

PRELIMINARY ENGINEERING REPORT STORAGE TANKS AND TRANSMISSION PIPELINE IMPROVEMENTS

October 2018

State Water Resources Control Board

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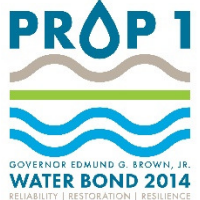
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1.0 INTRODUCTION

This Preliminary Engineering Report (PER) examines potential infrastructure improvements to the Apple Valley Heights County Water District (AVHCWD) potable water system. AVHCWD supplies potable water service to residents within its service area for domestic use. Sections of AVHCWD's potable water system have a history of pipeline breaks that result in shutdowns of water supply to AVHCWD customers. AVHCWD has also received documentation from its regulatory agency (State Water Resources Control Board, Division of Drinking Water; formerly the California Department of Public Health) which noted potential deficiencies in storage capacity and source capacity. This PER will determine if these potential deficiencies are present in the system based on the latest California Drinking Water Standards. The potential improvements to the potable water system include new storage facilities, well pump/motor improvements, and upgrades to the existing pipeline system.

This PER is being prepared under a Funding Agreement (D17-02032) between AVHCWD and the State Water Resources Control Board's Division of Financial Assistance (DFA). It is anticipated that proposed improvements discussed in the PER and approved by the State Water Resources Control Board will be funded by a separate construction funding agreement with DFA, or through a grant/loan with the United States Department of Agriculture, Rural Development. Agreements for the funding of construction phase activities have not been executed.

2.0 PROJECT PLANNING

2.1 LOCATION

AVHCWD (Public Water System No. CA3600009) is a special district of the State of California that was formed in 1957 to provide potable water service to the population within its service area. The AVHCWD is governed by a five-member board of directors elected for four-year terms. AVHCWD currently serves approximately 280 residential service connections. AVHCWD does not have any industrial or commercial service connections. The State Water Resources Control Board's Division of Drinking Water, District 13 (DDW), is AVHCWD's regulatory agency.

AVHCWD is located within the Victor Valley of unincorporated western San Bernardino County, less than 0.5 miles southeast of the Town of Apple Valley, California. AVHCWD's service area is approximately 10 miles southeast of Victorville, 25 miles north of San Bernardino, and covers an area of approximately 1.4 square miles. A Location Map is provided as Figure 1. AVHCWD's service area ranges in elevation from 3,110 to 3,640 feet above mean sea level, sloping downward generally to the north. The main land uses in this area are residential, small commercial, and small agricultural. Residences utilize individual septic systems for wastewater treatment and disposal.

The climate of the area is designated as semi-arid, with has an annual average precipitation of 6.2 inches. Additional historical weather information provided on The Weather Channel's website (<https://weather.com/>) documents an average summer high temperature of 97 °F and an average low winter temperature of 34 °F.

2.2 ENVIRONMENTAL RESOURCES PRESENT

AVHCWD is located within the Upper Mojave River Valley (Basin No. 6-42) of the South Lahontan Hydrologic Region of California. According to California DWR Bulletin 118 (updated 2003), the primary constituents of concern in the hydrologic region are inorganics and radiological contaminants. The Upper Mojave River Valley is classified as a Groundwater Budget Type A, which indicates one of the following: (1) a groundwater budget exists for the basin or enough components from separate studies could be combined to give a general indication of the basin’s groundwater budget, (2) a groundwater model exists for the basin that can be used to calculate a groundwater budget, or (3) actual groundwater extraction data exist for the basin.

For other environmental resources present within AVHCWD’s service area, refer to environmental documentation prepared by others.

2.3 POPULATION TRENDS

AVHCWD lies within Block Groups 2 and 3 of Census Tract 97.08. These Block Groups are considerably larger than AVHCWD’s service area. AVHCWD has 280 residential connections and an approximate population of 924. The median household income within Block Groups 2 and 3 are \$43,860 and \$32,969 per year, respectively. U.S. Census data is included in Appendix B.

Near term future growth in the AVHCWD service area is not expected to be significant. There are no anticipated projects, such as a housing development, that would cause a large growth in the number of customers for AVHCWD. With the population projected as relatively stable, a growth rate of approximately 0.5% per year is anticipated.

This annual growth rate was also used to project population within AVHCWD’s service area through 2038. Table 1 summarizes the projected population through 2038.

Table 1 – AVHCWD Population Growth Projection (2018-2038)

Year	2018	2023	2028	2033	2038	Annual Growth
Population	924	949	974	999	1,024	0.5%

Note: 2018 service area population data provided by AVHCWD

2.4 COLONIA STATUS

AVHCWD’s service area is not within a region designated as a colonia.

2.5 COMMUNITY ENGAGEMENT

An AVHCWD Board Workshop was held in February 2015 to provide information on potential planning/construction project funding, potential construction projects, and future steps to advance the planning and construction phases of the potential project.

AVHCWD will host additional project workshops to inform customers on the proposed project as the PER nears finalization and when the design is approximately 50% complete. Questions from

AVHCWD customers, shareholders, and other concerned parties will be answered from the AVHCWD board members and consultants during the workshop.

It is not anticipated that Proposition 218 will apply to the proposed project or to the proposed system owner(s), as the project will not affect user rates.

2.6 FLOOD ZONES

The Federal Emergency Management Agency (FEMA) has designated the area including AVHCWD's service area to be in Zone D (no flood mapping evaluation). The project area has not been mapped by FEMA to determine if portions of the project lie within a 100-year flood or any other specific event (FEMA Panel Number 06071C6520H).

2.7 JURISDICTIONS PRESENT

Projects proposed by this PER could affect, interact, and/or occur near several agencies' jurisdictions. Some nearby private entities are also relevant to the project. These agencies, entities, and their anticipated involvement are described below. Local water agency boundaries are shown in Figure 2.

2.7.1 Apple Valley Fire Protection District

The Apple Valley Fire Protection District (AVFPD) provides fire protection services for AVHCWD's service area. The AVFPD Board of Directors adopted Ordinance 42 in 2003, which set minimum standards for fire protection water systems within AVFPD's service area. Proposed project alternatives will comply with the requirements of the Ordinance.

2.7.2 Apple Valley Foothill County Water District

The Apple Valley Foothill County Water District (AVFCWD), Public Water System (PWS) No. CA3600008, is located within unincorporated San Bernardino County adjacent to the eastern border of the Town of Apple Valley. AVFCWD's service area is located approximately 1.0 miles north of AVHCWD's service area.

2.7.3 Apple Valley Unified School District – Bus Service

The Apple Valley Unified School District (AVUSD) provides bus transportation for students in and near AVHCWD's service area during the academic year. Buses travel along Tussing Ranch Road, Wren Street, and Central Road in close proximity to AVHCWD's service area. Proposed projects discussed later in this PER may affect bus routes along these routes during construction. To limit the effect of construction on the bus service, mitigation measures would be implemented such as performing construction outside of pick-up and drop-off times, during school breaks, or outside of travelled ways.

2.7.4 Bureau of Land Management

The Bureau of Land Management (BLM) is an agency within the United States Department of the Interior that oversees public lands. The Mesa Vista and Central tank sites are located on two separate properties owned by BLM. AVHCWD entered into agreements with BLM in 1968 (amended

in 1991) for the use of these properties. A copy of this agreement is included in Appendix D. It is anticipated that proposed improvements will affect and/or take place on these properties. AVHCWD notified BLM of the proposed project by submitting a Form 299 application in 2016.

2.7.5 County of San Bernardino – Department of Public Works

The County of San Bernardino Department of Public Works (County Public Works) owns and oversees the public roads in the unincorporated San Bernardino County. The Transportation Division manages the planning, design, operation, maintenance, and improvements of the County Maintained Road System (CMRS), which does not include roads/highways maintained by Caltrans and roads that are not on the County’s Maintained Roads List. Within the proposed project area, Roundup Way and Central Road (north of Roundup Way) are County maintained paved roads.

It is anticipated that the most of transmission and distribution pipelines improvements within the proposed project area will be located within right-of-way owned and/or maintained by the County of San Bernardino.

2.7.6 Golden State Water Company

The Golden State Water Company – Apple Valley South System (GSWC) is located approximately one mile northwest of AVHCWD within the limits of the Town of Apple Valley. GSWC is a wholly owned subsidiary of American States Water Company. GSWC is regulated by DDW and the California Public Utilities Commission.

2.7.7 Mariana Ranchos County Water District

The Mariana Ranchos County Water District (MRCWD), PWS No. CA3610030, is located adjacent to AVHCWD’s eastern, northern, and western borders. AVHCWD does not have any interconnection facilities with MRCWD.

2.7.8 Mojave Water Agency

Mojave Water Agency (MWA) is a regional wholesale water provider whose boundary encompasses approximately 4,900 square miles in San Bernardino County. MWA is the Watermaster for the adjudicated Mojave Basin. As Watermaster, MWA monitors and verifies water production from various water service providers. AVHCWD pumps water from the adjudicated basin and reports its water usage to MWA. The proposed improvements may affect MWA on an administrative level, but would not affect water supply or increase consumption. Improvements to system pipelines to reduce water losses from pipeline breaks could reduce AVHCWD’s well production.

The MWA also owns and operates the Morongo Basin Pipeline, a 71-mile underground pipeline that transfers water from the California Aqueduct in Hesperia to Apple Valley and Yucca Valley. The pipeline is located within the project area and the proposed project may cross, but would not connect to, the pipeline.

2.7.9 State Water Resources Control Board

The State Water Resources Control Board (SWRCB) has two roles in this project.

The Division of Drinking Water, District 13 (San Bernardino), is the regulatory agency for AVHCWD as well as the permitting agency for this project.

The Division of Financial Assistance issued a funding agreement (FA No. D17-02032, Project No. 3600009-001P) for the planning phase of improvements to AVHCWD’s water system.

2.7.10 Town of Apple Valley

The Town of Apple Valley is an incorporated area encompassing 78-square miles in Victor Valley in the County of San Bernardino. It is located east of Victorville and Hesperia along State Route 18 (SR-18). The AVHCWD does not serve within the limits of the Town of Apple Valley. AVHCWD’s existing well site is located with the town limits (see Figure 2). Portions of proposed improvements may be located within town limits.

3.0 EXISTING FACILITIES

3.1 LOCATION MAP

A project location map is presented in Figure 1. Locations of existing AVHCWD potable water facilities are provided in Figure 2 and Figure 3.

3.2 HISTORY

As previously discussed, AVHCWD currently serves approximately 280 residential service connections. AVHCWD does not have any industrial or commercial service connections. AVHCWD owns and operates two active wells that pump into a potable water storage and distribution system that consists of 4 storage tanks, a booster pump station, and pipelines of various sizes and materials. AVHCWD’s distribution system has two pressure zones, designated the Upper and Lower Zones. The Upper Zone serves approximately 60% of AVHCWD’s service connections (approximately 168 connections), with the remaining connections served from the Lower Zone (approximately 112 connections).

Table 2 – AVHCWD System Components

System Component	Year Constructed	Year Renovated	Description of Renovation
Water Sources			
Well No. 3	1990	2013	Pump and motor replacements
Well No. 4	2003	2013	Pump and motor replacements
Storage Tanks			
Mesa Vista Tank 1	1958	-	-
Mesa Vista Tank 2	1958	-	-
Mesa Vista Tank 3	1958	-	-
Central Tank	1990	-	-
Pump Stations			
Roundup Booster Station	1958	2014	Rehabilitation
Pipelines	1958	Various	Repairs as needed

3.3 CONDITION OF EXISTING FACILITIES

AVHCWD received a 2010 Sanitary Survey report from DDW (formerly CDPH) in 2011, which documented that AVHCWD’s water system is generally well maintained and operated. Detailed discussion of the components of AVHCWD’s potable water system is included below.

3.3.1 Water Supply Capacity

3.3.1.1 Surface Water Supply

AVHCWD does not operate or utilize any surface water facilities.

3.3.1.2 Groundwater Supply

AVHCWD owns, operates, and maintains two permitted production wells, Well Nos. 3 and 4. These wells are both located on the same AVHCWD owned property (APN 0438-043-07), as shown in Figure 2. A summary of these wells is provided in Table 3.

Table 3 – AVHCWD Potable Water Wells

Well No.	Pumping Rate (gpm)	Pump Motor Size (hp)	Well Depth (feet)	Well Capacity (gpm)	Well Casing Material/ Diameter	Well Age (years)	Regulatory Contaminants At/Near MCL
3	285	75	500	1,200	Steel/12.75"	28	N/A
4	275	75	504	1,250	Steel / 12"	15	N/A

Well No. 3 was drilled in 1990 to a depth of 500-feet and has a static water level of 267-feet. Well No. 3 has a pumping rate of approximately 285-gpm. Well No. 4 was drilled in 2003 to a depth of 504-feet and has a static water level of 274-feet. Well No. 4 has a pumping rate of approximately 275 gpm. Well Nos. 3 and 4 pump directly to AVHCWD’s distribution system, with excess water entering the Mesa Vista storage tanks, located approximately 1.5-miles south of the wells. AVHCWD was approved by DDW to provide chlorination to its groundwater sources in 2012.

Both wells are metered with a manually read propeller flowmeter. The wells are in generally good operating condition. The pumps/motors of the wells were replaced in 2013. The well screens were cleaned and videoed at the same time as the pump/motor replacements. Water produced from the wells does not contain regulatory contaminants at levels near Drinking Water MCLs.

Both wells are fed by the same electrical meter. The power supply to the site is insufficient to supply the current required to operate both pump simultaneously. Consequently, AVHCWD only operates one well at a time. There is no provision for backup power onsite. Energy efficiency tests were conducted by Southern California Edison on both wells in 2014 per a request by AVHCWD. AVHCWD’s well site do not have a backup source of power (permanent or portable) to allow it to remain in operation during a power outage. The site also does not have a manual transfer switch that would allow a portable generator to operate the wells. When grid power is unavailable, the distribution system maintains pressure until the elevated tanks at the Mesa Vista and Central Tank sites are emptied.

3.3.1.3 Standby and Emergency Supply

AVHCWD has an interconnection with the GSWC – Apple Valley South System that is currently inactive. The interconnection is located along Tussing Ranch Road, north of AVHCWD’s service area. AVHCWD does not have an active outside standby or emergency water supply source should its existing wells fail.

3.3.1.4 Storage Tanks

The AVHCWD system has four existing bolted steel potable water storage tanks. AVHCWD has a combined storage capacity of 260,000 gallons. The storage tanks pressurize AVHCWD’s distribution system pressure zones while the system’s wells are off. Information on the AVHCWD’s reservoirs is provided in Table 4. The locations of the tanks are shown on Figure 2.

Table 4 – AVHCWD Storage Tanks

Reservoir	Storage Capacity (gallons)	Material/ Construction	Elevation (ft)	Age (years)
Mesa Vista 1	20,000	Bolted Steel	3,440	60
Mesa Vista 2	20,000	Bolted Steel	3,440	60
Mesa Vista 3	20,000	Bolted Steel	3,440	60
Central	200,000	Bolted Steel	3,645	28

The tanks are located on two separate properties owned by the BLM. The Mesa Vista Tank Site (APN 0438-132-06) is located at the southern terminus of Mesa Vista Street and has an approximate elevation of 3,440 feet above mean sea level. The Mesa Vista Tank Site has three storage tanks that each have a maximum storage capacity of 20,000 gallons and serve AVHCWD’s Lower Zone. As previously described, the system’s wells supply water directly to the distribution system, with excess capacity filling the Mesa Vista tanks. When water demands exceed the supply from the wells, the tank level drops.

The Central Tank Site (APN 0433-031-02) is located at the southern terminus of Central Road and has an approximate elevation of 3,645 feet above mean sea level. The Central Tank Site has one bolted steel storage tank that has a maximum capacity of 200,000. An abandoned tank is also located at the site. The Central Tank serves AVHCWD’s Upper Zone. The Central Tank is delivered water from the Lower Zone via the Roundup Booster Station. The Lower Zone pumps water to the Upper Zone, with excess supply filling the Central Tank. The Central Tank is able to deliver water through the Upper Zone back to the Lower Zone through a combination pressure reducing/pressure sustaining valve located at the Roundup Booster Station.

Inspections and interior cleaning of AVHCWD’s four tanks were conducted in 2011 by LiquiVision Technology. Video inspection of the tanks revealed minor corrosion to the interior of the tanks. Liquivision Tech recommended the continuation of routine maintenance to the tanks but did not recommend any repairs to the tanks at the time of inspection.

Inspections and interior cleaning of AVHCWD’s four tanks were also conducted in 2015 by Inland Potable Services. The video inspections of the Mesa Vista tanks at this time noted accelerating levels of corrosion within these three tanks. The floors of the tanks were noted to have extensive rust

noduling and surface corrosion, and noted to be in 'poor' condition. The Central Tank video inspection noted that the interior of the tank was in 'excellent' condition.

3.3.1.5 Regulatory Capacity

California Drinking Water Standards

Section 64551.40 of the California Drinking Water Standards (DWS) defines "Source capacity" as the total amount of water supply available, expressed as a flow, from all active sources permitted for use by the water system, including approved surface water, groundwater, and purchased water. As previously mentioned, AVHCWD's only active sources of water are its two groundwater wells, Well Nos. 3 and 4. Section 64554(c) requires that systems utilizing only groundwater shall have a minimum of two sources of water and that the system shall be capable of meeting maximum day demand (MDD) with the highest-capacity source offline. "Maximum day demand" is defined in Section 64551.30 as the amount of water utilized by consumers during the highest day of use (midnight to midnight), excluding fire flow.

Section 64554(b) specifies the method of calculating of MDD by utilizing annual water usage data. AVHCWD well production data is utilized as a conservative estimate of water usage data. AVHCWD-supplied well production data for years 2013 through 2016 is provided in Table 5.

Table 5 - AVHCWD Well Production Data - 2013 through 2016

Year	Volume Produced (cubic feet)	Volume Produced (gallons)	Average Day Demand (gallons)	Maximum Day Demand (gallons)
2013	4,324,800	32,351,751	88,635	199,429
2014	3,798,200	28,412,509	77,842	175,146
2015	3,779,000	28,268,883	77,449	174,260
2016	4,010,400	29,999,875	82,191	184,931

Based on the calculation method specified by the DWS, AVHCWD's MDD is calculated to be 199,429-gallons (139-gpm). Section 64451.35 defines "Peak hour demand (PHD)" as the amount of water utilized by consumers during the highest hour of use during the maximum day, excluding fire flow. Per DWS calculation methods, the PHD for AVHCWD is 12,464-gallons (208-gpm).

Fire Code Standards

The California Fire Code 2013 (Appendix B of the code, Section B105), requires that sufficient storage exist to provide a fire flow of 1,000 gpm for 1 hour (60,000 gallons). This flow matches the fire flow required by AVFPD's Ordinance 42.

3.3.1.6 Water Supply Capacity Evaluation

As mentioned in the previous section, AVHCWD is required to meet MDD (139-gpm) with its highest producing source offline. AVHCWD's highest producing source of water is Well No. 3 (285-gpm). Well No. 4 has a production capacity of 275-gpm, which is greater than the calculated MDD.

The AVHCWD system provides 260,000-gallons of potable water storage and has 280 service connections. Section 64554(a) of the DWS requires that systems with less than 1,000 service

connections have storage capacity equal to or greater than the MDD in the system as a whole and in each individual pressure zone. As shown in the previous section, AVHCWD's MDD is 199,429-gallons, which is less than AVHCWD's available storage of 260,000-gallons.

Based on the previous estimates of connections in the Upper and Lower Zones, the Upper Zone is required to have storage capacity of 129,657-gallons, which is less than the Central Tank's capacity of 200,000-gallons. The lower zone has a required storage capacity of 79,771-gallons, which is greater than the combined capacity (60,000-gallons) of the existing Mesa Vista tanks. Therefore, the lower zone is currently in violation of storage capacity requirements. Per review of system demands and Mesa Vista tank site's storage capacity with DDW (August 2018), DDW prefers to increase the water storage capacity at the Mesa Vista tank site by approximately 20% to compensate for the potential for higher maximum day demands than AVHCWD has experienced in recent years. This will increase the proposed storage capacity at the Mesa Vista tank site to approximately 95,800 gallons.

AVHCWD complies with fire flow requirements specified by the California Fire Code and AVFPD Ordinance 42. The required 60,000-gallons fire flow capacity is available in the Central Tank, even with the MDD requirements of the Upper Zone. From the Central Tank, the required fire flow can be delivered to the Upper or Lower Zones.

3.3.2 Water Quality

AVHCWD does not have any current water quality violations. In 2016, DDW issued a Citation (No. 05-13-16C-009) for violation of the Total Coliform Maximum Containment Level during May 2016. This violation is included in Appendix C. Repeat samples collected by AVHCWD did not test present for total coliform, however since AVHCWD collects less than 40 samples per month, one violation is sufficient to be in violation of the Total Coliform Maximum Containment Level. AVHCWD has not had a total coliform violation since May 2016.

AVHCWD's 2016 Consumer Confidence Report (CCR), included in Appendix C, documents no violations of primary or secondary drinking water contaminant standards.

3.3.3 Pipelines

AVHCWD's distribution system consists of pipelines, standpipes, valves, meters, and other appurtenances. It is estimated that AVHCWD has approximately 13 miles of water pipelines, which range in size between 4 to 8-inches in diameter. The majority of the pipelines are concrete lined steel. The system does contain limited sections of PVC piping, mainly from repairs. Per DDW's 2010 Sanitary Survey, the distribution system operates at pressures ranging from 40-60 pounds per square inch (psi). AVHCWD's water system pressure exceeds the minimum standard pressure of 20 psi (see DWS Section 64602(a)). The pipeline system is generally looped but does contain multiple dead ends. AVHCWD has designated sample stations located in its distribution system.

AVHCWD's steel pipelines were generally installed in 1958 and have recently become prone to failure, causing system outages and water losses. Numerous water outages due to breaks in the transmission/distribution line along Mesa Vista Street occurred between July 2013 and November 2014. This section of pipeline is one of the primary alignments connecting AVHCWD's wells to the rest of its potable water system. Locations of these and other recent breaks in the distribution system are shown on Figure 3. Sections of the steel pipe inspected during repair showed signs of

extensive mineral deposit encrustations that could potentially reduce the conveyance capacity of the system.

3.3.4 Pump Station

AVHCWD operates the Roundup Booster Station. The booster station is housed within a small wood frame building located north of Roundup Way between Buena Vista Street and Central Road. The location of the booster station is shown on Figure 2. The site is enclosed by a chain-link fence topped with barbed wire and is accessible through a man-gate. The pump station was rehabilitated in 2014. Information on the booster pumps is provided in Table 6.

Table 6 – AVHCWD Booster Pumps

Booster Pump	Pumping Rate (gallons)	Power (hp)	Age (years)
Roundup Booster Station Pump 1	200	20	4
Roundup Booster Station Pump 2	200	20	4

As mentioned previously, the booster station conveys water from the Lower Zone to the Upper Zone, with excess supply filling the Central Tank. The booster station operates on a simple on/off SCADA system based on the water level in the Central Tank. The site has a 3-phase, 480-volt electrical service supplied by Southern California Edison. The site does not have portable or permanent backup power facilities. The site also does not contain a manual transfer switch that would allow the connection of a portable generator during power outages.

3.3.5 Water Meters

Each active customer connection is metered and manually read monthly. It is assumed from discussions with AVHCWD that meters are accurate and properly calibrated. Hours meters are located at AVHCWD’s well site.

3.3.6 System Management

AVHCWD owns, operates, and maintains its water supply, storage, and distribution systems. The system does not have water system deficiencies that appear to be a result of inadequate attention or capabilities of the AVHCWD’s operators or management.

3.4 FINANCIAL STATUS OF EXISTING FACILITIES

AVHCWD’s fiscal year commences July 1 and terminates on June 30. FY2016 ended on June 30, 2016. AVHCWD’s financial statements undergo a regular financial audit and audited financial reports are prepared annually.

3.4.1 User Rates

AVHCWD’s current water rates were set by Board Resolution No. 196-2016 and took effect in October 2016. A base monthly rate of \$52.75 is charged to all customers, which includes 300 cubic feet (CF) of water usage, and a monthly surcharge and Capital Improvement-Replacement Fund (CIRF). Water usage over 300 CF is charged per the following five-tier structure.

- Tier 1: 400-900 CF \$3.50 per 100 CF
- Tier 2: 1000-1900 CF \$3.60 per 100 CF
- Tier 3: 2000-2900 CF \$3.70 per 100 CF
- Tier 4: 3000-3900 CF \$3.80 per 100 CF
- Tier 5: 4000-4900 CF \$4.00 per 100 CF

A sample monthly bill with 2,000 CF of usage would be have a charge of \$113.35. See sample calculation below.

Base Monthly Charge		6 HCF @ \$3.50/HCF		11 HCF @ \$3.50/HCF	
\$52.75	+	\$21.00	+	\$39.60	= \$113.35

3.4.2 Revenues

AVHCWD has two primary revenue sources: operating revenues (service to customers) and non-operating revenues. Operating revenues in recent fiscal years are as follows: \$251,587 in FY2014, \$279,119 in FY2015, and \$270,918 in FY2016. The number of customers does not fluctuate significantly and the monthly facility charge to customers last changed in October 2016. Therefore, revenue from monthly service charges is consistent. The variation in annual operating revenue would be due to changes in water consumption year over year.

Non-operating revenues in recent fiscal years are as follows: \$11,427 in FY2014, \$8,772 in FY2015, and \$12,574 in FY2016. Non-operating revenues include interest income and other miscellaneous revenues.

3.4.3 Expenses

AVHCWD’s annual expenses focus on salaries and expenses for staff, and for supplies and utilities for system maintenance and operations. Annual operating expenses for AVHCWD were \$261,470 in FY2014, \$286,308 in FY2015, and \$239,644 in FY2016. Operation and maintenance expenses comprise most of W-4’s annual expenses.

3.4.4 Reserves

At the end of FY 2016, AVHCWD had a combined cash and cash equivalents balance of \$204,723. This is greater than the cash and cash equivalent balance at the end of FY2015, \$170,452.

3.4.5 Existing Debt

AVHCWD has one long-term debt. In September 2008, AVHCWD agreed to reimburse the County of San Bernardino for costs incurred by the County for a waterline relocation project on Central Road during the FY ending June 30, 2009. Payments are due each year with an interest rate of 0%. As of FY 2016, the outstanding debt is \$55,500. The last payment is projected to be in FY 2021.

3.5 EQUIVALENT DWELLING UNITS

There are 280 connections or equivalent dwelling units (EDUs) served by the existing system. Refer to Table 7 below.

Table 7 - AVHCWD Equivalent Dwelling Unit (EDU) Calculations

User Type	No. of Active Connections	Annual Consumption (Gallons) ¹	Average Annual Consumption per Active Connection (Gallons)	No. of EDUs
Residential	280	29,999,875	107,142	280
Commercial	0	-	-	0
Industrial	0	-	-	0
		29,999,875		280

¹Total Consumption based on water sales data provided by AVHCWD.

3.6 AUDITS – WATER/ENERGY/WASTE

AVHCWD conducted a leak detection survey with assistance from the California Rural Water Association (CRWA) in August 2017. An system energy audit was conducted by NV5 in 2015.

The most recent sanitary survey conducted by DDW is included in Appendix C.

4.0 NEED FOR PROJECT

The purpose of this PER is to identify and describe the system’s deficiencies, propose solutions to improve the system’s operation, and to increase its operating and performance reliability. AVHCWD’s current system has multiple deficiencies that are described below.

4.1 HEALTH, SANITATION, AND SECURITY

AVHCWD received a 2010 Sanitary Survey from its regulatory agency (DDW, formerly CDPH) which noted potential deficiencies in storage capacity and source capacity. Based on recent water sales data provided by AVHCWD and MDD and PHD calculations prepared per California Drinking Water Standards, AVHCWD is in compliance with Drinking Water Standards for source capacity requirements.

AVHCWD is not in compliance with the Drinking water standards storage capacity requirements, which specify that MDD storage be available in each individual pressure zone. AVHCWD’s Lower Zone, served by the Mesa Vista tanks, combined 60,000-gallons of storage does not meet the zone’s calculated 95,800-gallon MDD.

Pipeline failures such as those experienced by AVHCWD could increase the risk of contamination to AVHCWD’s system by allowing outside contaminants to enter and be distributed through the distribution system.

4.2 INFRASTRUCTURE AND O&M

4.2.1 Production

The current electrical service to AVHCWD's well site only allows for operation of one well at a time. The capacity of each well is greater than AVHCWD's MDD; reductions to the horsepower of the well pumps/motors could allow for individual production to remain above MDD while also allowing for the wells to be operated concurrently if required.

4.2.2 Pipelines

AVHCWD's pipeline system was installed in 1958. Portions of the pipeline system, as previously discussed, have been prone to failure. These pipeline breaks have generally occurred along Mesa Vista Street, which is a primary alignment for the delivery of water from AVHCWD's wells to the rest of its system. Locations and additional information on these breaks are provided on Figure 3. Based on inspection of pipe that has been removed doing repairs, this portion of pipeline is also encountering extensive issues with encrustation, which can reduce the conveyance capacity through this alignment.

Water produced from AVHCWD's wells is delivered directly to the distribution system at Ocotillo Way, with excess water filling the Mesa Vista tanks. AVHCWD does not have a dedicated transmission pipeline for the full length necessary to directly connect its production and storage facilities. Lack of a transmission pipeline reduces the level of cycling that occurs at the Mesa Vista tanks.

4.2.3 Storage Facilities

AVHCWD's Mesa Vista Storage Tank Site is the location of three bolted steel tanks that were constructed in 1958 and are reaching the end of their useful lives. Interior inspections of these tanks in 2015 by Inland Potable Services showed high levels of corrosion that had not been present in inspections conducted in 2011. The Mesa Vista tanks pressurize AVHCWD's Lower Zone, which also provides the source of water for the Roundup Booster Station to transfer water to the Upper Zone (including the Central Tank). Failure of one or more of the Mesa Vista tanks would cause a significant disruption to AVHCWD's operations, as well as cause AVHCWD to fall out of compliance with Drinking Water Standards storage capacity requirements.

4.2.4 Backup Power

AVHCWD's well site and booster station do not have backup sources of power (permanent or portable) to allow them to remain in operation during a power outage. The sites also do not have manual transfer switches that would allow a portable generator to operate the facilities. When grid power is unavailable, the distribution system maintains pressure until the elevated tanks at the Mesa Vista and Central Tank sites are emptied.

4.2.5 System Interconnection

AVHCWD does not have an active interconnection with a nearby water system to utilize as a backup water supply in the event of a power disruption or system facilities failure. An inactive

interconnection with GSWC is located north of its service area at the intersection of Tussing Ranch Road and Pioneer Road.

4.3 REASONABLE GROWTH

Growth within AVHCWD’s service area is not expected to be significant. As discussed previously, there are no anticipated projects, such as a housing development, that would cause a large growth in the number of customers for the AVHCWD. With the population projected as stable, a growth rate of approximately 0.5% per year is anticipated.

5.0 ALTERNATIVES CONSIDERED

The proposed project identified by this PER will be comprised of alternatives presented and evaluated within this section. The alternatives described address the various improvements to the AVHCWD’s infrastructure required to rectify deficiencies identified from an evaluation of the condition of AVHCWD’s facilities and to meet the other main objectives identified earlier in this PER:

- Water system’s lack of storage capacity serving the Lower Zone;
- Improve water system reliability and redundancy, communication systems, and infrastructure access.
- Failing transmission/distribution pipeline;
- Lack of dedicated transmission pipeline;
- Interconnections with adjacent agencies.

Budgetary construction phase cost opinions for each alternative are located in Appendix A. The cost opinions for the water system improvement alternatives presented below assume prevailing wages are applicable and that the facilities will be constructed in 2019. A contingency of 10% is included in each alternative. A combined project cost estimate comprising selected alternatives, and proposed funding sources, is provided in the following section.

The proposed alternatives described in this report are grouped into categories and associated with a unique identifier, comprised of a combination of a letter and a number. These alternatives and their identifiers are listed in Table 8 below. Unless otherwise noted within the alternative descriptions, these alternatives are not mutually exclusive.

Table 8 – Alternatives Considered

Proposed Project Component	Description of Alternatives Considered for Evaluation of Technical Feasibility
Pipeline	<ul style="list-style-type: none"> • P1 - Replace Mesa Vista Street Pipeline • P2 - Rehabilitate Pipeline Along Mesa Vista Street
Storage	<ul style="list-style-type: none"> • ST1 - Replace Mesa Vista Storage Tanks • ST2 - Rehabilitate Mesa Vista Storage Tanks • ST3 - Consolidation with Nearby Water System
Water Supply	<ul style="list-style-type: none"> • WS1 - Well Site Electrical Improvements • WS2 - Interconnection with Local Water Systems

5.1 ALTERNATIVE P1 – REPLACE MESA VISTA STREET PIPELINE

Under Alternative P1, AVHCWD would install approximately 4,800 linear feet of 6-inch PVC C900 transmission and 1,300 linear feet of 8-inch C900 PVC distribution pipeline along Mesa Vista Street, south of Ocotillo Way. This portion of distribution pipeline has been the site of numerous recent breaks, affecting the supply of water the rest of AVHCWD’s system. The existing distribution pipeline may be abandoned in place or removed depending on the final alignment of the new system.

The new transmission pipeline will commence at Ocotillo Way and continue 4,800 linear feet south to the Mesa Vista tank site. This transmission pipeline would provide a direct connection from AVHCWD’s wells to the Mesa Vista tank site. Sizing criteria for the proposed transmission pipeline is included in Table 9 below.

Table 9 – Mesa Vista Street Transmission Pipeline Replacement

Pipe Diameter	Well Run Time (hrs)	Well Flow Rate (gpm)	Pipeline Velocity (ft/s)	Headloss (ft)	TDH (ft)
6-inches	10	285	2.75	38	690
6-inches	18	155*	1.76	15	677

*Reduced flowrate per Alternative WS1

It is proposed that the new pipelines along Mesa Vista Street will be located generally along the exiting alignment to reduce/prevent the need for new easements. Locations of the proposed pipelines are shown in Figure 6.

5.1.1 Environmental Impacts

The proposed transmission and distribution pipelines would be located along existing easements and County ROW through developed areas within AVHCWD’s service area. A biological report was prepared that noted no sensitive habitats within the project area. No federal or State-listed species were observed during the field investigations. Cultural resources impacts are not anticipated. Traffic impacts can be minimized through construction phasing which will be determined during design.

5.1.2 Land Requirements

The existing pipeline along Mesa Vista Street travels through existing AVHCWD easements and County ROW. It is proposed that the new pipelines will be located generally along the existing alignment to reduce/prevent the need for new easements. If new easements are required, AVHCWD will contact the property owners to discuss easement acquisition.

5.1.3 Potential Construction Problems

A geotechnical report for the project has been prepared (NV5, May 2018), which identified subsurface conditions that require special construction attention, including boulders on the southern portions of the proposed pipeline alignment. The soils were not found to be corrosive. The proposed transmission pipeline will travel across Roundup Way, which is a County maintained road. Discussions with the County regarding this crossing have taken place that indicate the County would

allow this crossing to be constructed through open trench cut/cover methods through this paved section of Roundup Way.

The topography along the proposed alignment includes steep up-slopes south of Ocotillo Way and prior to the Mesa Vista tank site. Cut-off walls may be required in these areas to stabilize trench backfill if grades exceed 20%.

5.1.4 Sustainability Considerations

AVHCWD's water efficiency will improve due to decreased leakage and breakage risk compared to existing pipelines. Costs associated with leak detection and repairs will decrease.

5.1.5 Alternative Cost Estimate

The projected construction and non-construction costs of Alternative P1 are \$595,350 and \$191,400, respectively. The total approximate capital cost for Alternative P1 is \$786,750. A cost breakdown is provided in Appendix A.

5.2 ALTERNATIVE P2 – REHABILITATE MESA VISTA STREET PIPELINE

An alternative to replacing the 1,300 linear foot portion of distribution pipeline identified in Figure 6 would be to rehabilitate the pipeline using in-place lining methods. However, due to the level of encrustation observed in portions of the pipeline from this area that have been removed and replaced, lining this pipeline is not technically feasible. A lining project would require that the interior of the pipeline to have a generally smooth and consistent interior. The witnessed and anticipated levels of encrustation in this portion of pipeline would be prohibitive to installing an effective lining in the existing pipe. Additional analysis of this alternative was not conducted.

5.3 ALTERNATIVE ST1 – REPLACE MESA VISTA STORAGE TANKS

To provide AVHCWD's Lower Zone with the amount of storage required to comply with Drinking Water Standards, Alternative 3 proposes that the three aging Mesa Vista Storage Tanks be removed and replaced with two new bolted steel tanks. These three tanks are approaching the end of their useful lives and have advancing levels of interior corrosion as noted during 2015 interior inspections. The new tanks are proposed to have a combined storage capacity greater than the required 95,800-gallons. The Mesa Vista site is located on BLM property. AVHCWD has an agreement with BLM for use of this property (see Appendix D).

5.3.1 Design Criteria

The three existing Mesa Vista storage tanks provide combined storage capacity of 60,000-gallons. Two bolted steel tanks are proposed to replace these tanks. The constructability and cost-effectiveness of bolted steel tanks are greater than welded steel tanks for the range of dimensions that are proposed for this alternative. The use of two tanks would allow one tank to be taken out of service for short-term durations such as O&M and inspections without significantly impacting water service to AVHCWD's customers.

Utilizing the freeboard calculations in AWWA D103, seismic design parameters would require approximately 4.8-feet of freeboard in the proposed tanks. This level of freeboard is required to protect the structural integrity of the tank's roof structure during a seismic event. To retain similar storage capacity at the Mesa Tank Site, the size of the tanks due these parameters and the reduction of the number of tanks from three to two, the dimensions of the proposed tanks will be larger than those of the tanks being replaced. It is estimated that the tanks will have diameters of approximately 28'6" and heights of 16'-1". The use of these standards would slightly increase the effective storage capacity of the site to approximately 50,000-gallons per tank, for a combined effective capacity of 100,000-gallons, which would comply with the storage capacity requirements of the Division of Drinking Water. These dimensions and/or volume capacity estimates will vary slightly between bolted steel tank manufacturers.

A proposed layout of the Mesa Vista storage tank replacement alternative is presented in Figure 4.

5.3.2 Environmental Impacts

The Mesa Vista tank site has been in use by AVHCWD since 1958. A biological report was prepared that noted no sensitive habitats within the project area. No federal or State-listed species were observed during the field investigations. Cultural resources impacts are not anticipated. The site is located at the southern terminus of Mesa Vista Street and is not anticipated to have traffic impacts.

5.3.3 Land Requirements

The proposed site would not require the purchase of property, or an addition of an easement. The Mesa Vista Tank Site is located on APN 0438-132-06. An agreement between AVHCWD and BLM exists for this property and is included in Appendix D. BLM has been notified by AVHCWD of potential improvements to the tank site.

5.3.4 Potential Construction Problems

A geotechnical report prepared by NV5 has identified the Mesa Vista tank site area as having subsurface conditions that may require rock removal to allow for the construction of the tank foundations. Refusal was noted approximately 2.5' below grade. The report notes seismic requirements that may affect the design and construction of the storage tanks.

5.3.5 Sustainability Considerations

Net water demands are not expected to neither decrease nor increase under this alternative.

5.3.6 Alternative Cost Estimate

The projected construction and non-construction costs of Alternative ST1 are \$390,500 and \$116,600, respectively. The total approximate capital cost for Alternative ST1 is \$507,100. A breakdown of these costs are provided in Appendix A.

5.4 ALTERNATIVE ST2 – REHABILITATE MESA VISTA STORAGE TANKS

Alternative ST2 would rehabilitate the three existing Mesa Vista storage tanks. However, due to the age of the tanks and the level of identified corrosion, this would not be a feasible solution for AVHCWD. The level of corrosion has likely affected the structural integrity of the existing tanks to a level where rehabilitation would only provide a short-term solution that would still require replacement of the tanks in the near future. This alternative also does not address AVHCWD's non-compliance with available storage capacity for the Lower Zone. Due to these limitations, it has been determined not to be a technically or financially feasible solution to AVHCWD's infrastructure deficiencies.

5.5 ALTERNATIVE ST3 – CONSOLIDATION WITH NEARBY WATER SYSTEM

Alternative ST3 proposes addressing the deficiencies of the Mesa Vista tank site through consolidation with a nearby water system. Two nearby systems (GSWC and AVFCWD) operate at much lower hydraulic grade lines than the Mesa Vista tank site. Therefore, consolidation with these systems could not address the Mesa Vista Tank Site's deficiencies. Mariana Ranchos CWD has a pressure zone that operates on a similar hydraulic grade line as the Mesa Vista Tank Site. Mariana Ranchos CWD's upper zone is approximately 10-20 feet higher than the Mesa Vista tank site's hydraulic grade line. Although the systems' hydraulic grade lines are comparable, the capital costs associated with conveying water from AVHCWD's wells, the additional required storage capacity at Mariana Ranchos CWD's upper zone tank site, and for the administrative, regulatory, legal, mapping, engineering, and other costs related to consolidation would be significantly higher than the costs for the Mesa Vista Tank Site improvements (Alternative ST1). In addition, the benefits associated from consolidation are not apparent, as AVHCWD's system deficiencies are caused by its aging infrastructure and not from poor operations and maintenance capabilities or its financial condition. Consolidation would not result in improved operational efficiency or reliability. Based on this analysis, ST3 is not considered as a feasible solution to AVHCWD's Mesa Vista tank site deficiencies.

As noted previously, this PER considers interconnections with two adjacent systems (GSWC and AVFCWD) for the supply of water during emergencies (Alternative WS2). The infrastructure proposed for these interconnections could readily be converted to be used on a permanent basis under a future system consolidation.

5.6 ALTERNATIVE WS1 – WELL SITE ELECTRICAL IMPROVEMENTS

AVHCWD's wells are in generally good operating condition. The pumps/motors of the wells were replaced in 2013. The well screens were cleaned and videoed at the same time as the pump/motor replacements. However, the power supply to the site is insufficient to supply the current required to operate both wells simultaneously. Consequently, AVHCWD only operates one well at a time. There is no provision for backup power onsite.

Alternative WS1 would involve replacing the existing pumps and motors of Well Nos. 3 and 4 to reduce the combined electrical load at the site near the load of one of the site's existing wells. This would allow for concurrent use of the well pumps when required. The proposed well pumps/motors would be reduced to a capacity that would still allow for one of the pumps to be able to deliver MDD (139-gpm) with the other pump out of service. Existing and proposed pump parameters are shown in

Table 10. Reduction of the wells’ capacity to 155-gpm would still allow AVHCWD to meet MDD requirements with one well out of service and allow for an 11% increase in the MDD of the system.

Table 10 – Existing and Proposed Well Pump and Motor Size

Well	Existing			Proposed		
	GPM	HP	kW	GPM	HP	kW
Well No. 3	285	75	56	155	40	30
Well No. 4	275	75	56	155	40	30

Southern California Edison’s monthly electrical facility charges are based on the highest recorded kilowatt (kW) demand at any time during a billing cycle. During months where concurrent use is not required, AVHCWD would see a cost savings in the form of reduced electrical facility charges (56 kW vs. 30 kW). Based on a recent bill provided by AVHCWD, this reduction would result in an approximately monthly savings of \$200.

Also included in the improvements would be the installation of a manual transfer switch. This would allow AVHCWD to utilize a portable generator to keep the wells in operation during a power failure event.

5.6.1 Environmental Impacts

The proposed well improvements would be located on AVHCWD’s property. A biological report was prepared that noted no sensitive habitats within the project area. No federal or State-listed species were observed during the field investigations. Cultural resources impacts are not anticipated.

5.6.2 Land Requirements

The proposed well improvements would be located on AVHCWD’s property. No property or easement acquisitions are required by this alternative.

5.6.3 Potential Construction Problems

No potential construction problems have been identified for this alternative. No impacts to local traffic are anticipated.

5.6.4 Sustainability Considerations

Net water demands are not expected to neither decrease nor increase under this alternative. Even with both wells available for concurrent usage, actual well usage would continue to be set by AVHCWD customer demand, which is not expected to significantly increase in the near future, and would not increase as a result of this project.

5.6.5 Alternative Cost Estimate

The projected construction and non-construction costs of Alternative WS1 are \$95,700 and \$32,450, respectively. The total approximate capital cost for Alternative WS1 is \$128,150. A breakdown of these costs are provided in Appendix A.

5.7 ALTERNATIVE WS2 – INTERCONNECTIONS WITH AVFCWD AND GSWC

Under Alternative WS2, AVHCWD would construct interconnections with two nearby water systems, Apple Valley Foothill County Water District (System No. CA3600008) and Golden State Water Co. – Apple Valley South System. These interconnections would supply AVHCWD with additional sources of water in the event of power and/or system failures. AVHCWD could also supply water to AVFCWD under this alternative. Supply to GSWC is not considered as part of this alternative. Improvements proposed under this alternative are shown on Figure 5.

5.7.1 Design Criteria

AVFCWD is located approximately one mile north of AVHCWD. The elevation of AVFCWD’s service area is approximately 20 feet lower in elevation than AVHCWD in the proposed project area. AVFCWD’s boundaries are shown in Figure 2. Per information received from AVFCWD, AVFCWD’s existing system has the capacity to produce a sufficient amount of water to meet the demands of AVHCWD’s existing customers as well as AVFCWD’s existing customers. For AVFCWD and GSWC to provide service to AVHCWD’s customers, improvements and additions to AVHCWD’s water system would be necessary.

5.7.1.1 AVFCWD Interconnection

A new pipeline would connect AVFCWD’s system to the transmission system of AVHCWD. For the AVFCWD interconnection, a connection would be made at Houston Street and Blackfoot Road in AVFCWD’s service area (see Figure 5). Approximately 4,900 linear feet of 4-inch PVC or HDPE transmission pipeline would be installed to connect to AVHCWD’s system at the proposed connection point. A pressure reducing station would be located on the pipeline upstream of AVFCWD’s existing service area to allow for supply of water from AVHCWD to AVFCWD.

5.7.1.2 GSWC Interconnection

GSWC’s boundaries are shown in Figure 2. Per discussions with GSWC, the GSWC interconnection would only provide water to AVHCWD. An inactive AVHCWD/GSWC interconnection is located at Tussing Ranch Road. This alternative would replace this connection, installing new and replacing existing equipment as necessary. Approximately 200 linear feet of 4-inch PVC or HDPE pipe would be installed from GSWC’s distribution system to the interconnection point at Tussing Ranch Road and Pioneer Road.

5.7.1.3 AVHCWD Interconnection Pump Station

A pump station would be installed at AVHCWD’s well site to transfer water purchased from AVFCWD and/or GSWC to AVHCWD’s Mesa Vista tank site. The proposed pump station will contain pumps sized to deliver AVHCWD’s MDD (139-gpm) to the Mesa Vista tank site.

5.7.2 Environmental Impacts

The booster pump station site would be located adjacent to the existing Well Nos. 3 and 4. Proposed pump station construction and pipelines would be located along property owned by AVHCWD, new (if required) and existing easements, and County ROWs. A biological report was prepared that noted no

sensitive habitats within the project area. No federal or State-listed species were observed during the field investigations. Cultural resources impacts are not anticipated.

5.7.3 Land Requirements

The proposed improvements may require new easements or property purchases. Some portions of the pipeline alignment would require new easements; however most of the pipelines would be located in San Bernardino County ROWs or in existing AVHCWD-owned easements.

5.7.4 Potential Construction Problems

The project's geotechnical report notes silty sands and well graded sands in areas near the proposed pipeline. Boulders were not identified in this area. Soil samples did not exhibit corrosive characteristics. Groundwater was not encountered to the depths excavated.

School bus routes may cross the proposed interconnection pipeline alignments. Construction mitigation measures would be implemented to avoid interference with the bus service. Other traffic impacts to existing roads during construction will be minimal.

5.7.5 Sustainability Considerations

Net water demands are not expected to increase under this alternative. Water system reliability for AVHCWD and AVFCWD customers would increase with the addition of backup/emergency sources of potable water.

5.7.6 Alternative Cost Estimate

The projected approximate construction and non-construction costs of Alternative WS2 are \$679,030 and \$220,550, respectively. The total approximate capital cost for Alternative WS2 is \$899,580. A cost breakdown is provided in Appendix A.

6.0 SELECTION OF AN ALTERNATIVE

Several criteria are considered to determine the best alternative(s) to address AVHCWD's water system deficiencies and to meet the other objectives of this PER. These criteria include the anticipated project capital cost; ongoing operating and maintenance costs; permitting and easement difficulties; and certainty of the alternative's viability, including financial viability. Alternatives P2 and ST2 were determined to be technically infeasible options for AVHCWD to address its infrastructure deficiencies. Alternative P2 is not technically feasible due to the level of encrustations found in the existing pipelines. Alternative ST2 is not technically or financially feasible, as the age of the Mesa Vista tanks, as well as the level of corrosion noted in the 2015 interior inspections, would require replacement of the tanks within the proposed project planning period even if the tanks were rehabilitated. ST2 also would not address AVHCWD's non-compliance with Drinking Water Standards storage capacity requirements for the Lower Zone.

Based on these findings and the discussions in previous sections of this PER, the only technically feasible alternatives that would address AVHCWD's pipeline and storage infrastructure deficiencies

would be to replace the portion of distribution pipeline along Mesa Vista Street that is prone to failure (Alternative P1); and the replacement of the Mesa Vista site storage tanks (Alternative ST1).

The water supply alternatives presented in this PER are not mutually exclusive and would provide combined benefits to AVHCWD’s potable water system if both were selected to be implemented.

6.1 COST EVALUATION OF ALTERNATIVES

A life cycle present worth cost analysis was completed to analyze the remaining technically feasible alternatives. Per USDA recommendations, the planning period was set at 20 years.

Table 11 – Life-Cycle Cost Analysis

Project Alternative	Capital Cost	Annual O&M	P.W. O&M P/A, 1.2% 20 years	Salvage Value	P.W. Salvage P/A, 1.2% 20 years	Net Present Worth
P1	\$786,800	\$5,000	\$88,437	\$0	\$0	\$875,237
ST1	\$507,100	\$8,000	\$141,499	\$67,200	\$50,417	\$595,662
WS1	\$128,200	\$2,500	\$44,219	\$60,000	\$47,266	\$117,276
WS2	\$899,600	\$10,000	\$176,873	\$48,000	\$37,813	\$1,038,660

6.2 NON-MONETARY FACTORS ANALYSIS

Alternative WS1 would increase the reliability of AVHCWD’s existing wells by allowing for the use of both wells concurrently, as well as providing for the ability to use a portable generator to operate the wells during power outages by installing a manual transfer switch.

Alternative WS2 would increase the system reliability of AVHCWD and AVFCWD by constructing an interconnection between the two systems. A one-way interconnection to purchase water from GSWC would give AVHCWD a second source of external water that could be utilized to supply its customers with water in the event of a disruption to AVHCWD’s existing water sources.

7.0 PROPOSED PROJECT (RECOMMENDED ALTERNATIVE)

Based on the evaluation of the proposed project alternatives presented in this PER the following alternatives are recommended to be selected as part of the proposed project.

- Alternative P1 – Replace Mesa Vista Street Pipeline
- Alternative ST1 – Replace Mesa Vista Storage Tanks
- Alternative WS1 – Well Site Electrical Improvements
- Alternative WS2 – Interconnections with AVFCWD and GSWC

The implementation of these alternatives will address the existing deficiencies to AVHCWD’s system deficiencies, as well as providing AVHCWD with improvements to its existing water systems and introduce external sources of potable water.

7.1 TOTAL PROJECT COST ESTIMATE

A summary of these alternatives is included in Table 12. The combined preliminary cost opinion for the project is \$2,321,700.

Table 12 – Proposed Project (Recommended Alternatives)

Project Alternative	Description	Preliminary Cost Opinion
P1	Replace Mesa Vista Street Pipeline	\$786,800
ST1	Replace Mesa Vista Storage Tanks	\$507,100
WS1	Well Site Electrical Improvements	\$128,200
WS2	Interconnection with Local Water Systems	\$899,600
	Total Project Cost Opinion	\$2,321,700

7.2 PROJECT SCHEDULE

A schedule for implementing the proposed project is below. The date of execution of the construction phase funding agreement is approximate.

Table 13 – Anticipated Project Schedule

Deliverable/Submittal	Date
Preliminary Drawings, Specifications, Estimate	October 2018
Land Surveying – Field Topography and Potholing	October 2018
Prepare and File Easement Documents (if required)	November 2018
Final Drawings, Specifications, Estimate	January 2019
CEQA/NEPA Documentation	February 2019
Execution of Construction Funding Agreement	July 2019

7.3 PERMITTING AND APPROVAL REQUIREMENTS

Excavation and encroachment permits from the County of San Bernardino will be required prior to construction of the transmission and distribution pipelines. These permits will be required where the pipeline is traveling through County ROW (Roundup Way).

Excavation and encroachment permits from the Town of Apple Valley will be required prior to construction of the proposed interconnection pipeline with GSWC and AVFCWD.

AVHCWD entered into agreements with BLM in 1968 (amended in 1991) for the use of the Mesa Vista and Central Tank properties. A copy of this agreement is included in Appendix D. AVHCWD notified BLM of the proposed project by submitting a Form 299 application in 2016. BLM will determine if the improvements at the Mesa Vista site will require further amendment to the existing agreement.

As AVHCWD’s regulatory agency, DDW will be required to approve the proposed project prior to the commencement of design efforts under the planning phase funding agreement between DFA and AVHCWD.

7.4 SUSTAINABILITY CONSIDERATIONS

The proposed project would not impact net water demands with the exception of the replacement of distribution pipeline along Mesa Vista Street. This pipeline replacement would increase system efficiency due to the reduction of water losses associated with pipeline breaks along this segment. This would reduce water and electrical consumption, and increase water circulation within AVHCWD’s system.

The construction of interconnection infrastructure would provide additional sources of potable water for AVHCWD’s customers in the event of failure of AVHCWD’s existing wells or during periods of maintenance that would require the wells to be offline.

7.5 SHORT LIVED ASSET RESERVES

Short lived asset reserves for the proposed project are summarized in Table 14.

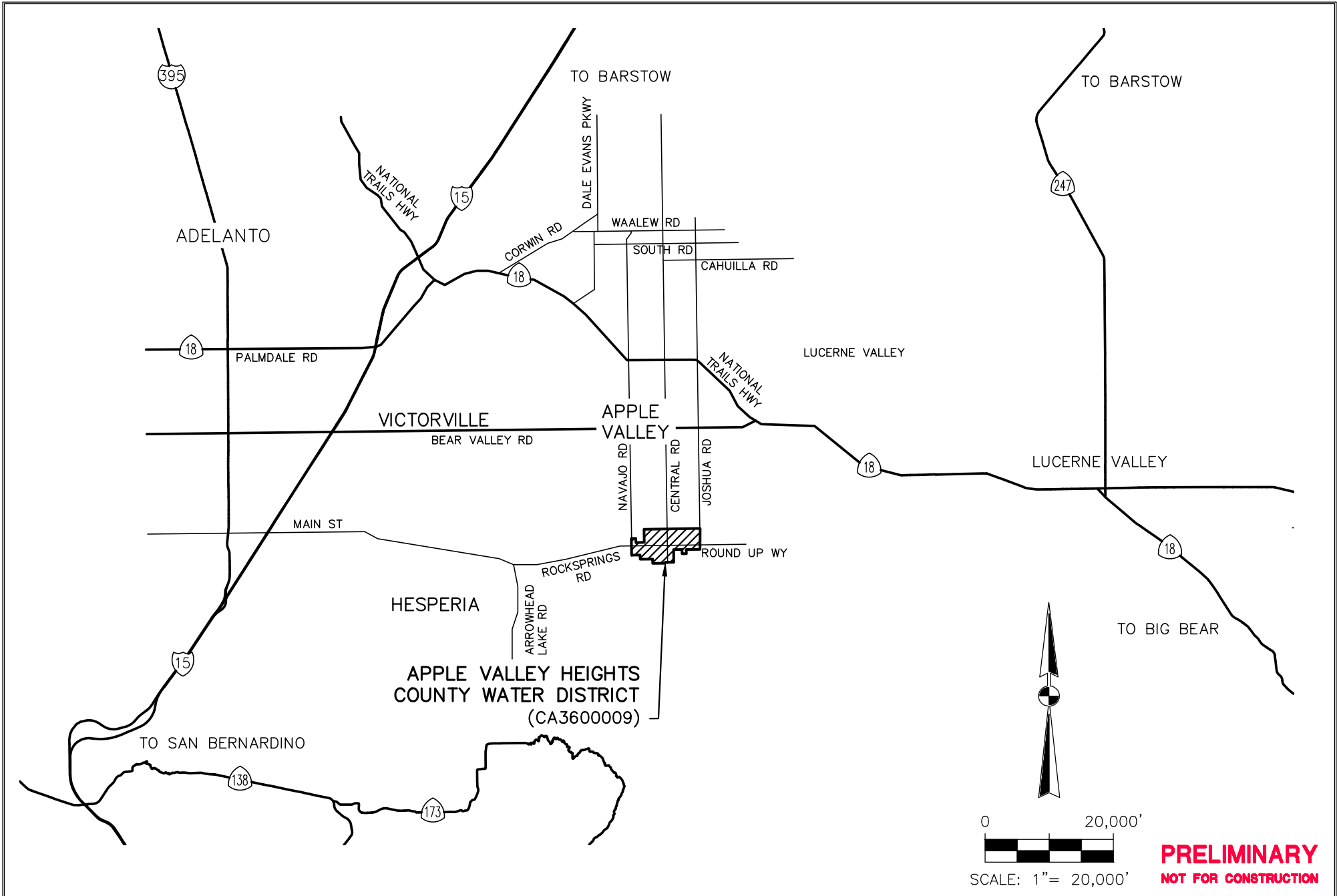
Table 14 – Short Lived Asset Reserve

Item	Useful Life (years)	Replacement Cost	Annual Reserve
Well No. 3 Pump/Motor	20	\$30,000	\$1,500
Well No. 4 Pump/Motor	20	\$30,000	\$1,500
Total			\$3,000

8.0 CONCLUSIONS AND RECOMMENDATIONS

The selected project should be advanced and implemented through design and construction efforts to address the infrastructure deficiencies of AVHCWD, to improve existing water sources, and to make available external water sources for AVHCWD’s customers. Replacement of the Mesa Vista tanks would bring AVHCWD in compliance with Division of Drinking Water storage capacity requirements.

FIGURES



XREFS:



15092 AVENUE OF SCIENCE, SUITE 200
 SAN DIEGO, CA 92128
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 858.385.0400 FAX
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DATE: 5/16/18 TIME: 1:36:16 PM
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 DESIGNER: MGR:

PRELIMINARY ENGINEERING REPORT
LOCATION MAP

PREPARED FOR: APPLE VALLEY HEIGHTS CWD

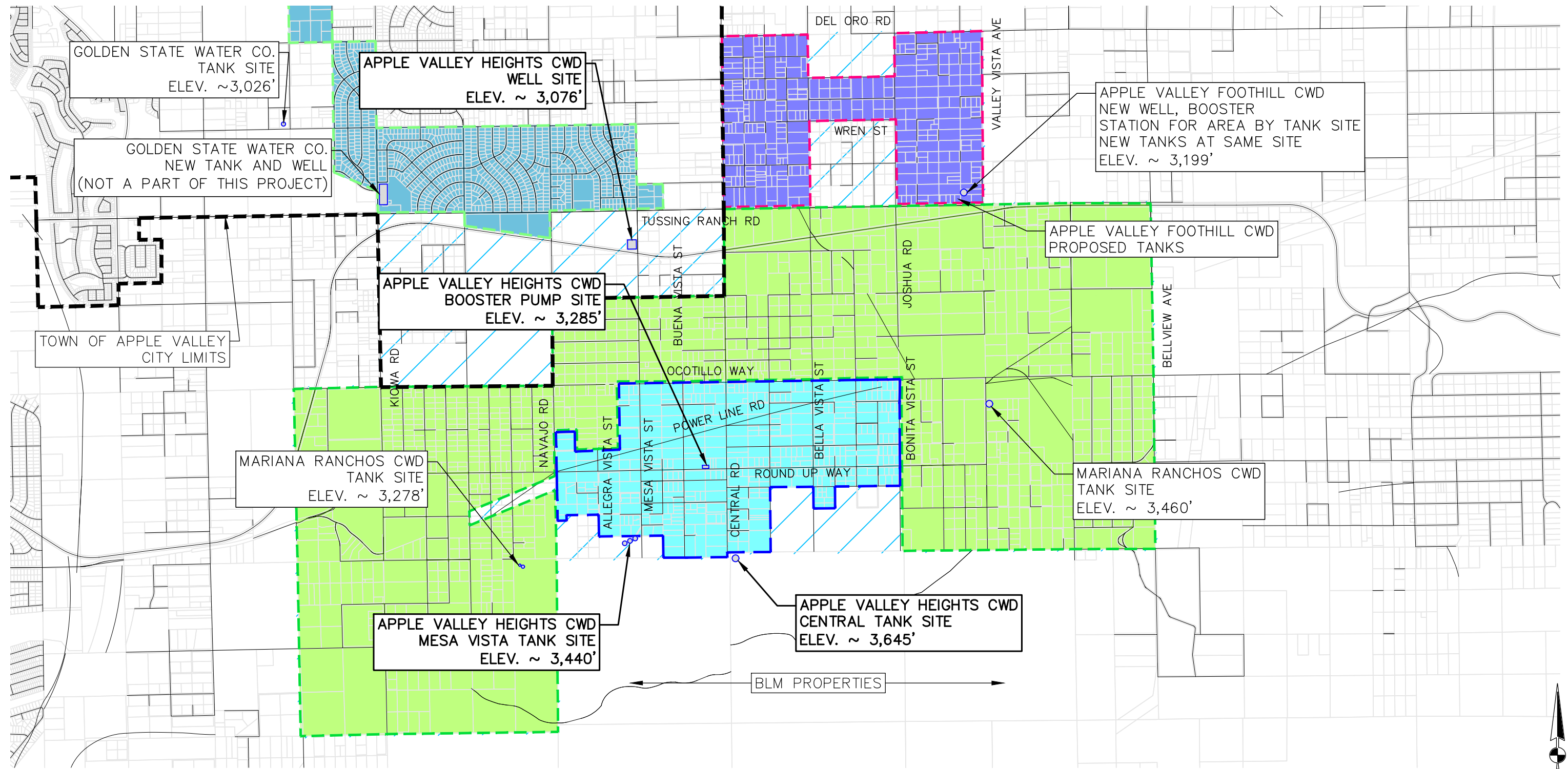
DATE SUBMITTED: MAY 2018

FIGURE

1

OF 6

JOB NUMBER
 226817-0000211



LEGEND

- APPLE VALLEY HEIGHTS COUNTY WATER DISTRICT (CA3600009)
- MARIANA RANCHOS COUNTY WATER DISTRICT (CA3610030)
- APPLE VALLEY FOOTHILL COUNTY WATER DISTRICT (CA3600008)
- AVHCWD, MRCWD, & AVFCWD SHARED SPHERE OF INFLUENCE
- GOLDEN STATE WATER COMPANY – APPLE VALLEY SOUTH SYSTEM



PRELIMINARY
NOT FOR CONSTRUCTION

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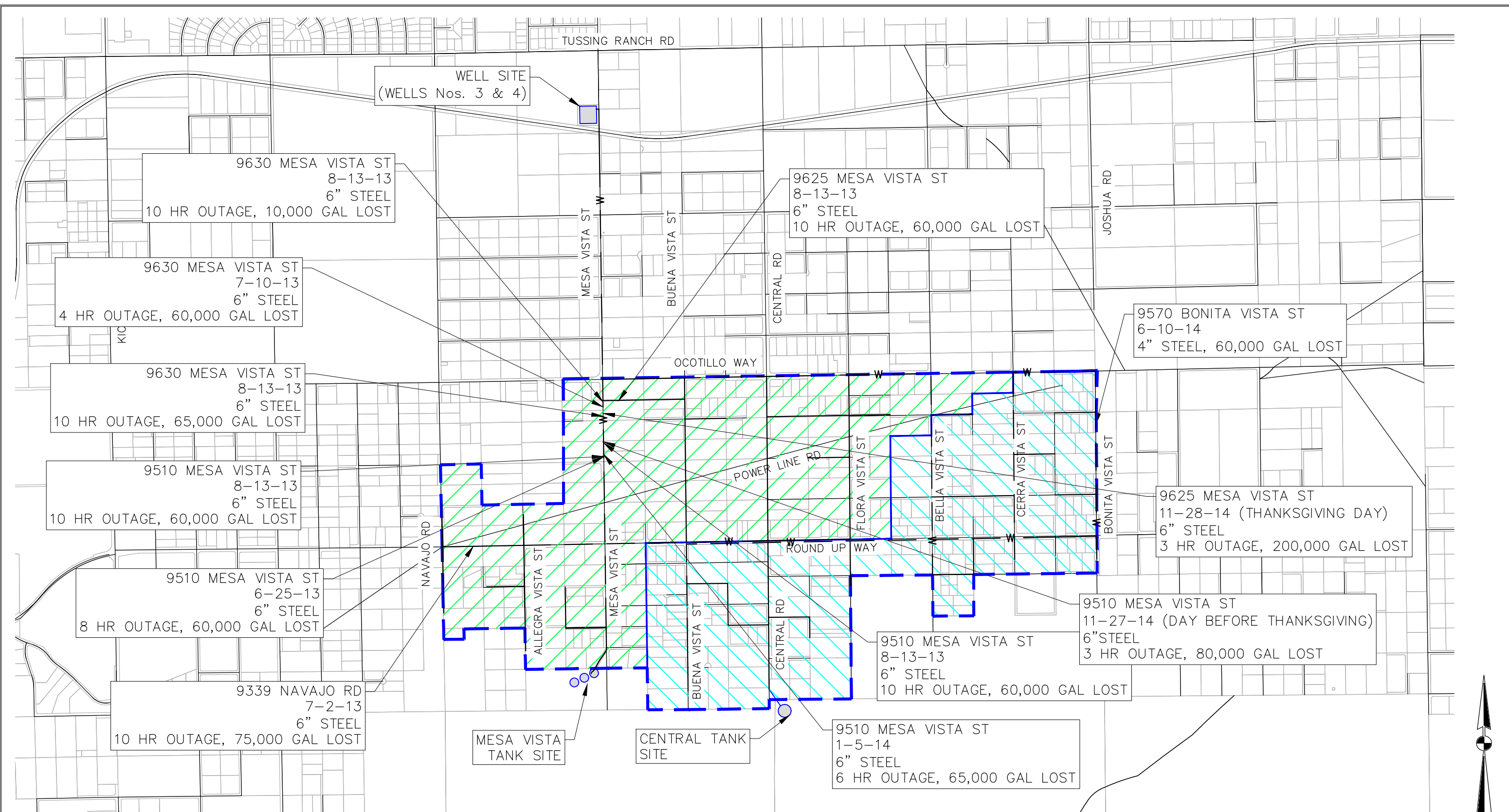
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PRELIMINARY ENGINEERING REPORT
LOCAL WATER PURVEYORS

PREPARED FOR: **APPLE VALLEY HEIGHTS CWD**

DATE SUBMITTED: **MAY 2018**

FIGURE
2
OF 6
JOB NUMBER
226817-0000211



LEGEND

- APPLE VALLEY HEIGHTS COUNTY WATER DISTRICT (CA3600009)
- APPLE VALLEY HEIGHTS COUNTY WATER DISTRICT UPPER ZONE
- APPLE VALLEY HEIGHTS COUNTY WATER DISTRICT LOWER ZONE



PRELIMINARY
NOT FOR CONSTRUCTION

DATE: 5/16/18 TIME: 1:36:28 PM
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 PAGE SETUP: 8.5x11_PDF
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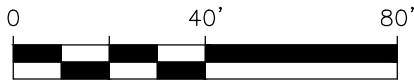
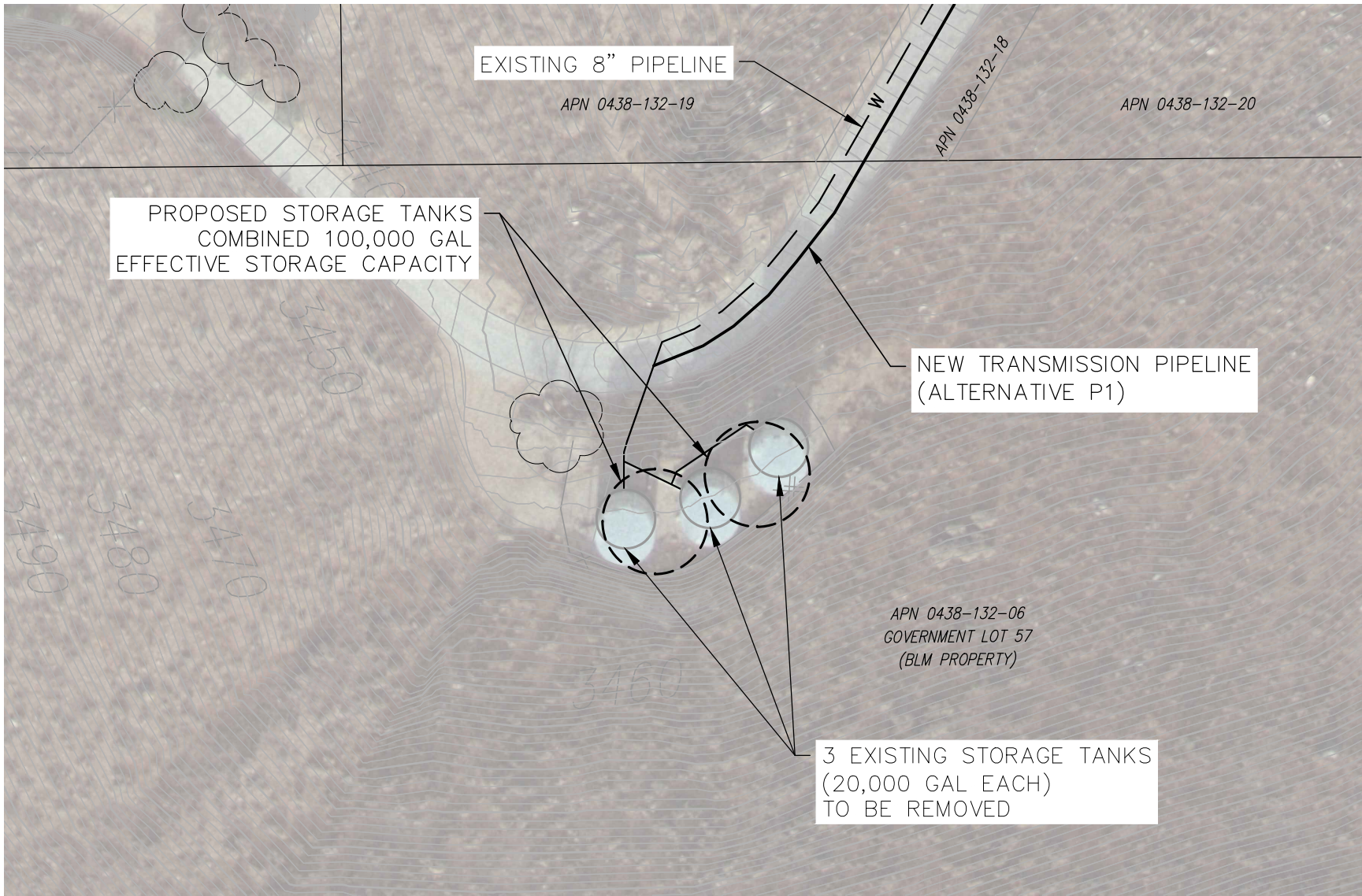
PRELIMINARY ENGINEERING REPORT
SYSTEM FACILITIES BREAKS MAP

PREPARED FOR: APPLE VALLEY HEIGHTS CWD

DATE SUBMITTED: MAY 2018

FIGURE
3
OF 6
JOB NUMBER
226817-0000211

XREFS:



SCALE: 1" = 40'

PRELIMINARY
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XREFS:



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DATE: 8/23/18 TIME: 4:03:13 PM
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DWG NAME: FIG4-MESAVISTATANKEXHIBIT.DWG
LAYOUT: 8.5X11L
DESIGNER: MGR:

PRELIMINARY ENGINEERING REPORT
ALTERNATIVE ST1 - MESA VISTA TANK SITE
INCREASE STORAGE TANK CAPACITY

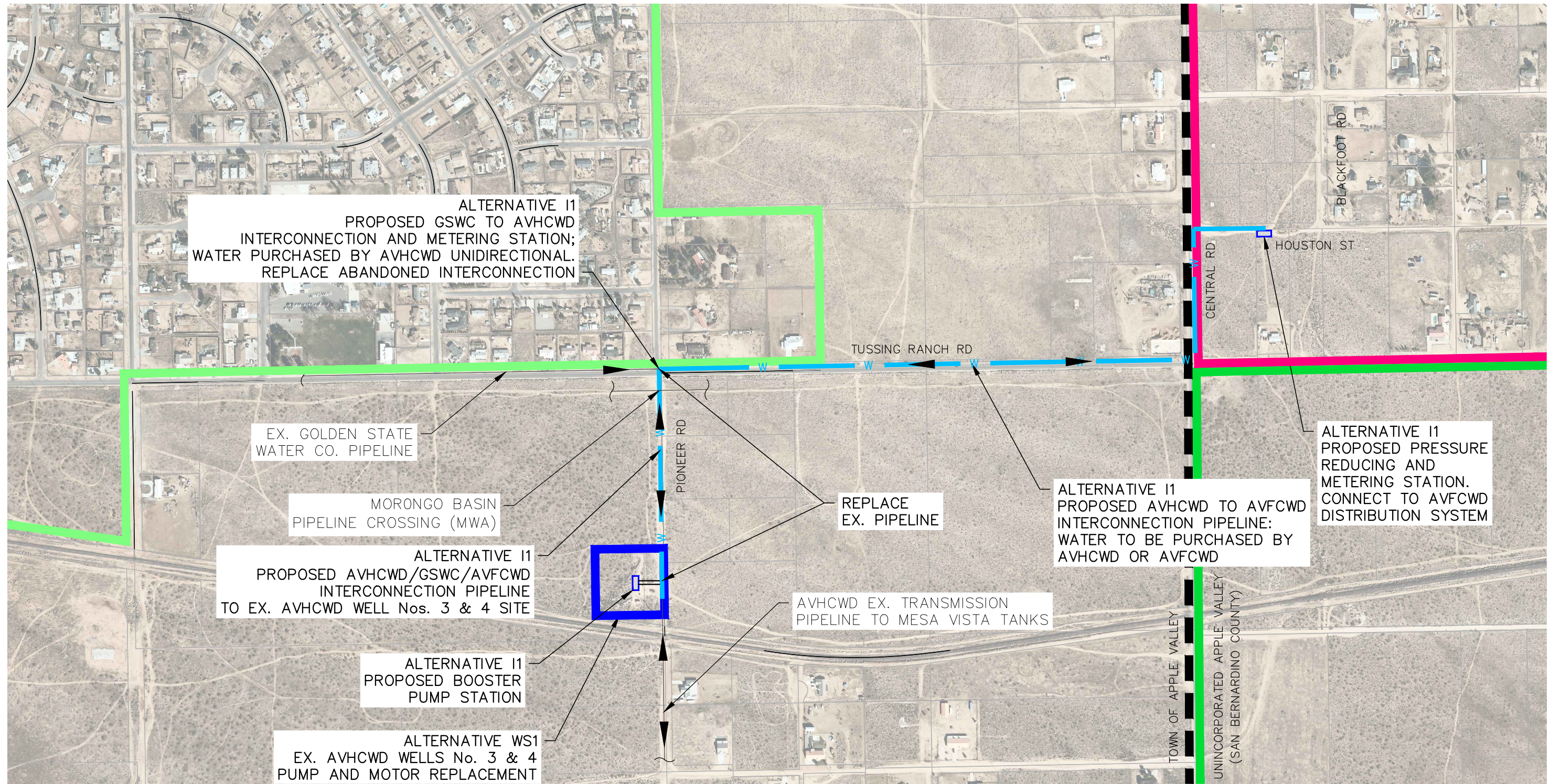
PREPARED FOR: APPLE VALLEY HEIGHTS CWD DATE SUBMITTED: MAY 2018

FIGURE

4

OF **6**

JOB NUMBER
226817-0000211



ALTERNATIVE I1
PROPOSED GSWC TO AVHCWD
INTERCONNECTION AND METERING STATION;
WATER PURCHASED BY AVHCWD UNIDIRECTIONAL.
REPLACE ABANDONED INTERCONNECTION

EX. GOLDEN STATE
WATER CO. PIPELINE

MORONGO BASIN
PIPELINE CROSSING (MWA)

ALTERNATIVE I1
PROPOSED AVHCWD/GSWC/AVFCWD
INTERCONNECTION PIPELINE
TO EX. AVHCWD WELLS Nos. 3 & 4 SITE

ALTERNATIVE I1
PROPOSED BOOSTER
PUMP STATION

ALTERNATIVE WS1
EX. AVHCWD WELLS No. 3 & 4
PUMP AND MOTOR REPLACEMENT

TUSSING RANCH RD

PIONEER RD

REPLACE
EX. PIPELINE

ALTERNATIVE I1
PROPOSED AVHCWD TO AVFCWD
INTERCONNECTION PIPELINE:
WATER TO BE PURCHASED BY
AVHCWD OR AVFCWD

AVHCWD EX. TRANSMISSION
PIPELINE TO MESA VISTA TANKS

ALTERNATIVE I1
PROPOSED PRESSURE
REDUCING AND
METERING STATION.
CONNECT TO AVFCWD
DISTRIBUTION SYSTEM

BLACKFOOT RD

HOUSTON ST

CENTRAL RD

TOWN OF APPLE VALLEY
UNINCORPORATED APPLE VALLEY
(SAN BERNARDINO COUNTY)



SCALE: 1" = 500'



LEGEND

- APPLE VALLEY HEIGHTS COUNTY WATER DISTRICT (CA3600009)
- MARIANA RANCHOS COUNTY WATER DISTRICT (CA3610030)
- APPLE VALLEY FOOTHILL COUNTY WATER DISTRICT (CA3600008)
- GOLDEN STATE WATER COMPANY - APPLE VALLEY SOUTH SYSTEM
- TOWN OF APPLE VALLEY CITY LIMITS
- ALTERNATIVE I1 CONNECTION PIPELINE

PRELIMINARY
NOT FOR CONSTRUCTION

XREFS:

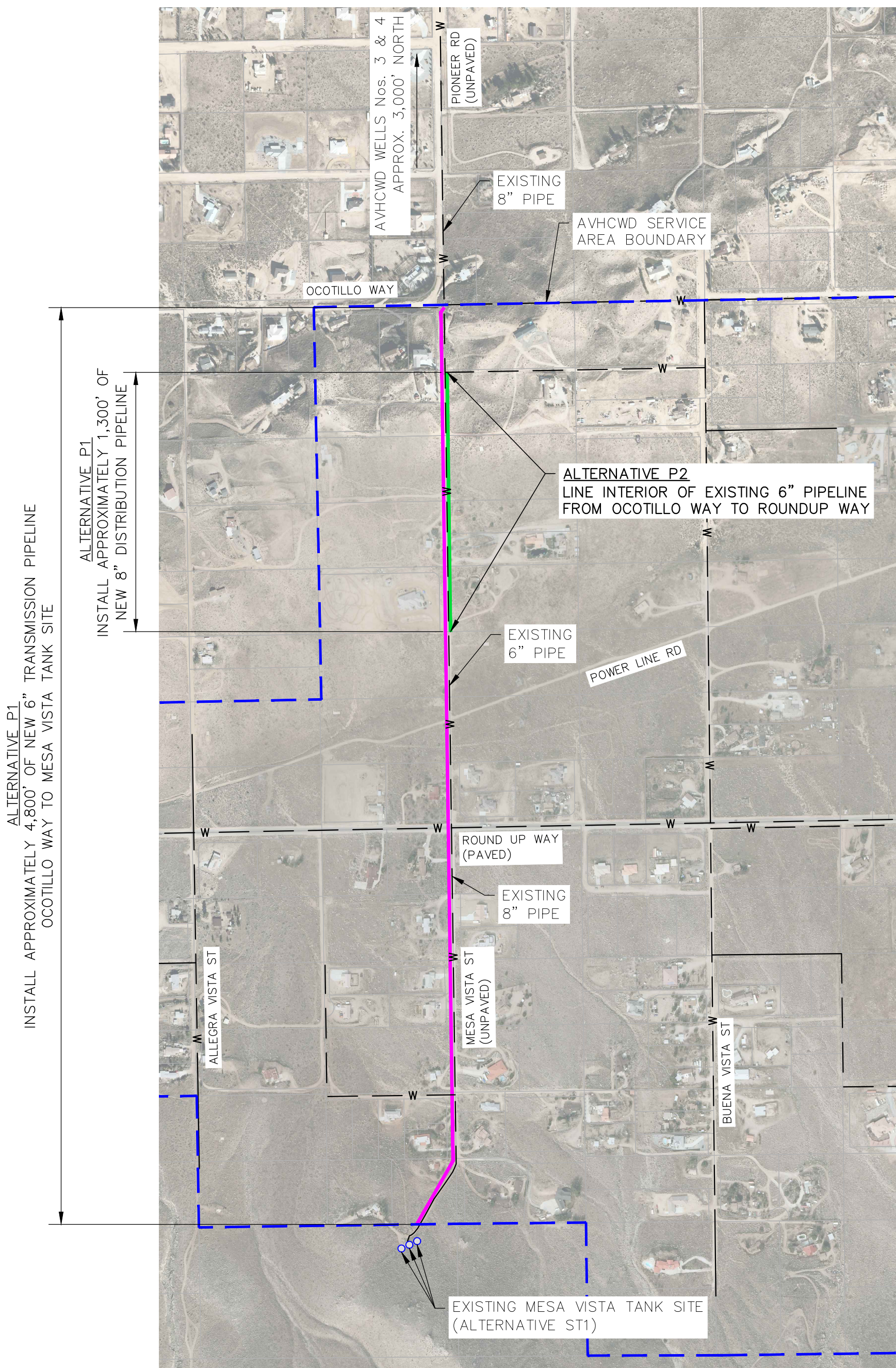
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PAGE SETUP: 11X17_.pdf
DESIGNER: PROJ. MGR:

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PRELIMINARY ENGINEERING REPORT
PROPOSED AVHCWD INTERCONNECTION WITH AVFCWD & GSWC

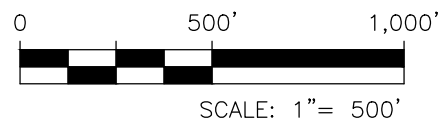
PREPARED FOR: **APPLE VALLEY HEIGHTS CWD** DATE SUBMITTED: **MAY 2018**

FIGURE
5
OF 6
JOB NUMBER
226817-0000211



LEGEND

- SERVICE AREA BOUNDARY OF APPLE VALLEY HEIGHTS COUNTY WATER DISTRICT (CA3600009)
- w EXISTING PIPELINE
- PROPOSED TRANSMISSION PIPELINE
- PROPOSED DISTRIBUTION PIPELINE



PRELIMINARY
NOT FOR CONSTRUCTION



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PRELIMINARY ENGINEERING REPORT
ALTERNATIVES P1 & P2
DEDICATED TRANSMISSION PIPELINE & DISTRIBUTION PIPELINE IMPROVEMENTS

PREPARED FOR: APPLE VALLEY HEIGHTS COUNTY WATER DISTRICT DATE SUBMITTED: MAY 2018

FIGURE
6
OF 6
JOB NUMBER
226817-000211

APPENDIX A – PROJECT ALTERNATIVE COST OPINIONS

Apple Valley Heights County Water District
Preliminary Cost Opinion
Alternative P1 - New Transmission and Distribution Line
August 2018

Construction Costs

Item	Unit	Qty	Cost Per Unit	Total Cost
Mobilization	LS	1	\$ 25,000	\$ 25,000
Bonding and Insurance	LS	1	\$ 15,000	\$ 15,000
Traffic Control	LS	1	\$ 20,000	\$ 20,000
Remove or Abandon in Place Existing Transmission Line	LS	1	\$ 10,000	\$ 10,000
Furnish & Install 6" Transmission System Piping and Appurtenances	LF	4,800	\$ 60	\$ 288,000
Furnish & Install 8" Distribution System Piping and Appurtenances	LF	1,300	\$ 75	\$ 97,500
Furnish & Install 8" Gate Valves	EA	5	\$ 2,500	\$ 12,500
Furnish & Install 6-inch Dry Barrel Fire Hydrant Assembly	EA	3	\$ 8,200	\$ 24,600
Furnish and Install Cut-off Walls	EA	3	\$ 2,000	\$ 6,000
Import Backfill Material	CY	230	\$ 30	\$ 6,900
Disinfection & Hydrostatic Testing	LS	1	\$ 10,000	\$ 10,000
Remove Existing AC Pavement	SF	120	\$ 6	\$ 720
Temporary AC Pavement	SF	120	\$ 20	\$ 2,400
Permanent AC Pavement	SF	120	\$ 30	\$ 3,600
Base Material (6")	SF	120	\$ 25	\$ 3,000
Slurry Seal	SF	500	\$ 12	\$ 6,000
BMP Implementation and Maintenance	LS	1	\$ 10,000	\$ 10,000
Construction Subtotal				\$ 541,220
Construction Contingency	%	10	\$ 541,220	\$ 54,130
Total Construction				\$ 595,350

Non-Construction Costs

Item	Unit	Qty	Cost Per Unit	Total Cost
Project Management/Pay Requests/Reporting	LS	1	\$ 15,000	\$ 15,000
Field Stormwater Inspection	LS	1	\$ 7,500	\$ 7,500
Environmental Monitoring	LS	1	\$ 10,000	\$ 10,000
SWPPP Development, NOI, COI, NOC	LS	1	\$ 12,000	\$ 12,000
Permitting (County of San Bernardino Public Works)	LS	1	\$ 6,000	\$ 6,000
OMB 133A Audit (One FY)	LS	1	\$ 15,000	\$ 15,000
Legal and Administrative	LS	1	\$ 7,500	\$ 7,500
Bidding and Advertising	LS	1	\$ 10,000	\$ 10,000
Construction Staking	LS	1	\$ 10,000	\$ 10,000
Construction Management/Inspection	LS	1	\$ 50,000	\$ 50,000
Materials and Compaction Testing	LS	1	\$ 15,000	\$ 15,000
Labor Compliance	LS	1	\$ 10,000	\$ 10,000
Prepare As-builts	LS	1	\$ 6,000	\$ 6,000
Non-Construction Subtotal				\$ 174,000
Non-Construction Contingency	%	10	\$ 174,000	\$ 17,400
Total Project Capital Cost (rounded)				\$ 786,800

Assumptions:

Prevailing wages are applicable
Costs for preliminary engineering, environmental documentation (CEQA/NEPA), title report purchases, easement writing, geotechnical investigation, and design services are anticipated to be paid for by SWRCB DFA funding agreement, and are not included in this table. Construction phase environmental monitoring efforts are unknown at this time; preliminary estimates are included.

Apple Valley Heights County Water District
Preliminary Cost Opinion
Alternative ST1 - Replace Mesa Vista Storage Tanks
August 2018

Construction Costs

Item	Unit	Qty	Cost Per Unit	Total Cost
Mobilization	LS	1	\$ 25,000	\$ 25,000
Bonding and Insurance	LS	1	\$ 10,000	\$ 10,000
Clearing and Grubbing	LS	1	\$ 7,500	\$ 7,500
Site Grading	LS	1	\$ 15,000	\$ 15,000
72,000-gallon Bolted Steel Tank (50,000 gallon effective capacity)	LS	2	\$ 84,000	\$ 168,000
Tank Ringwall Foundation	LS	2	\$ 32,000	\$ 64,000
Tank Piping & Appurtenances	LS	2	\$ 7,500	\$ 15,000
Import Material	CY	50	\$ 30	\$ 1,500
Rock Removal	CY	40	\$ 250	\$ 10,000
Rockfall Protection - Anchored Wire Mesh	LS	1	\$ 35,000	\$ 35,000
BMP Implementation and Maintenance	LS	1	\$ 4,000	\$ 4,000
Construction Subtotal				\$ 355,000
Construction Contingency	%	10	\$ 355,000	\$ 35,500
Total Construction				\$ 390,500

Non-Construction Costs

Item	Unit	Qty	Cost Per Unit	Total Cost
Project Management/Pay Requests/Reporting	LS	1	\$ 10,000	\$ 10,000
Field Stormwater Inspection	LS	1	\$ 6,000	\$ 6,000
Environmental Monitoring	LS	1	\$ 5,000	\$ 5,000
Permitting	LS	1	\$ 5,000	\$ 5,000
Legal and Administrative	LS	1	\$ 8,000	\$ 8,000
Bidding and Advertising	LS	1	\$ 10,000	\$ 10,000
Construction Staking	LS	1	\$ 4,000	\$ 4,000
Construction Management/Inspection	LS	1	\$ 45,000	\$ 45,000
Materials and Compaction Testing	LS	1	\$ 8,000	\$ 8,000
Prepare As-builts	LS	1	\$ 5,000	\$ 5,000
Non-Construction Subtotal				\$ 106,000
Non-Construction Contingency	%	10	\$ 106,000	\$ 10,600
Total Project Capital Cost (rounded)				\$ 507,100

Assumptions:

Prevailing wages are applicable

Costs for preliminary engineering, environmental documentation (CEQA/NEPA), title report purchases, easement writing, geotechnical investigation, and design services are anticipated to be paid for by SWRCB DFA funding agreement, and are not included in this table. Construction phase environmental monitoring efforts are unknown at this time; preliminary estimates are included. Costs associated with an OMB 133A audit, labor compliance, and stormwater documentation are included in Alternative P1.

Apple Valley Heights County Water District
Preliminary Cost Opinion
Alternative WS1 - Well Site Electrical Improvements
August 2018

Construction Costs

Item	Unit	Qty	Cost Per Unit	Total Cost
Mobilization	LS	1	\$ 7,500	\$ 7,500
Bonding and Insurance	LS	1	\$ 2,500	\$ 2,500
Well Pump and Motor Replacement/Mechanical	EA	2	\$ 35,000	\$ 70,000
Manual Transfer Switch	LS	1	\$ 7,000	\$ 7,000
Construction Subtotal				\$ 87,000
Contingency	%	10	\$ 87,000	\$ 8,700
Total Construction				\$ 95,700

Non-Construction Costs

Item	Unit	Qty	Cost Per Unit	Total Cost
Project Management/Pay Requests/Reporting	LS	1	\$ 2,000	\$ 2,000
Legal and Administrative	LS	1	\$ 6,000	\$ 6,000
Bidding and Advertising	LS	1	\$ 8,000	\$ 8,000
Construction Management/Inspection	LS	1	\$ 10,000	\$ 10,000
Technical Memorandum	LS	1	\$ 3,500	\$ 3,500
Non-Construction Subtotal				\$ 29,500
Non-Construction Contingency	%	10	\$ 29,500	\$ 2,950
Total Project Capital Cost (rounded)				\$ 128,200

Assumptions:

Prevailing wages are applicable

Costs for preliminary engineering, environmental documentation (CEQA/NEPA), title report purchases, easement writing, geotechnical investigation, and design services are anticipated to be paid for by SWRCB DFA funding agreement, and are not included in this table. Construction phase environmental monitoring efforts are unknown at this time; preliminary estimates are included. Costs associated with an OMB 133A audit, labor compliance, and stormwater documentation are included in Alternative P1.

Apple Valley Heights County Water District
Preliminary Cost Opinion
Alternative WS2 - Interconnection with AVHCWD and GSWC
August 2018

Construction Costs

Item	Unit	Qty	Cost Per Unit	Total Cost
Transmission Pipelines				
Mobilization	LS	1	\$ 25,000	\$ 25,000
Bonding and Insurance	LS	1	\$ 12,000	\$ 12,000
Clearing and Grubbing	LS	1	\$ 7,500	\$ 7,500
Traffic Control (Tussing Ranch Road, Central)	EA	1	\$ 8,000	\$ 8,000
Pressure Reducing Station, Meter, Piping, & Appurtenances (AVFCWD Service Area)	LS	1	\$ 25,000	\$ 25,000
Interconnection Meter, Piping, & Appurtenances (GSWC Service Area)	LS	1	\$ 17,500	\$ 17,500
Transmission Pipeline from AVFCWD to AVHCWD	LF	4,900	\$ 65	\$ 318,500
Transmission Pipeline from GSWC to AVHCWD	LF	200	\$ 65	\$ 13,000
Remove Existing AC Pavement	SF	300	\$ 6	\$ 1,800
Temporary AC Pavement	SF	300	\$ 20	\$ 6,000
Permanent AC Pavement	SF	300	\$ 30	\$ 9,000
Base Material (6")	SF	300	\$ 25	\$ 7,500
Slurry Seal	SF	1,000	\$ 10	\$ 10,000
BMP Implementation and Maintenance	LS	1	\$ 10,000	\$ 10,000
Transmission Pipelines Subtotal				\$ 470,800
New Pump Station				
Mobilization	LS	1	\$ 20,000	\$ 20,000
Bonding and Insurance	LS	1	\$ 10,000	\$ 10,000
Clearing and Grubbing	LS	1	\$ 4,000	\$ 4,000
Site Piping and Appurtenances	LS	1	\$ 12,500	\$ 12,500
Pump Station Building/Foundation	LS	1	\$ 60,000	\$ 60,000
Package Skid Mounted Pumps	LS	1	\$ 35,000	\$ 35,000
BMP Implementation and Maintenance	LS	1	\$ 5,000	\$ 5,000
New AVHCWD Pump Station Subtotal				\$ 146,500
Construction Subtotal				\$ 617,300
Construction Contingency	%	10	\$ 617,300	\$ 61,730
Total Construction Cost				\$ 679,030

Non-Construction Costs

Item	Unit	Qty	Cost Per Unit	Total Cost
Transmission Pipelines				
Project Management/Pay Requests/Reporting	LS	1	\$ 10,000	\$ 10,000
Field Stormwater Inspection	LS	1	\$ 15,000	\$ 15,000
Environmental Monitoring	LS	1	\$ 20,000	\$ 20,000
Permitting/Agency Costs (County of San Bernardino, Town of Apple Valley, DDW)	LS	1	\$ 25,000	\$ 25,000
Legal and Administrative	LS	1	\$ 10,000	\$ 10,000
Bidding and Advertising	LS	1	\$ 10,000	\$ 10,000
Construction Staking	LS	1	\$ 20,000	\$ 20,000
Construction Management/Inspection	LS	1	\$ 40,000	\$ 40,000
Materials and Compaction Testing	LS	1	\$ 15,000	\$ 15,000
Prepare As-builts	LS	1	\$ 4,000	\$ 4,000
Transmission Pipelines Subtotal				\$ 169,000
New AVHCWD Pump Station				
Project Management/Pay Requests/Reporting	LS	1	\$ 8,000	\$ 8,000
Construction Management/Inspection	LS	1	\$ 18,000	\$ 18,000
Construction Staking for New Pump Station	EA	1	\$ 1,500	\$ 1,500
Prepare As-builts	LS	1	\$ 4,000	\$ 4,000
New AVHCWD Pump Station Subtotal				\$ 31,500
Non-Construction Subtotal				\$ 200,500
Non-Construction Contingency	%	10	\$ 200,500	\$ 20,050
Total Project Capital Cost (rounded)				\$ 899,600

Assumptions:

Prevailing wages are applicable

Costs for preliminary engineering, environmental documentation (CEQA/NEPA), title report purchases, easement writing, geotechnical investigation, and design services are anticipated to be paid for by SWRCB DFA funding agreement, and are not included in this table. Construction phase environmental monitoring efforts are unknown at this time; preliminary estimates are included. Costs associated with an OMB 133A audit, labor compliance, and stormwater documentation are included in Alternative P1.

APPENDIX B – CENSUS DATA



QT-P11

Households and Families: 2010

2010 Census Summary File 1

NOTE: For information on confidentiality protection, nonsampling error, and definitions, see <http://www.census.gov/prod/cen2010/doc/sf1.pdf>.

Geography: Block Group 2, Census Tract 97.08, San Bernardino County, California

Subject	Number	Percent
HOUSEHOLD TYPE		
Total households	869	100.0
Family households [1]	638	73.4
Male householder	471	54.2
Female householder	167	19.2
Nonfamily households [2]	231	26.6
Male householder	126	14.5
Living alone	93	10.7
Female householder	105	12.1
Living alone	85	9.8
HOUSEHOLD SIZE		
Total households	869	100.0
1-person household	178	20.5
2-person household	291	33.5
3-person household	153	17.6
4-person household	121	13.9
5-person household	66	7.6
6-person household	32	3.7
7-or-more-person household	28	3.2
Average household size	2.82	(X)
Average family size	3.25	(X)
FAMILY TYPE AND PRESENCE OF RELATED AND OWN CHILDREN		
Families [3]	638	100.0
With related children under 18 years	285	44.7
With own children under 18 years	247	38.7
Under 6 years only	37	5.8
Under 6 and 6 to 17 years	54	8.5
6 to 17 years only	156	24.5
Husband-wife families	503	100.0
With related children under 18 years	198	39.4
With own children under 18 years	177	35.2
Under 6 years only	19	3.8
Under 6 and 6 to 17 years	34	6.8
6 to 17 years only	124	24.7
Female householder, no husband present families	87	100.0
With related children under 18 years	58	66.7
With own children under 18 years	47	54.0

Subject	Number	Percent
Under 6 years only	9	10.3
Under 6 and 6 to 17 years	13	14.9
6 to 17 years only	25	28.7

X Not applicable.

[1] A household that has at least one member of the household related to the householder by birth, marriage, or adoption is a "Family household." Same-sex couple households are included in the family households category if there is at least one additional person related to the householder by birth or adoption. Same-sex couple households with no relatives of the householder present are tabulated in nonfamily households. Responses of "same-sex spouse" were edited during processing to "unmarried partner."

[2] "Nonfamily households" consist of people living alone and households which do not have any members related to the householder.

[3] "Families" consist of a householder and one or more other people related to the householder by birth, marriage, or adoption. They do not include same-sex married couples even if the marriage was performed in a state issuing marriage certificates for same-sex couples. Same-sex couples are included in the families category if there is at least one additional person related to the householder by birth or adoption. Responses of "same-sex spouse" were edited during processing to "unmarried partner." Same-sex couple households with no relatives of the householder present are tabulated in nonfamily households.

Source: U.S. Census Bureau, 2010 Census.

Summary File 1, Tables P17, P18, P28, P29, P37, P38, and P39.



QT-P11

Households and Families: 2010

2010 Census Summary File 1

NOTE: For information on confidentiality protection, nonsampling error, and definitions, see <http://www.census.gov/prod/cen2010/doc/sf1.pdf>.

Geography: Block Group 3, Census Tract 97.08, San Bernardino County, California

Subject	Number	Percent
HOUSEHOLD TYPE		
Total households	535	100.0
Family households [1]	361	67.5
Male householder	274	51.2
Female householder	87	16.3
Nonfamily households [2]	174	32.5
Male householder	112	20.9
Living alone	91	17.0
Female householder	62	11.6
Living alone	53	9.9
HOUSEHOLD SIZE		
Total households	535	100.0
1-person household	144	26.9
2-person household	177	33.1
3-person household	87	16.3
4-person household	70	13.1
5-person household	24	4.5
6-person household	16	3.0
7-or-more-person household	17	3.2
Average household size	2.60	(X)
Average family size	3.16	(X)
FAMILY TYPE AND PRESENCE OF RELATED AND OWN CHILDREN		
Families [3]	361	100.0
With related children under 18 years	153	42.4
With own children under 18 years	133	36.8
Under 6 years only	20	5.5
Under 6 and 6 to 17 years	28	7.8
6 to 17 years only	85	23.5
Husband-wife families	279	100.0
With related children under 18 years	107	38.4
With own children under 18 years	96	34.4
Under 6 years only	12	4.3
Under 6 and 6 to 17 years	20	7.2
6 to 17 years only	64	22.9
Female householder, no husband present families	48	100.0
With related children under 18 years	25	52.1
With own children under 18 years	22	45.8

Subject	Number	Percent
Under 6 years only	4	8.3
Under 6 and 6 to 17 years	5	10.4
6 to 17 years only	13	27.1

X Not applicable.

[1] A household that has at least one member of the household related to the householder by birth, marriage, or adoption is a "Family household." Same-sex couple households are included in the family households category if there is at least one additional person related to the householder by birth or adoption. Same-sex couple households with no relatives of the householder present are tabulated in nonfamily households. Responses of "same-sex spouse" were edited during processing to "unmarried partner."

[2] "Nonfamily households" consist of people living alone and households which do not have any members related to the householder.

[3] "Families" consist of a householder and one or more other people related to the householder by birth, marriage, or adoption. They do not include same-sex married couples even if the marriage was performed in a state issuing marriage certificates for same-sex couples. Same-sex couples are included in the families category if there is at least one additional person related to the householder by birth or adoption. Responses of "same-sex spouse" were edited during processing to "unmarried partner." Same-sex couple households with no relatives of the householder present are tabulated in nonfamily households.

Source: U.S. Census Bureau, 2010 Census.

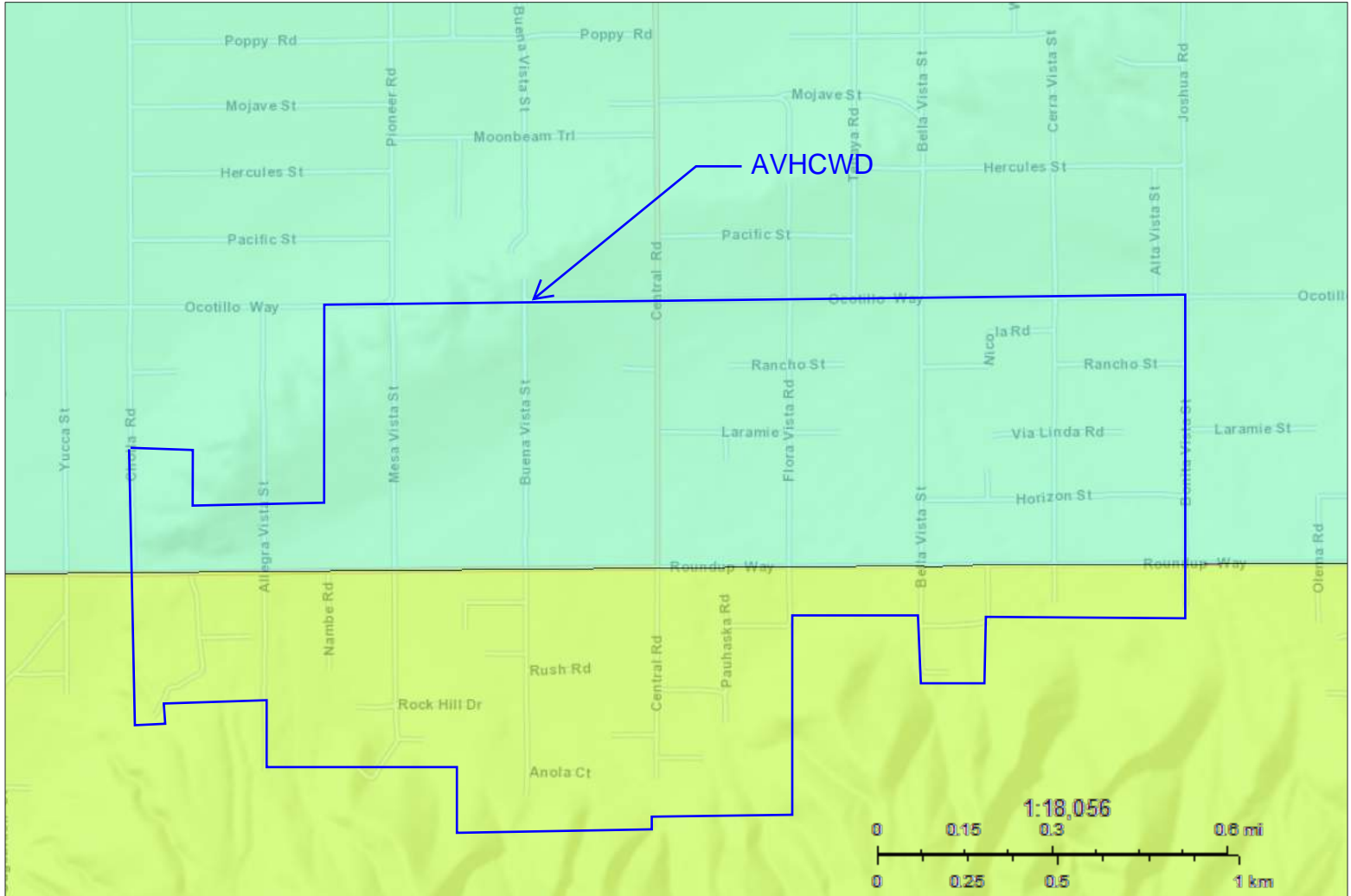
Summary File 1, Tables P17, P18, P28, P29, P37, P38, and P39.



B19013

MEDIAN HOUSEHOLD INCOME IN THE PAST 12 MONTHS (IN 2016 INFLATION-ADJUSTED DOLLARS)
Universe: Households
2012-2016 American Community Survey 5-Year Estimates

Thematic Map of Estimate; Median household income in the past 12 months (in 2016 inflation-adjusted dollars)
Geography by: Block Group within Census Tract



Legend

Data Classes

- 32,969 - 32,969 Block Group 3, Tract 97.08
- 43,860 - 43,860 Block Group 2, Tract 97.08

Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Data and Documentation section.

Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.

Boundaries

No Legend

Tell us what you think. Provide feedback to help make American Community Survey data more useful for you.

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities and towns and estimates of housing units for states and counties.

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of

APPENDIX C – REGULATORY AGENCY DOCUMENTS



EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIGUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board

Division of Drinking Water

June 30, 2016

Mr. Daniel Smith
Assistant General Manager
Apple Valley Heights CWD
P.O. Box 938
Apple Valley, CA 92307

CITATION NO. 05-13-16C-009
TOTAL COLIFORM MCL EXCEEDANCE FOR MAY 2016
APPLE VALLEY HEIGHTS COUNTY WATER DISTRICT (SYSTEM NO. 3600009)

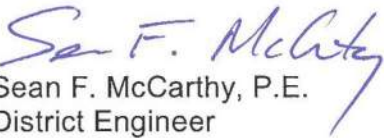
Dear Mr. Smith:

The State Water Resources Control Board, acting by and through its Division of Drinking Water (Division), hereby issues a citation to Apple Valley Heights County Water District (hereinafter, District) for the following violation:

- Title 22, California Code of Regulations (CCR), Section 64426.1(b)(2). Specifically, the District failed to meet the Primary Drinking Water Standards for bacteriological quality in the month of May 2016. A public water system which collects fewer than 40 samples per month is in violation of the Total Coliform Maximum Contaminant Level (MCL) when more than one (1) sample collected during a single month is total coliform-positive.

The District has followed all the directives listed in this citation and has returned to compliance. If you have any questions in regards to this letter, please contact Mr. Wei Chang at (909) 383-6029 or by e-mail at wei.chang@waterboards.ca.gov

Sincerely,


Sean F. McCarthy, P.E.
District Engineer
San Bernardino District
Southern California Field Operations Branch

Enclosure: Citation No. 05-13-16C-009

ENCLOSURE

CITATION NO. 05-13-16C-009

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STATE OF CALIFORNIA
WATER RESOURCES CONTROL BOARD
DIVISION OF DRINKING WATER

TO: Apple Valley Heights County Water District

P.O. Box 938

Apple Valley, CA 92307

ATTN: Daniel Smith

Assistant General Manager

CITATION FOR VIOLATION OF CALIFORNIA CODE OF REGULATIONS,

TITLE 22, SECTION 64424(b)

WATER SYSTEM NO. 3600009

CITATION NO. 05-13-16C-009

Issued on June 30, 2016

Section 116650 of the California Health and Safety Code authorizes the issuance of a citation to a public water system for violation of the California Safe Drinking Water Act (Health and Safety Code, Division 104 , Part 12, Chapter 4, commencing with Section 116270) (hereinafter "California SDWA"), or any regulation, standard, permit or order issued or adopted thereunder.

The State Water Resources Control Board, acting by and through its Division of Drinking Water (hereinafter "Division") and the Deputy Director for the Division (hereinafter "Deputy Director"), hereby issues a citation to Apple Valley Heights Water District (hereinafter District) for the following violation:

- Title 22, California Code of Regulations (CCR), Section 64426.1(b)(2). Specifically, the District failed to meet the Primary Drinking Water Standards for bacteriological quality in the month of May 2016. A public water system who collects fewer than 40 samples per month is in violation of the Total Coliform Maximum Contaminant Level (MCL) when more than one sample collected during a single month is total coliform-positive.

In the month of May 2016, the District collected two routine distribution system samples for analysis. One routine sample resulted present for total coliform but absent for *E.coli*. A total of three repeat samples and two triggered source samples were collected (**see Attachment No 1**). All triggered source samples resulted absent for total coliform and *E.coli*/Fecal, but one repeat sample resulted present for total coliform but absent for *E.coli*/Fecal.

HISTORY

Apple Valley Heights County Water District (District) is community and is located south of the Town of Apple Valley in San Bernardino County. The District serves an estimated population of 917 people through 307 service connections. The District's water system comprises of two wells, four storage tanks, two booster stations, and the distribution system's pipelines with isolation valves and fire hydrants.

The District was approved to provide chlorination of the its groundwater sources in 2012. Currently the District has no connections with other water systems. The District's water system is currently operating by authority of Water Permit No. 03-13-03 (P)-001 issued by the Division on January 21, 2003.

1 The District is required to collect a minimum of one routine bacteriological water quality sample
2 every month from the distribution system, in accordance with Section 64423(a) of the Title 22,
3 CCR. The District currently monitors two sample sites per month.

4

5 On May 2, 2016, the District collected two routine samples from the distribution system for
6 analysis. One routine sample resulted present for total coliform and absent for *E.colii*/Fecal. The
7 sample location was 9429 Cerra Vista.

8

9 On May 3, 2016, the District proceeded to collect one repeat sample set from the distribution
10 system, for a total number of three samples. The sample set consisted of one sample at the
11 original site with the present total coliform, one upstream sample, and one downstream sample.
12 The District also collected total coliform samples from the two active sources that were serving
13 the system pursuant to the Groundwater Rule. The repeat source samples resulted absent for
14 total coliform and *E.colii*/Fecal, but one of the three repeat distribution samples resulted present
15 for total coliform and absent for *E.colii*/Fecal. The sample locations were 9430 Cerra Vista.

16

17 On May 4, 2016, the District proceeded to collect one repeat sample from 9430 Cerra Vista. The
18 sample resulted absent for total coliform and *E.colii*/Fecal.

19

20 Pursuant to Section 64426.1(b), if a public water system collects fewer than 40 samples per
21 month and more than one sample collected during any month is total coliform-positive, the public
22 water system is in violation of the total coliform Maximum Contaminant Level (MCL). Therefore,
23 the District violates the Total Coliform MCL, because more than one sample collected during the
24 month of May 2016 was total coliform-positive.

25

26 **DIRECTIVES**

1
2 Apple Valley Heights County Water District is hereby directed to take the following actions:

3
4 1. Apple Valley Heights County Water District shall notify its consumers of the bacteriological
5 water quality failure (Total Coliform MCL violation) in conformance with Section 64426.1€,
6 Title 22, CCR: A Tier 2 Resolved Total Coliform Notice.

- 7 • The notice shall be issued to consumers by mail or direct delivery, including those
8 that provide their drinking water to others (e.g. schools or school system, apartment
9 building owners, or large private employers), and other service connections to which
10 water is delivered by the water system. When consumers are not likely to be
11 reached by mail or directly delivery, the notice shall be published in a local
12 newspaper, posted in conspicuous public places served by the water system, or on
13 the Internet; or delivered to community organizations. The notice has been
14 distributed on May 16, 2016. **(Attachment No. 2)**

15
16 2. Apple Valley Heights County Water District shall submit Proof of Notification that all the
17 public notice requirements have been met pursuant to Section 64469(d), Title 22, CCR,
18 **within 10 days following issuance of the public notice.** The Proof of Notification has
19 been submitted to the Division. **(Attachment No. 3)**

20
21 3. Apple Valley Heights County Water District has submitted a completed Positive Total
22 Coliform Rule Investigation report **(Attachment No.4)** to the Division on May 6, 2016.

23
24 All submittals required by this citation were sent to:
25
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Sean F. McCarthy, P.E.
Senior Sanitary Engineer
State Water Resources Control Board
Division of Drinking Water
464 W. 4th Street, Suite 437
San Bernardino, CA 92401

CIVIL PENALTIES

Section 116650 (d) and (e) of the H&S Code allow for the assessment of a civil penalty for failure to comply with requirements of the Safe Drinking Water Act. Failure to comply with any provision in this citation will result in the Division imposing an administrative penalty of up to \$200.00 (two hundred dollars) per day as of the date of violation of any provision of this citation.

June 30, 2016
Date

Sean F. McCarthy
Sean F. McCarthy, P.E.
District Engineer
San Bernardino District
Southern California Field Operations Branch

Attachments: (4)
Certified Mail No.: 7006 2150 0004 3940 7938



Attachment No. 1

May 2016 Monthly Coliform Monitoring Report

MONTHLY SUMMARY OF DISTRIBUTION SYSTEM COLIFORM MONITORING (including triggered source monitoring for systems subject to the Groundwater Rule)

System Name Apple Valley Heights County Water District	System Number 3600009
Sampling Period May	Year 2016

	Number Required	Number Collected	Number Total Coliform Positives	Number Fecal/E.coli Positives
1. Routine Samples (see note 1)	<u>2</u>	<u>6</u>	<u>2</u>	<u>0</u>
2. Repeat Samples following Samples that are Total Coliform Positive and Fecal/E.coli <i>Negative</i> (see notes 5 and 6)		<u>7</u>	<u>1</u>	0
3. Repeat Samples following Routine Samples that are Total Coliform <i>Positive</i> and Fecal/E.coli Positive (see notes 5 and 6)		<u>0</u>	0	0
4. MCL Computation for Total Coliform Positive Samples				
a. Totals (sum of columns)		<u>13</u>	<u>3</u>	
b. If 40 or more samples collected in month, determine percent of samples that are total coliform positive [(total number positive/total number collected) x 100] = _____ %				
c. Is system in compliance...with fecal/E. coli MCL? (see notes 2 and 3)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
...with monthly MCL? (see note 4)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No		
5. Source Samples Triggered by Routine Samples that are Total Coliform Positive (This applies only to systems subject to the Groundwater Rule - see notes 7 and 8)		<u>1</u>	<u>1</u>	0
6. Invalidated Samples (Note what samples, if any, were invalidated; who authorized the invalidation; and when replacement samples were collected. Attach additional sheets, if necessary.)				
7. Summary Completed By:				

Signature Daniel B. Smith	Title Genera Manager	Date 6/16/2016
-------------------------------------	--------------------------------	--------------------------

NOTES AND INSTRUCTIONS:

1. Routine samples include:
 - a. Samples required pursuant to 22 CCR Section 64423 and any additional samples required by an approved routine sample siting plan established pursuant to 22 CCR Section 64422.
 - b. Extra samples are required for systems collecting less than five routine samples per month that had one or more total coliform positives in previous month:
 - c. Extra samples for systems with high source water turbidities that are using surface water or groundwater under direct influence of surface water and do not practice filtration in compliance with regulations:
2. Note: For a repeat sample following a total coliform positive sample, any fecal/*E.coli* positive repeat (boxed entry) **constitutes an MCL violation and requires immediate notification to the Division** (22, CCR, Section 64426.1).
3. Note: For repeat sample following a fecal/*E.coli* positive sample, any total coliform positive repeat (boxed entry) **constitutes an MCL violation and requires immediate notification to the Division** (22, CCR, Section 64426.1).
4. Total coliform MCL (**Notify the Division within 24 hours of MCL violation**):
 - a. For systems collecting less than 40 samples, if two or more samples are total coliform positive, then the MCL is violated.
 - b. For systems collecting 40 or more samples, if more than 5.0 percent of samples collected are total coliform positive, then the MCL is violated.
5. Positive results and their associated repeat samples are to be tracked on the Coliform Monitoring Worksheet.
6. Repeat samples must be collected within 24 hours of being notified of the positive results. For systems collecting more than one routine sample per month, three repeat samples must be collected for each total coliform positive sample. For systems collecting one or fewer routine samples per month, four repeat samples must be collected for each total coliform positive sample.
7. For systems subject to the Groundwater Rule: Positive results and the associated triggered source samples are to be tracked on the Coliform Monitoring Worksheet.
8. For triggered sample(s) required as a result of a total coliform routine positive sample, an *E.coli*, enterococci, or coliphage positive triggered sample (boxed entry) **requires immediate notification to the Division, Tier 1 public notification, and corrective action.**

COLIFORM MONITORING WORKSHEET

(COMPLETED FOR POSITIVE ROUTINE SAMPLES, ALL REPEAT SAMPLES, AND ALL TRIGGERED SOURCE SAMPLES)

Page 2 of 2
Report Month May Year 2016

Routine Samples ⁹			Repeat Samples ⁶				Triggered Source Samples ⁸						
TC+ Sample Date	TC+ Sample Site ID	¹² EC/FC Results	Repeat Collection Date	Repeat Sample Site IDs ¹⁰	Coliform Results (Check one box)			Source Sample Date	Groundwater Source(s) Sampled	¹² TC Results	^{11,12} E. coli Results		
					TC-	TC+ <u>BUT</u> FC/EC-	TC+AND FC/EC+						
5/2/2016	9429 Cerra Vista	(+ -)	3-May	9429 Cerra Vista	X			2-May	Well 3 & 4	(+ -)	(+ -)		
			3-May	9430 Cerra Vista		X						(+ / -)	(+ / -)
			3-May	9370 Cerra Vista	X							(+ / -)	(+ / -)
			4									(+ / -)	(+ / -)
		(+ / -)	4-May	9430 Cerra Vista	X					(+ / -)	(+ / -)		
			2						(+ / -)	(+ / -)			
			3						(+ / -)	(+ / -)			
			4						(+ / -)	(+ / -)			
5/17/2016	9614 Bella Vista	(+ -)	18-May	9614 Bella Vista	X			19-May	Well 3 & 4	(+ -)	(+ -)		
			18-May	9159 Bella Vista	X							(+ / -)	(+ / -)
			18-May	22895 Roundup Way	X							(+ / -)	(+ / -)
			18-May	4								(+ / -)	(+ / -)
		(+ / -)	1							(+ / -)	(+ / -)		
			2						(+ / -)	(+ / -)			
			3						(+ / -)	(+ / -)			
			4						(+ / -)	(+ / -)			
		(+ / -)	1							(+ / -)	(+ / -)		
			2						(+ / -)	(+ / -)			
			3						(+ / -)	(+ / -)			
			4						(+ / -)	(+ / -)			
		(+ / -)	1							(+ / -)	(+ / -)		
			2						(+ / -)	(+ / -)			
			3						(+ / -)	(+ / -)			
			4						(+ / -)	(+ / -)			
		(+ / -)	1							(+ / -)	(+ / -)		
			2						(+ / -)	(+ / -)			
			3						(+ / -)	(+ / -)			
			4						(+ / -)	(+ / -)			
		(+ / -)	1							(+ / -)	(+ / -)		
			2						(+ / -)	(+ / -)			
			3						(+ / -)	(+ / -)			
			4						(+ / -)	(+ / -)			

Comments:

NOTES AND INSTRUCTIONS:

6. Repeat samples must be collected within 24 hours of being notified of the positive results. For systems collecting more than one routine sample per month, three repeat samples must be collected for each total coliform positive sample. For systems collecting one or fewer routine samples per month, four repeat samples must be collected for each total coliform positive sample.
8. For triggered sample(s) required as a result of a total coliform routine positive sample, an *E. coli*, enterococci, or coliphage positive triggered sample (boxed entry) requires immediate notification to the Division, Tier 1 public notification, and corrective action.
9. Also include any data for positive samples that occurred in the previous month that led to repeat monitoring occurring in the reporting month. Include location and indicate if the routine sample was either positive or negative for *E. coli* or Fecal Coliforms.
10. For systems serving ≤ 1000 persons that collect one or fewer routine samples per month, a triggered source water sample may be used as the fourth repeat, as noted in an approved plan, if *E. coli* was the indicator used. Show result in GW source column too.
11. The Division recommends using *E. coli* (see note 8). If enterococci or coliphage is used, note which in the comment box below.
12. Circle the appropriate result.

Abbreviations: TC = Total Coliform, FC = Fecal Coliform, EC = *E. coli*

Tier 2 Public Notice

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

Este informe contiene información muy importante sobre su agua potable.

Tradúzcalo o hable con alguien que lo entienda bien.

Apple Valley Heights County Water District Had Levels of Coliform Bacteria Above the Drinking Water Standard

Our water system recently violated a drinking water standard. Although this is not an emergency, as our customers, you have a right to know what you should do, what happened, and what we did to correct this situation.

We routinely monitor for drinking water contaminants. We took (4) four samples to test for the presence of coliform bacteria during May 2016. 25% of those samples showed the presence of total coliform bacteria. The standard is that no more than 1 sample per month/5.0 percent of samples may do so.

What should I do?

- **You do not need to boil your water or take other corrective actions.**
- This is not an emergency. If it had been, you would have been notified immediately. Total coliform bacteria are generally not harmful themselves. *Coliforms are bacteria which are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.*
- Usually, coliforms are a sign that there could be a problem with the system's treatment or distribution system (pipes). Whenever we detect coliform bacteria in any sample, we do follow-up testing to see if other bacteria of greater concern, such as fecal coliform or *E. coli*, are present. **We did not find any of these bacteria in our subsequent testing, and further testing shows that this problem has been resolved.**
- People with severely compromised immune systems, infants, and some elderly may be at increased risk. These people should seek advice about drinking water from their health care providers. General guidelines on ways to lessen the risk of infection by microbes are available from U.S. EPA's Safe Drinking Water Hotline at 1(800) 426-4791.
- If you have other health issues concerning the consumption of this water, you may wish to consult your doctor.

What happened? What was done?

Water samples were taken from bathroom faucets with aerators, the results came back positive for coliform bacteria. The aerators caused the *false positive* results.

- We have increased sampling for coliform bacteria to catch the problem early if it recurs.
- Removal of aerators, flushing, and additional samples do not show presence of coliform bacteria.

For more information, please contact Gail Hunter or Daniel Smith at 760-247-7330 or 9429 Cerra Vista St.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this public notice in a public place or distributing copies by hand or mail.

Secondary Notification Requirements

Upon receipt of notification from a person operating a public water system, the following notification must be given within 10 days [Health and Safety Code Section 116450(g)]:

- **SCHOOLS:** Must notify school employees, students, and parents (if the students are minors).
- **RESIDENTIAL RENTAL PROPERTY OWNERS OR MANAGERS** (including nursing homes and care facilities): Must notify tenants.
- **BUSINESS PROPERTY OWNERS, MANAGERS, OR OPERATORS:** Must notify employees of businesses located on the property.

This notice is being sent to you by Apple Valley Heights County Water District.

State Water System ID#: 3600009. Date distributed: 5/16/2016.

Attachment No. 3

Proof of Consumer Notification

Drinking Water Notification to Consumers

PROOF OF NOTIFICATION

Name of Water System: Apple Valley Heights County Water District

Please explain what caused the problem if you have determined what it was and what steps you have taken to correct it. Water samples were taken from bathroom facets with aerators, the results came back positive for coliform bacteria. The aerators caused the false positive results. Removal of aerators, flushing, and additional samples do not show presence of coliform bacteria.

Consumers Notified X Yes No

If not, Explain:

Date of Notification: May 16, 2016

On the date of notification set forth above, I served the above referenced document(s) on the consumers by:

- X Sending a copy through the U.S. Mail, first class, postage prepaid, addressed to each of the resident(s) at the place where the property is situated, pursuant to the California Civil Code. Attach copy of Notice.
- Newspaper (if the problem has been corrected). Attach a copy of Notice.
- Personally hand-delivering a copy to each of the consumers. Attach a copy of Notice.
- Posted on a public bulletin board, that will be seen by each of the consumers (for small, non-community water systems with prior Division approval). Attach copy of Notice.

I hereby declare the forgoing to be true and correct under penalty of perjury.

Dated: 6/28/2016
 David B. Smith
Signature of Person Serving Notice

****Notice:** Complete this Proof of Notification and return it along with a copy of the notification to the Division within 10 days of receipt of giving public notice.

Attachment No. 4

Positive Total Coliform Investigation Form

POSITIVE TOTAL COLIFORM INVESTIGATION

This form is intended to assist public water systems in completing the investigation required by the State Water Resources Control Board, Division of Drinking Water (Section 64426(b) of Title 22, California Code of Regulations) and may be modified to take into account conditions unique to the system.

ADMINISTRATIVE INFORMATION

Entity Name:	Name	System Address & Email	Telephone Number
PWSID NUMBER: 360009	Daniel B. Smith	9429 Cerra Vista	760-247-7330
Operator in Responsible Charge (ORC)	Daniel B. Smith		
Person that collected TC samples if different than ORC			
System Owner			
Certified Laboratory for Microbiological Analyses	Geo-Monitor		
Date Investigation Completed:			
Month(s) of Total Coliform MCL Failure: 1 month			

INVESTIGATION DETAILS

SOURCE	WELL (name)	WELL (name)	WELL (name)	WELL (name)	COMMENTS (attach additional pages if needed)
1. Inspect each well head for physical defects and report					
a. Is raw water sample tap upstream from point of disinfection?	3	4			
b. Is wellhead vent pipe screened?	Yes	Yes			
c. Is wellhead seal watertight?	Yes	Yes			
d. Is well head located in pit or is any piping from the wellhead submerged?	Yes	Yes			
e. Does the ground surface slope towards well head?	No	No			
f. Is there evidence of standing water near the wellhead?	No	No			
g. Are there any connections to the raw water piping that could be cross connections? (describe all connections in comments)	No	No			
h. Is the wellhead secured to prevent unauthorized access?	Yes	Yes			
i. To what treatment plant (name) does this well pump?	N/A	N/A			
j. How often do you take a raw water total coliform (TC) test?	Monthly	Monthly			
k. Provide the date and result of the last TC test at this location	5-2-16	5-2-16			Absent
2. Inspect and review records for surface water source (if applicable)	N/A	N/A			
a. Have there been any events in the watershed or near the intake that might have contributed to TC+ or EC+ results? (Describe)	No	No			

TREATMENT

TREATMENT	PLANT (NAME)	PLANT (NAME)	PLANT (NAME)	PLANT (NAME)	COMMENTS
1. If you provide continuous chlorination treatment was there any equipment failure?	N/A	N/A			
a. Did the distribution system maintain chlorine residual?	N/A	N/A			
b. Was emergency chlorination initiated? If yes, for how long?	No	No			
c. Did the distribution system lose chlorine residual?	N/A	N/A			
2. If you do not provide routine chlorination, was emergency chlorination initiated? If Yes, when?	No	No			
3. Inspect each point where disinfectant is added and report	N/A	N/A			
a. Is the disinfectant feed pump feeding disinfectant?	N/A	N/A			
b. What is the feed rate of disinfectant in ml/minute?	N/A	N/A			

POSITIVE TOTAL COLIFORM INVESTIGATION

TREATMENT	PLANT (NAME)	PLANT (NAME)	PLANT (NAME)	PLANT (NAME)	PLANT (NAME)	COMMENTS
c. What is the concentration of the disinfectant solution being fed? (percent or mg/l of chlorine as HOCl)	N/A	N/A				
d. By what method was the concentration of solution determined? (ex: measured, manufacturer's literature)	N/A	N/A				
e. What is the age (days) of the disinfectant solution currently being used at this treatment location?	N/A	N/A				
f. What is the raw water flow rate at the point where disinfectant is added in gallons per minute?	N/A	N/A				
g. What is the total chlorine residual measured immediately downstream from the point of application?	N/A	N/A				
h. What is the free chlorine residual measured immediately downstream from the point of application?	N/A	N/A				
i. What is the contact time in minutes from the point of disinfectant application to the first customer?	N/A	N/A				

SAMPLE SITE EVALUATION (Complete for all TC+ or EC+ findings)	Routine Site TC+ or EC+	Upstream Site	Downstream Site	Sample 4 (specify)
1. What is the height of the sample tap above grade? (inches)	TC+ 36"	TC+ 36"	TC+ 36"	
2. Is the sample tap located in an exterior location or is it protected by an enclosure?	ENC	Ext	ENC	
3. Is the sample tap threaded, have a swing arm (kitchen sink) or an aerator (sinks)?	aerator	threaded	aerator	
4. Is the sample tap in good condition, free of leaks around the stem or packing?	Yes	Yes	Yes	
5. Can the sample tap be adjusted to the point where a good laminar flow can be achieved without excessive splash?	Yes	Yes	Yes	
6. Is the sample tap and areas around the sample tap clean and dry (free of animal droppings other contaminants or spray irrigation systems)?	Yes	Yes	Yes	
7. Is the area around the sample tap free of excessive vegetation or other impediments to sample collection?	Yes	Yes	Yes	
8. Describe how the tap was treated in preparation for sample collection (ran water, swabbed with disinfectant, flamed, etc.).	Ran Water	Ran Water	Ran Water	
9. Is this sample tap designated on the sampling plan submitted with this information request?	NO	NO	NO	
10. What were the weather conditions at the time of the positive sample (rainy, windy, and sunny)?	windy	windy	windy	

POSITIVE TOTAL COLIFORM INVESTIGATION

STORAGE	TANK (name)	TANK (name)	TANK (name)	TANK (name)	COMMENTS
1. Is each tank locked to prevent unauthorized access?	Mesa	Central			
2. Are all vents of each tank screened down-turned to prevent dust and dirt from entering the tank?	Yes	Yes			
3. Is the overflow on each tank screened?	Yes	Yes			
4. Are there any unsealed openings in the tank such as access doors, water level indicators hatches, etc.?	NO	NO			
5. Is the roof/cover of the tank sealed and free of any leaks?	Yes	Yes			
6. Is the tank above ground or buried?	ground	ground			
a. If buried or partially buried, are there provisions to direct surface water away from the site.	T-3/N/A	Yes/NA			
b. Has the interior of the tank been inspected to identify any sanitary defects, such as root intrusion?	Yes	Yes			
8. Does the tank "float" on the distribution system or are there separate inlet and outlet lines?	Float	Float			
9. What is the measured chlorine residual (total/free) of the water exiting the storage tank today?	0	0			
10. What is the volume of the storage tank in gallons?	60,000	200,000			
11. Is the tank baffled?	NO	NO			
12. Prior to the TC+ or EC+, what was the previous date item #1-7 were checked and documented?	4/1/16	4/1/16			

DISTRIBUTION SYSTEM	SYSTEM RESPONSES
1. What is the minimum pressure you are maintaining in the distribution system?	20 psi
2. Did pressure in the distribution system drop to less than 5 psi prior to positive bacti?	NO
3. Has the distribution system been worked on within the last week? (taps, hydrant flushing, main breaks, mainline extensions, etc.) If yes, provide details.	NO
4. Are there any signs of excavations near your distribution system not under the direct control of your maintenance staff?	NO
5. Did you inspect your distribution system to check for mainline leaks? Do you or did you have a mainline leak?	Yes - NO
6. If there was a mainline leak, when was it repaired?	N/A
7. On what date was the distribution system last flushed?	10/1/15
8. Is there a written flushing procedure you can provide for our review?	NO
9. Do you have an active cross-connection control program?	Yes
10. What is name & phone number of your Cross-Connection Control Program Coordinator?	Yes
11. Is the review and testing of backflow prevention devices current?	Yes
12. On what date was the last physical survey of the system done to identify cross-connections?	2014

POSITIVE TOTAL COLIFORM INVESTIGATION

BOOSTER STATION	Response
1. Do you have a booster pump? How many?	Yes - 2
2. Do you have a standby booster pump if the main pump fails?	NO
3. Prior to bacteriological quality problems, did your booster pump fail?	NO
4. Do you notice standing water, leakage at the booster station?	NO

GENERAL OPERATIONS:	Response
1. Where there any power outages that affected water system facilities during the 30 days prior to the TC+ or EC + findings?	NO
2. Where there any main breaks, water outages, or low pressure reported in the service area where TC+ or EC+ samples were located.	NO
3. Does the system have backup power or elevated storage?	Elevated Storage tanks
4. During or soon after bacteriological quality problems, did you receive any complaints of any customers' illness suspected of being waterborne? How many?	NO - 0
5. What were the symptoms of illness if you received complaints about customers being sick?	N/A

ADDITIONAL INFORMATION TO BE SUBMITTED WITH RESPONSES TO THE ABOVE QUESTIONS

1. Sketch of System showing all sources, treatment locations, storage tanks, microbiological sampling sites and general layout of the distribution system including the location of all hazardous connections such as the wastewater treatment facility.
2. A set of photographs of the well, pressure tanks, and storage tanks in the system may be submitted if they would show that the contamination is directly related and changes have been made since the last inspection by our Department
3. Name, certification level and certificate number of the Operator in Responsible Charge.
4. Copy of the last cross connection survey performed that identifies the location of all unprotected cross connections.
5. Updated source water assessment(s) (DWSAP) if there have been changes to well construction or potentially contaminating activities (PCA list) since last inspection.

SUMMARY: BASED ON THE RESULTS OF YOUR INVESTIGATION AND ANY OTHER INFORMATION AT YOUR DISPOSAL, WHAT DO YOU BELIEVE TO BE THE CAUSE OF THE POSITIVE TOTAL COLIFORM SAMPLES FROM YOUR PUBLIC WATER SYSTEM?

Bad sample test sites. Bathroom sink with Aerator's.

CERTIFICATION: I CERTIFY THAT THE INFORMATION SUBMITTED IN RESPONSE TO THE QUESTIONS ABOVE IS ACCURATE TO THE BEST OF MY PROFESSIONAL KNOWLEDGE

NAME: Daniel Smith TITLE: General Manager DATE: 5/6/16

2016 Consumer Confidence Report

Water System Name: Apple Valley Heights County Water District Report Date: 06/30/2017

We test the drinking water quality for many constituents as required by state and federal regulations. This report shows the results of our monitoring for the period of January 1 - December 31, 2016 and may include earlier monitoring data.

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo ó hable con alguien que lo entienda bien.

Type of water source(s) in use: Groundwater

Name & general location of source(s): Well #3 and Well #4

Drinking Water Source Assessment information: Source Water Assessments were conducted in 2003-2016
Well #3 and Well #4 are most vulnerable to railroad corridors and water supply. No chemical was detected.

Time and place of regularly scheduled board meetings for public participation: Meetings are the second Wednesday of
The month at 6 p.m. District office, 9429 Cerra Vista St., Apple Valley, Ca 92308

For more information, contact: District Office Phone: (760) 247-7330

TERMS USED IN THIS REPORT

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency (USEPA).

Public Health Goal (PHG): The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Primary Drinking Water Standards (PDWS): MCLs and MRDLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.

Secondary Drinking Water Standards (SDWS): MCLs for contaminants that affect taste, odor, or appearance of the drinking water. Contaminants with SDWSs do not affect the health at the MCL levels.

Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.

Regulatory Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

Variations and Exemptions: State Board permission to exceed an MCL or not comply with a treatment technique under certain conditions.

Level 1 Assessment: A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.

Level 2 Assessment: A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an *E. coli* MCL violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.

ND: not detectable at testing limit

ppm: parts per million or milligrams per liter (mg/L)

ppb: parts per billion or micrograms per liter (µg/L)

ppt: parts per trillion or nanograms per liter (ng/L)

ppq: parts per quadrillion or picogram per liter (pg/L)

pCi/L: picocuries per liter (a measure of radiation)

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

- *Microbial contaminants*, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- *Inorganic contaminants*, such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- *Pesticides and herbicides*, that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- *Organic chemical contaminants*, including synthetic and volatile organic chemicals, that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- *Radioactive contaminants*, that can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the USEPA and the State Water Resources Control Board (State Board) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. State Board regulations also establish limits for contaminants in bottled water that provide the same protection for public health.

Tables 1, 2, 3, 4, 5, and 6 list all of the drinking water contaminants that were detected during the most recent sampling for the constituent. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. The State Board allows us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of the data, though representative of the water quality, are more than one year old. Any violation of an AL, MCL, MRDL, or TT is asterisked. Additional information regarding the violation is provided later in this report.

TABLE 1 – SAMPLING RESULTS SHOWING THE DETECTION OF COLIFORM BACTERIA

Microbiological Contaminants (complete if bacteria detected)	Highest No. of Detections	No. of months in violation	MCL	MCLG	Typical Source of Bacteria
Total Coliform Bacteria (state Total Coliform Rule)	(3)	1	1 positive monthly sample	0	Naturally present in the environment
Fecal Coliform or <i>E. coli</i> (state Total Coliform Rule)	0	0	A routine sample and a repeat sample are total coliform positive, and one of these is also fecal coliform or <i>E. coli</i> positive	0	Human and animal fecal waste

(a) Routine and repeat samples are total coliform-positive and either is *E. coli*-positive or system fails to take repeat samples following *E. coli*-positive routine sample or system fails to analyze total coliform-positive repeat sample for *E. coli*.

TABLE 2 – SAMPLING RESULTS SHOWING THE DETECTION OF LEAD AND COPPER

Lead and Copper (complete if lead or copper detected in the last sample set)	Sample Date	No. of samples collected	90 th percentile level detected	No. sites exceeding AL	AL	PHG	Typical Source of Contaminant
Lead (ppb)	8/22-30/2016	10	ND	0	15	0.2	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits
Copper (ppm)	8/22-30/2016	10	ND	0	1.3	0.3	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives

TABLE 3 – SAMPLING RESULTS FOR SODIUM AND HARDNESS

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	MCL	PHG (MCLG)	Typical Source of Contaminant
Sodium (ppm)	5/4/2015	115	110-120	none	none	Salt present in the water and is generally naturally occurring
Hardness (ppm)	5/4/2015	350	330-370	none	none	Sum of polyvalent cations present in the water, generally magnesium and calcium, and are usually naturally occurring

TABLE 4 – DETECTION OF CONTAMINANTS WITH A PRIMARY DRINKING WATER STANDARD

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	MCL [MRDL]	PHG (MCLG) [MRDLG]	Typical Source of Contaminant
Nitrate as N (NO ₃ -N)	5/2/2016	.51	.51-.52	10	10	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits
Gross Alpha (pCi/L)	4/8/2015 4/23/2015	10.7	8.5-15	15	0	Erosion of natural deposits
Fluoride	5/4/2015	1.2	1.1-1.3	2	1	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Hexavalent Chromium	5/4/2015	1.1	ND-2.2	10	.02	Discharge from electroplating factories; leather tanneries, wood preservation, chemical synthesis, refractory production, and textile manufacturing facilities; erosion of natural deposits

TABLE 5 – DETECTION OF CONTAMINANTS WITH A SECONDARY DRINKING WATER STANDARD

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	MCL	PHG (MCLG)	Typical Source of Contaminant
Sulfate	3/10/2016 6/1/2016 9/29/2016 12/5/2016	505	420-560	500	n/a	Runoff/leaching from natural deposits; industrial wastes.
Aluminum	5/4/2015	27.5	ND-55	200	.6	Erosion of natural deposits; residual from some surface water treatment processes
Iron (ug/L)	3/3/2015 5/4/2015 5/22/2015	65	ND-330	300	n/a	Leaching from natural deposits; industrial wastes
Odor Threshold (units)	5/4/2015	1	1	3	n/a	Naturally-occurring organic materials
Turbidity (ntu)	5/4/2015	1.25	.9-1.6	Units	n/a	Soil runoff
Total Filterable Residue/TD (ppm)	5/4/2015	800	780-820	1000	n/a	Runoff/leaching from natural deposits
Specific Conductance	5/4/2015	1150	1150-1200	1600	n/a	Substances that form ions when in water; seawater influence
Chloride	5/4/2015	28	26-30	500	n/a	Runoff/leaching from natural deposits; seawater influence

TABLE 6- DETECTION OF UNREGULATED CONTAMINANTS

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	Notification Level	Health Effects Language
Boron	5/4/2015	1.25	1.2-1.3	1 ppm	The babies of some pregnant women who drink water containing boron in excess of the notification level may have an increased risk of developmental effects, based on studies in laboratory animals
Vanadium	5/4/2015	7.9	7-8.8	50 ppb	The babies of some pregnant women who drink water containing boron in excess of the notification level may have an increased risk of developmental effects, based on studies in laboratory animals

Additional General Information on Drinking Water

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA’s Safe Drinking Water Hotline (1-800-426-4791).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Lead-Specific Language for Community Water Systems: If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing APPLE VALLEY HEIGHTS COUNTY WATER DISTRICT is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. [Optional: If you do so, you may wish to collect the flushed water and reuse it for another beneficial purpose, such as watering plants.] If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (1-800-426-4701) or at <http://www.epa.gov/lead>.

Summary Information for Violation of a MCL, MRDL, AL, TT, or Monitoring and Reporting Requirement

VIOLATION OF A MCL, MRDL, AL, TT, OR MONITORING AND REPORTING REQUIREMENT				
Violation	Explanation	Duration	Actions Taken to Correct the Violation	Health Effects Language
MCL for total coliform bacteria exceeded	3 samples tested positive for total coliform bacteria. Water samples were taken from bathroom faucets with aerators, the aerators caused the false positive results	May 2017	Removal of aerators, flushing, and additional samples do not show presence of coliform bacteria. The system was chlorinated to disinfect any potential bacteria. All subsequent samples tested negative for total coliform bacteria.	Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems

APPENDIX D – BLM RIGHT-OF-WAY R-566 APPROVAL LETTER



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
BARSTOW RESOURCE AREA
150 COOLWATER LANE
BARSTOW, CALIFORNIA 92311-3221
(619) 256-3591



IN REPLY REFER TO

R-566
CA-28567
2800(CA-068.24)

AUG 3 1991

CERTIFIED MAIL #591713
RETURN RECEIPT REQUESTED

DECISION

Apple Valley Heights County Water District	:	Water Storage
9614 Bella Vista	:	Right-of-Way R-566
Apple Valley, CA 92308	:	

Amendment of Right-of-Way Grant Approved

Right-of-Way R-566 was granted to Apple Valley Heights County Water District on February 21, 1968 for construction and maintenance of one 15'4" diameter water tank, pipeline and access road at two distinct sites:

Central Road Tank Site - located in lot 4 of the NW $\frac{1}{4}$ of section 26, T. 4 N., R. 3 W., SBBM.

Mesa Vista Tank Site - located in lot 57 of the SE $\frac{1}{4}$ SW $\frac{1}{4}$ of section 22, T. 4 N., R. 3 W., SBBM.

The grant was for an indefinite term and was granted pursuant to the Act of February 15, 1901 (31 Stat. 790; 43 U.S.C. 959).

On June 28, 1991, Apple Valley Heights County Water District filed an application, pursuant to Title V of the Act of October 21, 1976 (Stat. 2776; 43 U.S.C. 1761-1767) to amend R-566 to construct at the Central Road tank site an additional road and fenced tank site above the existing reservoir and to place a 200,000 gallon capacity water storage tank and connecting pipeline.

A records search shows that one 15'4" diameter tank existed at each of the sites prior to the issuance of a right-of-way grant for a second tank at each site. There are no casefile records to support that the original tanks were ever authorized, by letter or grant.



On July 18, 1991, the Water District asked that their application include the water tanks at Central and Mesa sites which were not previously authorized. An updated engineering drawing of the Mesa Vista Site was, at this time, submitted.

On August 12, 1991, a written statement of relinquishment of that portion of R-566 pertaining to the Central Road Site was submitted by Apple Valley Heights County Water District, with the provision that the original grant's term, rental and nature of use would remain. At this time, the Water District also clarified that the dimensions of the area applied for under CA-28567 coincide with those authorized under R-566.

A favorable field report for authorization of the expanded site was received. Accordingly, Right-of-Way grant R-566, issued on February 21, 1968 is terminated for that portion affecting the Central Road Site and Right-of-Way amendment application CA-28567 is approved pursuant to the provisions of Title V of the Act of October 21, 1976, Supra, subject to the terms and conditions of the grant agreed to by Apple Valley Heights County Water District on August 19, 1991. Exhibit B of Right-of-Way grant CA-28567 (for Central Road) and the Mesa Vista Site map submitted July 18, 1991 supercede all previous maps of record and include a second 15'4" diameter water tank at each site, not formerly authorized.

The amended Right-of-Way R-566 contains 1.133 acres, more or less.

All other existing grant terms and conditions remain in effect. A copy of the original grant is enclosed.



Karla K.H. Swanson
Area Manager

Enclosure

Pursuant to the ab e mentioned Act and the regulations thereunder, the right-of-way is hereby approved, subject to the following terms and conditions:

1. All valid rights existing on the date of the grant.
2. Upon completion of construction, proof thereof should promptly be filed with this office. A period of 5 years from date of approval of this right-of-way is allowed for construction.
3. All regulations in circulars specified above.

TS/ CHARLES L. SCHAEFER
Charles L. Schaefer
Chief, Branch of Lands and
Minerals Adjudication

cc: Decisions File

Mr. James L. King, Attorney
Suite 401, Platt Bldg.,
San Bernardino, California 92401

EBrown/vgb/2-19-68



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