		other
							$\leftarrow$		Level and		of Com	pleted W	/ell	
				_			-		o first wate	r			_ (Fee	et below surface)
				-		₩.	<i>}</i>	Depth to			<b>/</b> □	.4\ D-4-		
Total	Donth of I	Doring .	20	_		Foot								ured <u>04/19/2011</u>
	Depth of I		30			- Feet								down(Feet)
Total [	Depth of (	Complet	ted Well <u>27.5</u>	$\sim$	$\hookrightarrow$	_ Feet			ot be repres					
				Cas	ings							Annul		
	th from	Boreh	IVno	Mate	rial	Wall	Outside	Screen	Slot Size		h from			
	urface to Feet	Diame (Inche	eter		- 11	<b>hickness</b> (Inches)	S Diameter (Inches)	Type	if Any (Inches)		rface to Feet	Fil	1	Description
0	<b>17.</b> 5	6	Blank	PVC Sch. 40		.154	2.375			0	5	Bentonite	)	Hydrated pellets
<b>17.</b> 5	<b>27.</b> 5	6	Screen	PVC Sch. 4	0	.154	2.375	Milled Slots	0.010	5	30	Filter Pac	:k	#2/12 graded sand
										<u></u>				
				1			1			<u> </u>		1		
<u></u>	<u> </u>	<u> </u>		<u> </u>			<u> </u>	<u> </u>	<u> </u>	<u></u>	<u> </u>	<u> </u>		
		Attac	hments						Certificat					
	Geologi								t is comple	te and a	ccurate t	o the best	of my	knowledge and belief
			on Diagram			Person,	rillnig and Firm or Corpo	oration						
	Geophy:		g(s) nical Analyses		<u>2726 W</u>	/alnut /	Avenue Address		Sign	ial Hill Citv	,		A S	90755 Zip
			d Site Map		Signed		Auuress			City	04/26/		<sup>ate</sup> 85165	·
	ditional info				L	C-57 Lic	ensed Water	Well Contractor						cense Number
	DEV 4/555													

*The free	Adobe R	eader ma	y be used to view	and complete	e this form	n. However,	software m	ust be purchas	sed to compl	ete, save,	and reus	e a saved	form.	
File Orig	ginal with	DWR					ate of Cal		. [		DV	VR Use O	nly – Do	Not Fill In
Page 1		of 1	<u> </u>		V	Vell Co	mpleti	on Repo	ort					
			iezometer 5 (		_		• e01290				Sta	te Well No	umber/S	ite Number
			/2011			nded <u>4/19</u>	)/2011				Latitude			Longitude
			n Bernardino									ΔΡΝ	/TRS/Ot	her
Permit N	Number _	2011040	0185		ate <u>4/5/</u>	711		-			107 11			1101
0=	entation	(A)/a		ogic Log	O A n al	0 0	<i>t.</i> .	+	2 114 1			Owner		
			micai O Ho em Auger	rizontal	O Angl Drilling	-	ту		California				d Gam	ne
	n from S				cription				Address <u>4</u>					00544
	to I			cribe material				City BI	snop					A z <sub>ip</sub> <u>93514</u>
0	5		(SP) Pale bro									Locatio	n	
5	10		(SW) Greyish		•		oarse	1 1	Camp C					) B "
10	15		(SW) Brown (	ome cobble			nd							San Bernardino
10 15	18		(SW) Brown (					Latitude	34 Dea .	<u>56</u>	11 Sec	N Longit	tude 1	16 37 0 W Deg. Min. Sec.
18	19-		(SC) Dark blu					1 1						cimal Long. <u>-116.6168</u>
10	13*			arse) sand	)LL   ¬/	1) Silty Cit	дусу							cel 19
19.5	20		(CL) Dark blu		I FY2 4	/1) mode	rately		ip 10N					
10.0			stiff silty cl			717111000	ratory			ion Ske				Activity
								(Sketch	must be draw	by hand a	fter form is	printed.)		lew Well
								╗		NOTH	<i></i>		ON	Modification/Repair  Deepen
								TI ./						Other
														Destroy Describe procedures and materials
														Describe procedures and materials under "GEOLOGIC LOG"
														Planned Uses
														Vater Supply  Domestic ☐ Public
								West				ast		Irrigation Industrial
												ш	II .	Cathodic Protection
								_  Se	ee at	tach	ed m	nap		Dewatering
-					~~		-							leat Exchange
				-		-	$\leftarrow$	41 _ \						njection Monitoring
					$\overline{}$			$\pm 100$						Remediation
-					4		-	71 V					_	Sparging
					-			b .		South				est Well
				_	•	-	-	Illustrate or d	lescribe distance nd attach a map.		pads, building	s, fences,	O V	apor Extraction
				4	-			rivers, etc. ar	nd attach a map. ccurate and com	Use additional plete.	al paper if ned	cessary.	$\circ$	Other
						-		Water I	_evel and	Yield	of Com	pleted \	Well	
				-		$\sim$			first water	·			(Fe	et below surface)
				1			<i>†</i>	Depth to			(Foc	at) Date	Measi	ured <u>04/19/2011</u>
Total [	Depth of	Borina	20		-	Feet								urou <u>0 1/ 10/2011</u>
		· ·	ed Well 18	-				Test Le	ngth		<u> </u>	urs) Tota	l Draw	down(Feet)
Total I	Jepin oi	Complet	ed Well 10		$\Box$	Feet			t be repres					
				Cas	ings							Annu	lar Ma	iterial
Su	th from rface to Feet	Diame (Inche	ter Type	Mate	rial	Wall Thickness (Inches)	Outside Diameter (Inches)	Screen Type	Slot Size if Any (Inches)	Su	th from rface to Feet	F	ill	Description
0	13	6	Blank	PVC Sch. 40	)	0.154	2.375		Í	0	5	Bentonit	te	Hydrated pellets
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\*The free Adobe Reader may be used to view and complete this form. However, software must be purchased to complete, save, and reuse a saved form. File Original with DWR State of California DWR Use Only - Do Not Fill In **Well Completion Report** \_ of \_1 Refer to Instruction Pamphlet State Well Number/Site Number Owner's Well Number Piezometer 9 (P9) No. e0129075 W Date Work Began 04/19/2011 Date Work Ended 4/19/2011 Latitude Longitude Local Permit Agency San Bernardino County DPH EHS APN/TRS/Other Permit Number <u>2011040189</u> Permit Date <u>4/5/11</u> Geologic Log **Well Owner** O Horizontal **O**Angle Name California Department of Fish and Game Specify\_ Drilling Method Hollow Stem Auger Drilling Fluid Mailing Address 407 W. Line Street Depth from Surface Description State CA City Bishop to Feet Describe material, grain size, color, etc Feet 0 (SP) Light brownish gray (10YR 6/2) fine sand Well Location 5 4 (SC) Brown (10YR 5/3) silty, clayey (fine) sand Address Camp Cady, Mojave Trail (SC) Pale brown (10YR 6/3) silty medium coarse **17.** 5 \_\_\_ County San Bernardino City Newberry Springs to coarse sand w/ trace clay Latitude 34 17.5 (CL) Dark bluish grey (GLEY2 4/1) stiff clay 18 Datum NAD83 Decimal Lat. 34.940085 Decimal Long. -116.5966 \_\_ Parcel <u>19</u> APN Book <u>0541</u> Page <u>011</u> Township 10N Range 04E Section 19 **Location Sketch** Activity (Sketch must be drawn by hand after form is printed.) New Well O Modification/Repair O Deepen Other\_ O Destroy Describe procedures and materials under "GEOLOGIC LOG" Planned Uses O Water Supply ☐ Domestic ☐ Public ☐ Irrigation ☐ Industrial O Cathodic Protection O Dewatering See attached map O Heat Exchange O Injection Monitoring O Remediation O Sparging O Test Well South O Vapor Extraction Illustrate or describe distance of well from roads, buildings, fences, rivers, etc. and attach a map. Use additional paper if necessary. Please be accurate and complete. O Other Water Level and Yield of Completed Well Depth to first water \_\_ (Feet below surface) Depth to Static \_\_\_\_ (Feet) Date Measured 04/19/2011 Water Level 6 Total Depth of Boring Estimated Yield \* (GPM) Test Type Feet (Hours) Total Drawdown Total Depth of Completed Well 18 Feet \*May not be representative of a well's long term yield. **Casings** Annular Material Depth from Borehole Wall Outside Screen Slot Size Depth from Material Type Surface Diameter Thickness Diameter Type if Any Surface Fill Description Feet to Feet (Inches) (Inches) (Inches) (Inches) Feet to Feet 8 6 Blank PVC Sch. 40 0.154 2.375 5 Bentonite Hydrated pellets Screen PVC Sch. 40 Filter Pack #2/12 graded sand 18 6 0.154 2.375 Milled Slots 0.010 18 **Attachments Certification Statement** I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief ☐ Geologic Log Name Gregg Drilling and Testing ☐ Well Construction Diagram Person, Firm or Corporation ☐ Geophysical Log(s) 2726 Walnut Avenue Signal Hill ☐ Soil/Water Chemical Analyses Address 04/26/2011 485165 ☑ Other Detailed Site Map C-57 Licensed Water Well Contractor C-57 License Number Attach additional information, if it exists. Date Signed

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	entation			rizontal	OAngle		fy	— Name <u>√</u>	<u>California</u>	Departr	nent of	Fish and	Gam	ne	
	from Si		em Auger	Dos	Drilling cription	Fluid			Address 4						
	to F		Des	cribe material		e, color, etc		City Bi	shop			Sta	te <u>CA</u>	<u>Zip</u> <u>93514</u>	
0	5		(SW) Greyish	brown (10	YR 5/2)	fine to m	edium		Well Location						
			coarse sa	nd w/ cobbl	es up to	1/4-inch		Address	Address Camp Cady, Mojave Trail						
5	10		(SW) Dark ye	llowish bro	wn (10\	/R 4/4) m	edium	City Newberry Springs County San Bernardino							
			coarse to	coarse san	d w/ trad	ce gravel			Latitude 34 56 41 N Longitude 116 35 12 W						
10	17		(SW) Greyish	brown (10	YR 5/2)	medium	corase to	~							
				nd w/ some		<del>,                                    </del>		<b>   </b>   <sup>-</sup>						imal Long. <u>-116.5867</u>	
17	18-	5	(SW) Greyish											el <u>19</u>	
				nd w/ some				Townsh	ip <u>10N</u>				Sect		
18.5	20		(CL) Dark blu	ish grey (G	LEY2 3	/1) stiff cl	ay	(Sketch	Locat must be draw	ion Ske		printed )		Activity	
								(OKCICII	must be draw	North	iter form is	printed.)		lew Well Iodification/Repair	
												7 4		O Deepen	
								/						Other	
														Destroy Describe procedures and materials under "GEOLOGIC LOG"	
												~	(	Planned Uses	
													O V	Vater Supply	
							_							Domestic Public	
								West				East		Irrigation Industrial	
-	_						$\sim$	_	See attached map  O Cathodic Protection O Dewatering O Heat Exchange						
	_							Se							
					~ 0	_	=	-							
-	-			_		-	-	4						njection	
											Monitoring Remediation				
-	-				-	-	-		O Sparging						
-									. Court				O Test Well		
-				-				Illustrate or o	South  Illustrate or describe distance of well from roads, buildings, fences,				O Vapor Extraction		
-				4	-				rivers, etc. and attach a map. Use additional paper if necessary.  Please be accurate and complete.					Other	
						-	$\overline{}$	Water Level and Yield of Completed Well							
				-		$\overline{}$	-	Depth to	o first wate	r			_ (Fe	et below surface)	
				7	-		<del>/                                    </del>	Depth to			(Foo	at) Date	Maası	ured 04/19/2011	
Total	Depth of I	Boring	20	_		Feet								urea <u>0-7/19/2011</u>	
								Test Le	nath		— (Hou	urs) Total	Draw	down(Feet)	
Total I	Depth of (	Complet	ed Well <u>18</u>	-	$\sim$	Feet			ot be repres						
				Cas	ings							Annula	ar Ma	terial	
Su	th from rface	Boreho Diame	ter Type	Mate	rial	Wall Thickness	Outside Diameter	Screen Type	Slot Size if Any	Su	h from rface	Fill	1	Description	
	to Feet	(Inche		D) (C, C, 1	`	(Inches)	(Inches)		(Inches)		to Feet	Bontonit-		Hydratad pollata	
0 13	13 18	6	Blank Screen	PVC Sch. 40 PVC Sch. 40		0.154	2.375	Milled Slots	0.010	0 5	5 20	Bentonite Filter Pac		Hydrated pellets #2/12 graded sand	
13	10	U	Scieen	F V C SCII. 40	,	0.134	2.313	IVIIIIEU SIOIS	0.010	J	20	i iilei Pac	IV.	#Z/ 12 graded Sand	
	1						+		+	1		+			
	1						<u> </u>	1	1	1		<del>                                     </del>			
										1					
	1	Attac	hments						Certificat	ion Stat	ement	•			
	Geologic		imienta		I, the u	ndersianea	d, certify th		Certification Statement t this report is complete and accurate to the best of my knowledge and belief						
			n Diagram			Gregg D	rilling and	d Testing							
	Geophy	sical Log	g(s)		2726	Person, I Walnut A	Firm or Corpo	oration Signal Hill CA 90755							
			nical Analyses				Address	City State Zip							
			Site Map		Signed		ensed Water	04/26/2011         485165           ter Well Contractor         Date Signed         C-57 License Number							
Attach ad	Attach additional information, if it exists.					Johnadol			שמוב או	gri <del>c</del> u C	J/ LI(	CHOC HUITIDE			

# Appendix C Well Logs for Shallow Piezometers

Alameda, California

#### **EXPLORATORY BORING/WELL LOG**

PROJECT NO.: 64903
HOLE NO.: Piezometer 1 (P1)
HOLE LOCATION: Camp Cady
HOLE LOCATION: Mojave River

LOGGED BY: Edwin Lin

PROJECT LOCATION: Camp Cady

DATE STARTED: 4/20/2011 LogGED BY: Edwin Lin LogGED BY: 4/20/2011 Lat 34.926412 Long -116.638884 DATE FINISHED: 4/20/2011

DRILLING INFORMATION	COMPLETION/INFORMATION				
DRILLING AGENCY: Gregg Drilling and Testing	CASING SIZE & TYPE: 2-inch PVC Schedule 40				
DRILLER: Santiago Vega	CASED INTERVAL: 0 - 43 feet SCREEN SIZE AND TYPE: 2-inch PVC Schedule 40 0.010-slot SCREENED INTERVAL: 33 - 43 feet				
DRILLING METHOD. Hollow Stem Auger					
DDILL BIT: 6-inch	FILTER PACK: #2/12 Lapus Lustre Sand PACKED INTERVAL: 5 - 50 Feet				
00.40.6	SURFACE SEAL TYPE: Hydrated Bentonite Pellets				
	SURFACE SEAL INTERVAL: 0 - 5 feet WELLHEAD: Riser casing 2 feet above grade				

	GRAPHIC			
DEPTH (FEET)	LITHOLOGIC DESCRIPTION	LITHOLOGY	WELL	
5 –	(SP) Pale yellow (5YR 8/2) fine sand.			Note: no discrete samples collected; cuttings brought to surface by auger flights used for geologic logging
-	(SW) Pale brown (10YR 6/3) fine to coarse sand with occasional cobbles up to 1/4-inch diameter.	0 0 0 0 0 0 0 0 0 0		
10 — - - - - - - - 15 —	(SW) Grayish brown (10YR 5/2) fine to coarse sand with fine gravel.			
	(SW) Brown (10YR 5/3) fine to coarse sand with some fine gravel.			
25 -	(SW) Grayish brown (10YR 5/2) fine to coarse sand with some gravel and cobbles up to 1/2-inch.	0 0 0		
30	(SW) Brown (10YR 5/3) fine to coarse sand with some fine gravel and cobbles up to 1/2-inch.			

# **TODD ENGINEERS** Alameda, California

#### **EXPLORATORY BORING/WELL LOG**

PROJECT NO.: 64903 PROJECT LOCATION: Camp Cady
HOLE NO.: Piezometer 1 (P1) HOLE LOCATION: Mojave River
ELEVATION: LOCCED BY: Edwin Lin

| DATE STARTED: 4/20/2011 | LOGGED BY: Edwin Lin | Lat 34.926412 Long -116.638884 | DATE FINISHED: 4/20/2011

	Lat 34.926412 Long -116	4/20/2011		
DEDTIL		GRAPH	HIC LOG	
DEPTH (FEET)	LITHOLOGIC DESCRIPTION	LITHOLOGY	WELL COMPLETION	
40 -	(SW) Brown (10YR 5/3) fine to coarse sand with some fine gravel and cobbles up to 1/2-inch.			
45 —	(SM) Dark grayish brown (10YR 4/2) silty (fine to coarse) sand with minor clay.			
	(CL) Brown (10YR 4/3) moderately stiff silty clay.			
55	Total Depth = 50' bgs			
75 —				

Alameda, California

#### **EXPLORATORY BORING/WELL LOG**

PROJECT NO.: 64903 HOLE NO.: Piezometer 2 (P2) ELEVATION:

PROJECT LOCATION: Camp Cady
HOLE LOCATION: Mojave River
LOGGED BY: Edwin Lin

DATE STARTED: 4/20/2011 LogGED BY: Edwin Lin LogGED BY: 4/20/2011 DATE FINISHED: 4/20/2011

	DRILLING INFORMATION	COMPLETION/INFORMATION				
DRILLIN	GAGENCY: Gregg Drilling and Testing					
	R: Santiago Vega	CASING SIZE & TYPE: 2-inch PVC Schedule 40 CASED INTERVAL: 0 - 38 feet				
	G EQUIPMENT: Marl M5-T (Rhino)	SCREEN SIZE AND TYPE: 2-inch PVC Schedule 40 0.010-slot				
	G METHOD: Hollow Stem Auger	SCREENED INTERVAL: 28 - 38 feet				
	T: 6-inch	FILTER PACK: #2/12 Lapus Lustre Sand				
	S TAKEN: Continuous	PACKED INTERVAL: 5 - 40 Feet				
	WATER LEVEL: 21.75 feet bgs SAMPLE TYPE: Flight	SURFACE SEAL TYPE: Hydrated Bentonite Pellets				
	DEPTH: 40 feet bgs COMPLETED DEPTH: 38 feet bgs	SURFACE SEAL INTERVAL: 0 - 5 feet				
TOTALL	DEPTH: 40 feet bys COMPLETED DEPTH: 30 feet bys	WEELING !				
DEPTH		GRAPHIC LOG				
(FEET)	LITHOLOGIC DESCRIPTION	LITHOLOGY WELL COMPLETION				
-	<ul> <li>(SP) Pale yellow (5Y 8/4) fine sand with cobbles</li> <li>up to 1/2-inch.</li> </ul>	Note: no discrete samples collected;				
		cuttings brought to surface by auger				
-						
-	-	- 1º . N N				
5 <del>-</del>	-	- 10 × N - N				
5 –	(SW) Grayish brown (10YR 5/2) fine to medium coarse					
	sand with some cobbles up to 1/2-inch.					
_	_	0				
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-	-					
10 –						
-	(SW) Grayish brown (10YR 5/2) fine to medium coarse sand with cobbles up to 1.5-inch increasing with depth.					
-	Count with coopies up to 1.5 mon more doing with dopui.					
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20 –	(0)(0) D. I					
-	(SW) Dark grayish brown (10YR 4/2) fine to coarse sand with cobbles up to 1/2-inch.					
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-						
-		0 0				
25 <b>–</b>	<u>-</u>					
	-					
-						
_		U U				
=	(SW) Dark brown (10YR 3/3) fine to coarse sand.					
=	(11.7) 2 3 2.3 (13.11.3.3) mile to obtaine build.					
30 –	(SW) Brown (10YR 4/3) fine to coarse sand	o o				
-	with some fine gravel.	0.00				
-	-	0 0 0 0				
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35 <b>–</b>	L	0 0 0 <u> </u>				
		CUEET 1 OF 2				

## **EXPLORATORY BORING/WELL LOG** PROJECT NO.: 64903 PROJECT LOCATION: Camp Cad HOLE NO.: Piezometer 2 (P2) HOLE LOCATION: Mojave River **TODD ENGINEERS** PROJECT LOCATION: Camp Cady Alameda, California ELEVATION: LOGGED BY: Edwin Lin DATE STARTED: 4/20/2011 Lat 34.926412 Long -116.638884 DATE FINISHED: 4/20/2011 **GRAPHIC LOG** DEPTH (FEET) LITHOLOGIC DESCRIPTION LITHOLOGY WELL COMPLETION 0 (SW) Brown (10YR 4/3) fine to coarse sand with some fine gravel. 000 0 (CL) Brown (10YR 4/3) moderately stiff silty clay. 40 Total Depth = 40' bgs 45 50 55 60

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Alameda, California

#### **EXPLORATORY BORING/WELL LOG**

PROJECT NO.: 64903 HOLE NO.: Piezometer 3 (P3) **ELEVATION:** 

DATE STARTED: 4/20/2011

PROJECT LOCATION: Camp Cady HOLE LOCATION: Mojave River LOGGED BY: \_Edwin Lin Lat 34.933506 Long -116.628921 DATE FINISHED: 4/20/2011

DRILLING INFORMATION COMPLETION/INFORMATION DRILLING AGENCY: Gregg Drilling and Testing CASING SIZE & TYPE: 2-inch PVC Schedule 40 DRILLER: Santiago Vega CASED INTERVAL: 0 - 37 feet SCREEN SIZE AND TYPE: 2-inch PVC Schedule 40 0.010-slot DRILLING EQUIPMENT: Marl M5-T (Rhino) SCREENED INTERVAL: 27 -37 feet DRILLING METHOD: Hollow Stem Auger FILTER PACK: #2/12 Lapus Lustre Sand DRILL BIT: 6-inch PACKED INTERVAL: 5 - 50 Feet SAMPLES TAKEN: Continuous SURFACE SEAL TYPE: Hydrated Bentonite Pellets STATIC WATER LEVEL: 19.29 feet bgs SAMPLE TYPE: Flight SURFACE SEAL INTERVAL: 0 - 5 feet TOTAL DEPTH: 50 feet bgs COMPLETED DEPTH: 37 feet bgs WELLHEAD: Riser casing 3 feet above grade

GRAPHIC LOG **DEPTH** LITHOLOGIC DESCRIPTION LITHOLOGY WELL COMPLETION (FEET) (SW) Pale yellow (5Y 7/3) fine to medium coarse sand Note: no discrete samples collected; cuttings brought to surface by auger flights used for geologic logging 5 (SW) Grayish brown (10YR 5/3) fine to medium coarse sand with some cobbles up to 1/2-inch. 0 0 10 (SM) Brown (10YR 5/3) silty (fine to coarse) sand 0 0 with cobbles up to 1/2-inch. 0 0 Ο 15 0 20 0 25 0 0 30 35

# **EXPLORATORY BORING/WELL LOG** PROJECT NO.: 64903 PROJECT LOCATION: Camp Cade HOLE NO.: Piezometer 3 (P3) HOLE LOCATION: Mojave River **TODD ENGINEERS** PROJECT LOCATION: Camp Cady Alameda, California **ELEVATION:** LOGGED BY: Edwin Lin DATE STARTED: 4/20/2011 Lat 34.933506 Long -116.628921 DATE FINISHED: 4/20/2011 **GRAPHIC LOG DEPTH** LITHOLOGIC DESCRIPTION LITHOLOGY WELL COMPLETION (FEET) (SM) Brown (10YR 5/3) silty (fine to coarse) sand with cobbles up to 1/2-inch. 0 Ο 40 (SC) Very pale brown (10YR 7/3) silty clayey (fine) sand. 45 (ML) Light yellowish brown (10YR 6/4) clayey sandy silt. (CL) Brown (10YR 4/3) moderately stiff silty clay. 50 Total Depth = 50' bgs 55 60 65 70 75

Alameda, California

#### **EXPLORATORY BORING/WELL LOG**

PROJECT NO.: 64903
HOLE NO.: Piezometer 4 (P4)
HOLE LOCATION: Camp Cade
HOLE LOCATION: Mojave River

LOGGED BY: Edwin Lin

PROJECT LOCATION: Camp Cady

DATE STARTED: 4/19/2011 LogGED BY: Edwin Lin LogGED BY: 4/19/2011 Lat 34.936292 Long -116.622919 DATE FINISHED: 4/19/2011

DRILLING INFORMATION	COMPLETION/INFORMATION			
DRILLING AGENCY: Gregg Drilling and Testing	CASING SIZE & TYPE: 2-inch PVC Schedule 40			
DRILLER: Santiago Vega	CASED INTERVAL: 0 - 27.5 feet SCREEN SIZE AND TYPE: 2-inch PVC Schedule 40 0.010-slot			
DRILLING EQUIPMENT: Marl M5-T (Rhino)				
DRILLING METHOD: Hollow Stem Auger	SCREENED INTERVAL: 17.5 - 27.5 feet			
DRILL BIT: 6-inch	FILTER PACK: #2/12 Lapus Lustre Sand			
	PACKED INTERVAL: 5 - 30 Feet			
	SURFACE SEAL TYPE: Hydrated Bentonite Pellets			
	SURFACE SEAL INTERVAL: 0 - 5 feet			

	T: 6-inch	FILTER PACK: #2/12 Lapus Lustre Sand				
	S TAKEN: Continuous	PACKED INTERVAL: 5 - 30 Feet				
	WATER LEVEL: 10.80 feet bgs SAMPLE TYPE: Flight	SURFACE SEAL TYPE: Hydrated Bentonite Pellets SURFACE SEAL INTERVAL: 0 - 5 feet				
			WELLHEAD: Riser casing 2.5 feet above grade			
			GRAPHIC		-	
DEPTH	LITHOLOGIC DESCRIPTION		HOLOGY		1	
(FEET)				WELL COMPLETION		
	- (SW) Pale yellow (2.5Y 7/4) fine sand with some medium coarse sand and cobbles up to 1/2-inch	0	0 0 0		Note: no discrete samples collected; cuttings brought to surface by auger flights used for geologic logging	
10 -	(SP) Grayish brown (10YR 5/2) fine sand with some medium coarse sand.		<u>)</u>	_		
15 - - - - -	- (SW) Grayish brown (10YR 5/2) fine sand with some medium coarse sand, clay, cobbles up to 3/4-inch.  - (SC) Dark grayish brown (10YR 4/2) silty clayey (fine to coarse) sand with some cobbles up to 1/2-inch.	O	0			
20		0	0 0 0			
-		O	0			
30 —	(CL) Brown (10YR 4/3) moderately stiff silty clay.					
-	Total Depth = 30' bgs					
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-					SHEET_1_OF_1_	

Alameda, California

#### **EXPLORATORY BORING/WELL LOG**

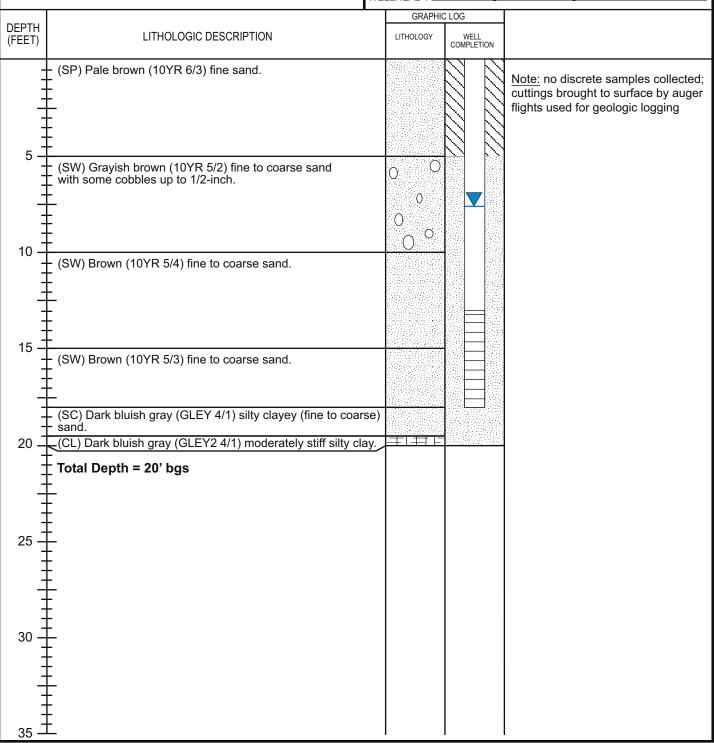
PROJECT LOCATION: Camp Cady

PROJECT NO.: 64903 HOLE NO.: Piezometer 5 (P5)

HOLE LOCATION: Mojave River LOGGED BY: Edwin Lin

**ELEVATION:** DATE STARTED: 4/19/2011 Lat 34.936507 Long -116.616753 DATE FINISHED: 4/19/2011

DRILLING INFORMATION	COMPLETION/INFORMATION				
DRILLING AGENCY: Gregg Drilling and Testing	CASING SIZE & TYPE: 2-inch PVC Schedule 40 CASED INTERVAL: 0 - 18 feet				
DRILLER: Santiago Vega					
	SCREEN SIZE AND TYPE: 2-inch PVC Schedule 40 0.010-slot				
	SCREENED INTERVAL: 13 - 18 feet				
DRILL BIT: 6-inch	FILTER PACK: #2/12 Lapus Lustre Sand				
	PACKED INTERVAL: 5 - 20 Feet				
	SURFACE SEAL TYPE: Hydrated Bentonite Pellets				
STATIC WATER LEVEL: 7.64 feet bgs SAMPLE TYPE: Flight	SURFACE SEAL INTERVAL: 0 - 5 feet				
TOTAL DEPTH: 20 feet bgs COMPLETED DEPTH: 18 feet bgs	WELLHEAD : Riser casing 2 feet above grade				



Alameda, California

#### **EXPLORATORY BORING/WELL LOG**

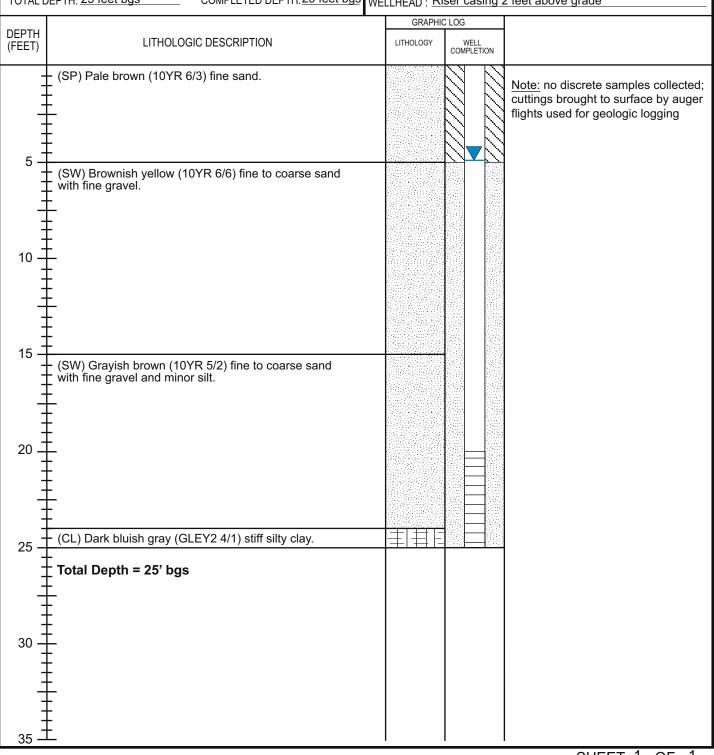
PROJECT NO.: 64903 HOLE NO .: Piezometer 6 (P6) **ELEVATION:** 

HOLE LOCATION: Mojave River LOGGED BY: Edwin Lin

PROJECT LOCATION: Camp Cady

DATE STARTED: 4/18/2011 Lat 34.937081 Long -116.612885 DATE FINISHED: 4/18/2011

DRILLING INFORMATION	COMPLETION/INFORMATION				
DRILLING AGENCY: Gregg Drilling and Testing	CASING SIZE & TYPE: 2-inch PVC Schedule 40 CASED INTERVAL: 0 - 25 feet SCREEN SIZE AND TYPE: 2-inch PVC Schedule 40 0.010-slot SCREENED INTERVAL: 20 - 25 feet				
DRILLER: Santiago Vega					
DRILL BIT: 6-inch	FILTER PACK: #2/12 Lapus Lustre Sand				
	PACKED INTERVAL: <u>5 - 25 Feet</u>				
	SURFACE SEAL TYPE: Hydrated Bentonite Pellets				
	SURFACE SEAL INTERVAL: 0 - 5 feet WELLHEAD: Riser casing 2 feet above grade				
TOTAL DEPTH: 25 feet bgs COMPLETED DEPTH: 25 feet bgs					



Alameda, California

#### **EXPLORATORY BORING/WELL LOG**

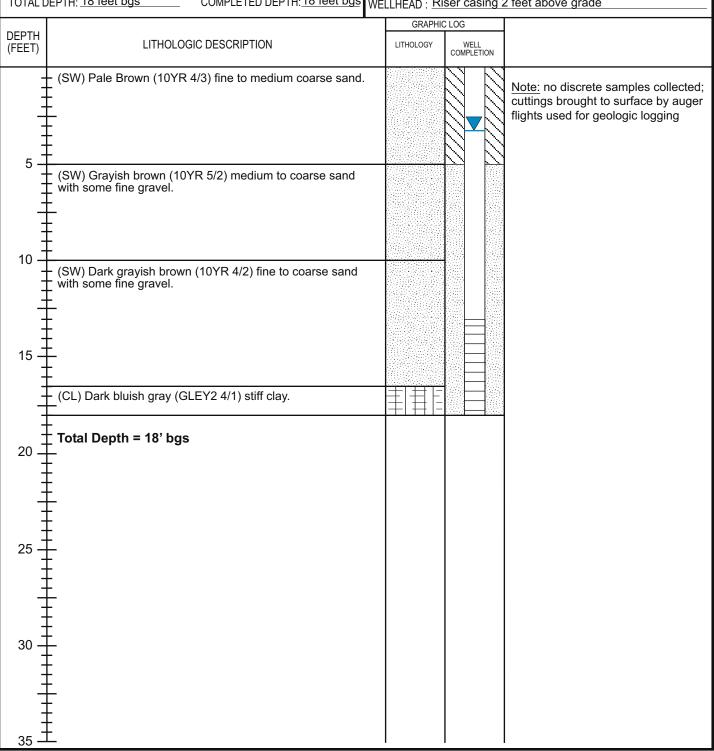
PROJECT NO.: 64903
HOLE NO.: Piezometer 7 (P7)
ELEVATION:

HOLE LOCATION: Mojave River LOGGED BY: Edwin Lin

PROJECT LOCATION: Camp Cady

DATE STARTED: 4/18/2011 LogGED BY: Edwin Lin Lat 34.937776 Long -116.607647 DATE FINISHED: 4/18/2011

DRILLING INFORMATION	COMPLETION/INFORMATION
DRILLING AGENCY: Gregg Drilling and Testing	CASING SIZE & TYPE: 2-inch PVC Schedule 40
DRILLER: Santiago Vega	CASED INTERVAL: 0 - 18 feet
	SCREEN SIZE AND TYPE: 2-inch PVC Schedule 40 0.010-slot
	SCREENED INTERVAL: 13 - 18 feet
DRILL BIT: 6-inch	FILTER PACK: #2/12 Lapus Lustre Sand
SAMPLES TAKEN: Continuous	PACKED INTERVAL: 5 - 18 Feet SURFACE SEAL TYPE: Hydrated Bentonite Pellets
STATIC WATER LEVEL: 3.21 feet bgs_SAMPLE TYPE: Flight	SURFACE SEAL INTERVAL: 0 - 5 feet
	WELLHEAD : Riser casing 2 feet above grade
	GRAPHIC LOG



Alameda, California

#### **EXPLORATORY BORING/WELL LOG**

PROJECT NO.: 64903 HOLE NO.: Piezometer 8 (P8) ELEVATION:

HOLE LOCATION: Mojave River LOGGED BY: Edwin Lin

PROJECT LOCATION: Camp Cady

DATE STARTED: 4/18/2011 LogGED BY: Edwin Lin Lat 34.938463 Long -116.602607 DATE FINISHED: 4/18/2011

	3 Long -116.602607 DATE FINISHED: 4/16/2011
DRILLING INFORMATION	COMPLETION/INFORMATION
DRILLING AGENCY: Gregg Drilling and Testing	CASING SIZE & TYPE: 2-inch PVC Schedule 40
DRILLER: Santiago Vega	CASED INTERVAL: 0 - 18 feet
DRILLING EQUIPMENT: Marl M5-T (Rhino)	SCREEN SIZE AND TYPE: 2-inch PVC Schedule 40 0.010-slot
DRILLING METHOD: Hollow Stem Auger	SCREENED INTERVAL: 13 - 18 feet
DRILL BIT: 6-inch	FILTER PACK: #2/12 Lapus Lustre Sand
SAMPLES TAKEN: Continuous	PACKED INTERVAL: 5 - 18 Feet SURFACE SEAL TYPE: Hydrated Bentonite Pellets
STATIC WATER LEVEL: 5.62 feet bgs SAMPLE TYPE: Flight	SURFACE SEAL INTERVAL: 0 - 5 feet
TOTAL DEPTH: 18 feet bgs COMPLETED DEPTH: 18 fee	
	GRAPHIC LOG
DEPTH LITTUOL GOLD RECORDER TO L	
(FEET) LITHOLOGIC DESCRIPTION	LITHOLOGY WELL COMPLETION
(CD) Dala brown (10VD C/2) fine cond	
+ (SP) Pale brown (10YR 6/3) fine sand.	Note: no discrete samples collected;
<b> </b>	cuttings brought to surface by auger
l ±	flights used for geologic logging
l ±	
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5 (SW) Brown (10YR 5/3) fine to coarse sand.	
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<b>I</b>	
15 + (20) 0 - 15   15   15   15   15   15   15   15	
(SC) Grayish brown (10YR 5/2) clayey silty (fine to c	coarse)
(CL) Dark bluish gray (GLEY2 4/1) stiff clay.	
<del> </del>	
Total Depth = 18' bgs	
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Alameda, California

#### **EXPLORATORY BORING/WELL LOG**

PROJECT NO.: 64903 HOLE NO.: Piezometer 9 (P9) **ELEVATION:** 

DATE STARTED: 4/19/2011

PROJECT LOCATION: Camp Cady HOLE LOCATION: Mojave River

LOGGED BY: \_Edwin Lin Lat 34.940085 Long -116.596598 DATE FINISHED: 4/19/2011

DRILLING INFORMATION COMPLETION/INFORMATION DRILLING AGENCY: Gregg Drilling and Testing CASING SIZE & TYPE: 2-inch PVC Schedule 40 CASED INTERVAL: 0 - 18 feet DRILLER: Santiago Vega SCREEN SIZE AND TYPE: 2-inch PVC Schedule 40 0.010-slot DRILLING EQUIPMENT: Marl M5-T (Rhino) SCREENED INTERVAL: 8 - 18 feet DRILLING METHOD: Hollow Stem Auger FILTER PACK: #2/12 Lapus Lustre Sand DRILL BIT: 6-inch PACKED INTERVAL: 5 - 18 Feet SAMPLES TAKEN: Continuous SURFACE SEAL TYPE: Hydrated Bentonite Pellets STATIC WATER LEVEL: 6.20 feet bgs SAMPLE TYPE: Flight SURFACE SEAL INTERVAL: 0 - 5 feet TOTAL DEPTH: 18 feet bgs COMPLETED DEPTH: 18 feet bgs WELLHEAD: Riser casing 2 feet above grade

GRAPHIC LOG **DEPTH** LITHOLOGIC DESCRIPTION LITHOLOGY WELL COMPLETION (FEET) (SP) Light brownish gray (10YR 6/2) fine sand. Note: no discrete samples collected; cuttings brought to surface by auger flights used for geologic logging (SC) Brown (10YR 5/3) silty, clayey (fine) sand. (SC) Pale brown (10YR 6/3) silty medium-coarse to coarse sand with trace clay. 10 15 (CL) Dark bluish gray (GLEY 4/1) stiff clay. Total Depth = 18' bgs 20 25 30 35

Alameda, California

#### **EXPLORATORY BORING/WELL LOG**

PROJECT NO.: 64903
HOLE NO.:Piezometer 10 (P10)
HOLE LOCATION: Mojave River
ELEVATION:

DATE STARTED: 4/19/2011 LOGGED BY: Edwin Lin Lat 34.942583 Long -116.591406 DATE FINISHED: 4/19/2011

	Eat 34.942363 Edity - 116.391406 DATE FINISHED.					
DRILLING INFORMATION			COMPLETION/INFORMATION			
	GAGENCY: Gregg Drilling and Testing R: Santiago Vega	CASING SIZE & TYPE: 2-inch PVC Schedule 40 CASED INTERVAL: 0 - 18 feet				
DRILLIN	G EQUIPMENT: Marl M5-T (Rhino)	SCREE		ND TYPE	<u>: 2-</u>	inch PVC Schedule 40 0.010-slot
	G METHOD: Hollow Stem Auger  IT: 6-inch	FILTER	PACK: #2	2/12 La	apus	Lustre Sand
STATIC \	WATER LEVEL: 7.10 feet bgs SAMPLE TYPE: Flight	PACKED INTERVAL: 5 - 18 Feet SURFACE SEAL TYPE: Hydrated Bentonite Pellets SURFACE SEAL INTERVAL: 0 - 5 feet			ated Bentonite Pellets 0 - 5 feet	
TOTAL	DEPTH: 18 feet bgs COMPLETED DEPTH: 18 feet bgs	WELLH			ing i	2 feet above grade
DEPTH (FEET)	LITHOLOGIC DESCRIPTION	LIT	GRAPHIC THOLOGY	WELL COMPLET	TION	
5 -	(SP) Light brownish gray (10YR 6/2) fine sand.					Note: no discrete samples collected; cuttings brought to surface by auger flights used for geologic logging

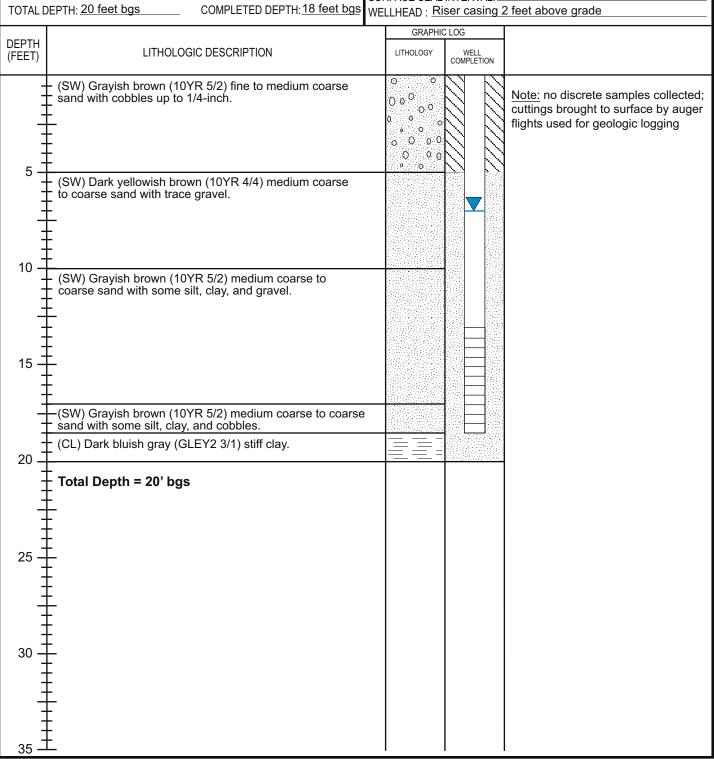
Alameda, California

#### **EXPLORATORY BORING/WELL LOG**

PROJECT NO.: 64903 PROJECT LOCATION: Camp Cady
HOLE NO.:Piezometer 11 (P11) HOLE LOCATION: Mojave River
ELEVATION:

DATE STARTED: 4/19/2011 LOGGED BY: Edwin Lin Lat 34.944768 Long -116.586719 DATE FINISHED: 4/19/2011

	DRILLING INFORMATION	COMPLETION/INFORMATION
DRILLER DRILLIN DRILLIN DRILL B SAMPLE STATIC	NG AGENCY: Gregg Drilling and Testing R: Santiago Vega NG EQUIPMENT: Marl M5-T (Rhino) NG METHOD: Hollow Stem Auger BIT: 6-inch ES TAKEN: Continuous WATER LEVEL: 7.00 feet bgs SAMPLE TYPE: Flight DEPTH: 20 feet bgs COMPLETED DEPTH: 18 feet bgs	CASING SIZE & TYPE: 2-inch PVC Schedule 40  CASED INTERVAL: 0 - 18 feet  SCREEN SIZE AND TYPE: 2-inch PVC Schedule 40 0.010-slot  SCREENED INTERVAL: 13 - 18 feet  FILTER PACK: #2/12 Lapus Lustre Sand  PACKED INTERVAL: 5 - 20 Feet  SURFACE SEAL TYPE: Hydrated Bentonite Pellets  SURFACE SEAL INTERVAL: 0 - 5 feet  WELLHEAD: Riser casing 2 feet above grade
DEPTH (FEET)	LITHOLOGIC DESCRIPTION	GRAPHIC LOG  LITHOLOGY WELL COMPLETION
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## Appendix D Photographs

### Appendix D List of Photographs

Figure No.	Description			
Physical C	onditions			
D-1	Blow sand drifting across Harvard Road			
D-1	Manix Beds exposed to north across from Shallow Piezomter P4			
D-2	2005 Flood - behind bunkhouse looking east			
D-2	2005 Flood - behind bunkhouse looking north			
D-3	2005 Flood - behind bunkhouse looking northeast			
D-3	2005 Flood - Harvard Road crossing looking north			
Oh alla Di	en en et en Pieldere de			
-	ezometer Fieldwork			
D-4	Hollow Stem Auger rig at Shallow Piezometer P6			
D-4	Hollow Stem Auger rig at Shallow Piezometer P4			
D-5	Well screen installation			
D-5	0.020-slot Schedule 40 PVC screen			
D-6	Recent Mojave River sand at P7			
D-6	Silt/clay encountered at bottom of Shallow Piezometer P8			
D-7	Shallow Piezometer P4			
D-7	Locking cap at Shallow Piezometer P4			
01114/-	Her. Hand			
	ell Fieldwork			
D-8	Sonic rig at Cluster A			
D-8	Sonic rig at Cluster B			
D-9	Cluster B wells			
D-9	Cluster C wells			
D-10	Cluster B - shallow sand, 30'-32.5'			
D-10	Cluster B deep sand, 172.5'-175'			
D-11	Cluster A - Manix Clay Beds (oxidized), 65'-67.5'			
D-11	Cluster B - Manix Clay Beds, 137.5'-140'			
D-12	Cluster A - Deep sand, 195'-197.5'			
D-12	Cluster C - Deep sand, 190'-192.5'			
D-13	Cluster D - Indurated conglomerate, 172.5'-175'			
D-13	Cluster D - cemented, friable, partially lithified silt/clay, 180'-182.5'			
D-14	Cluster D - partially lithified, foliated clay, 185'-187.5'			
D-14	Cluster D - partially lithified, foliated clay, 192.5'-195'			

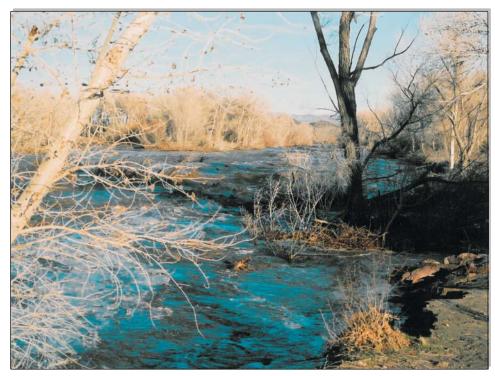


Blow sand drifting across Harvard Road

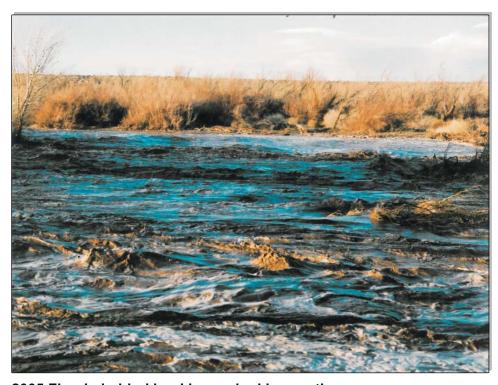


Manix Beds exposed to north across from P4

January 2013	
TODD ENGINEERS Alameda, California	



2005 Flood - behind bunkhouse looking east

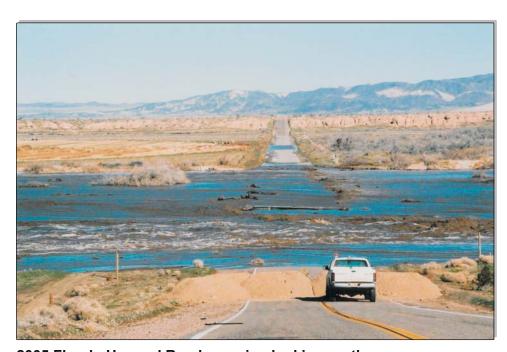


2005 Flood - behind bunkhouse looking north

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2005 Flood - behind bunkhouse looking northeast



2005 Flood - Harvard Road crossing looking north

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Hollow Stem Auger rig at Shallow Piezometer P6



Hollow Stem Auger rig at Shallow Piezometer P4

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Well screen installation



0.020-slot Schedule 40 PVC screen

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Figure D-5



Recent Mojave River sand at P7



Silt/Clay encountered at bottom of Shallow Piezometer P8

January	2013



**Shallow Piezometer P4** 



Locking cap at Shallow Piezometer P4

January 2013
TODD ENGINEERS Alameda, California

Figure D-7

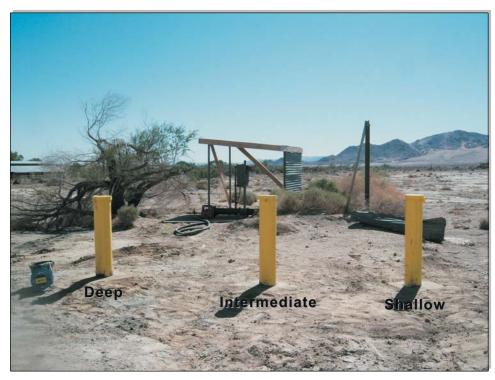


Sonic rig at Cluster A

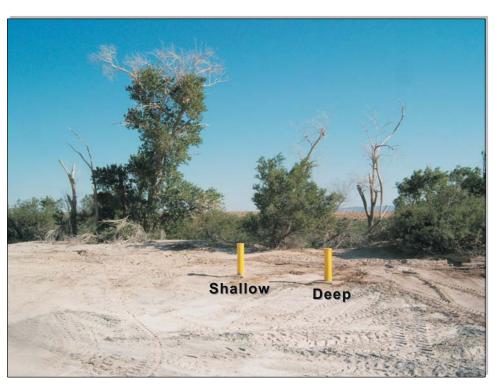


Sonic rig at Cluster B

J	anuar	y 2	013



**Cluster B Wells** 

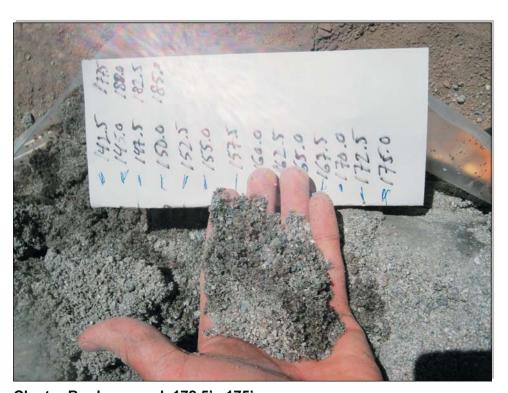


**Cluster C Wells** 

January	2013



Cluster B - shallow sand, 30' - 32.5'



Cluster B - deep sand, 172.5' - 175'

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Cluster A - Manix Clay Beds (oxidized), 65' - 67.5'



Cluster B - Manix Clay Beds, 137.5' - 140'

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Cluster A - Deep Sand, 195' - 197.5'



Cluster C - Deep Sand, 190' - 192.5'

January	2013

TODD ENGINEERS Alameda, California



Cluster D - Indurated conglomerate, 172.5' - 175'



Cluster D - cemented, friable, partially lithified silt/clay, 180' - 182.5'

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Cluster D - partially lithified, foliated clay, 185' - 187.5'



Cluster D - partially lithified, foliated clay, 192.5' - 195'

TODD ENGINEERS Alameda, California

# Appendix E Merrell Johnson Stamped As-Built Survey Report

138 BASIS OF BEARINGS

CALIFORNIA STATE PLANE COORDINATE SYSTEM ZONE V NAD 83 BASED ON GPS
MEASUREMENTS TAKEN ON U.S.C.&G.S. TRIANGULATION STATION MAN (PID#EV3569) AND
CSM 103-13, HAVING A CSPCS ZONE V BEARING BETWEEN THEM OF N18°41'18"E AND A GRID
DISTANCE OF 13645.42 FT. U.S.C.&G.S. TRI STATION MAN, LOCATED 22.4 KM (14.0 MI) NORTHEAST ALONG YERMO ROAD FROM THE POST OFFICE IN YERMO, 83.9 METERS (275 FT) SOUTHEAST OF AND ACROSS THE UNION PACIFIC RAILROAD TRACKS FROM THE CENTERLINE OF THE ROAD, 11.9 METERS (39 FT) NORTH-NORTHEAST OF THE CENTERLINE OF ALVORD MOUNTAIN ROAD, 55.8 METERS (183 FT) SOUTH OF AND ACROSS THE TRACKS FROM A RAILROAD RELAY BOX, 37.8 METERS (124 FT) SOUTHEAST OF THE SOUTHEAST RAIL OF THE MAIN TRACK, 3.7 METERS (12 FT) SOUTHEAST OF THE CENTERLINE OF A TRACK ROAD. THE MARK IS 1.1 METERS NE FROM A WITNESS POST. THE MARK IS 1.1 M BELOW THE RAILS. BENCHMARK 166 167 LS 7562 CONC PTS 104-107 Merrellohnson

COMPANIES Johnson

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(760) 240–8000
(760) 256–2068
(760) 240–1400 FAX
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149 BASIS OF BEARINGS

CALIFORNIA STATE PLANE COORDINATE SYSTEM ZONE V NAD 83 BASED ON GPS
MEASUREMENTS TAKEN ON U.S.C.&G.S. TRIANGULATION STATION MAN (PID#EV3569) AND
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