

Final Feasibility Report for Sheep Creek Water Company Addressing Water Source Capacity Issues

Prepared for:

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1.0 Introduction

The Sheep Creek Water Company (SCWC) is a private water company that owns the water system recognized as the Sheep Creek Water Company Water System (Water System No. CA3610109) by the State Water Resources Control Board (SWRCB), Division of Drinking Water (DDW). The water system is classified as a Community Water System and supplies water for domestic purposes to unincorporated portions of San Bernardino County in Phelan, CA. DDW regulates the water system under Domestic Water Supply Permit No.78-007 as issued on February 9, 1978. The Permit was recently amended to include a new supply source Well 11, which is located within the adjudicated Upper Mojave River Valley Basin (Basin No. 6-042).

Figure 1 shows SCWC's service area and an overview of their water system. The service area is approximately 7,000 acres. The SCWC relies on source of supply from five (5) wells and a water tunnel located within the El Mirage Basin (Basin No. 6-043) in the Swarthout Canyon in the San Gabriel Mountains.

2.0 Description of Problem

In 2015 the State of California issued a 25% mandatory reduction in water usage and required water purveyors to notify users and adopt policies to enforce the mandate. SCWC controls water usage by reducing or increasing the amount of water allotted per share, which prior to 2015 the allotment was 1,350 cubic feet per share. Then to discourage users from exceeding their allotted amount SCWC charges an overage fee, the standard fee was \$2.50 per 100 cubic feet. Effective May 1, 2015 SCWC reduced the water allotment from 1,350 cubic feet (cf) to 1,000 cf.

Due to the continued drought in California and the decline in SCWC's water production, on August 30, 2018 the SCWC received a Compliance Order (No. 05-13-18R-002) Source Capacity Violation from the State Water Resources Control Board, Division of Drinking Water (DDW) plus an imposed service connection moratorium, which became effective immediately. DDW cited the violation of California Code of Regulations (CCR) Title 22, section 64554(a), which states that a public water system must at all times have adequate source capacity to meet the system's highest maximum day demand (MDD); DDW cited a MDD of 2.09 MGD. DDW stated that SCWC's total source capacity as of August 2018 was 0.72 MG, which renders a MDD deficiency of 1.37 MG.

The board continues to monitor the drought conditions and the declining water supply. **Table 2.1** shows the progression of action taken by the board to reduce water allotments and increase overage fees. Today, all 8,000 shareholders adjusted to an allotment of 750 cf for their first share, 150 cf for their remaining shares and overage fees of \$6.32 per 100 cf. SCWC expects the current allotment and overage fees to remain in effect throughout 2019. The Board's Action Plan is included in **Appendix D**.

**Feasibility Report for Sheep Creek Water Company
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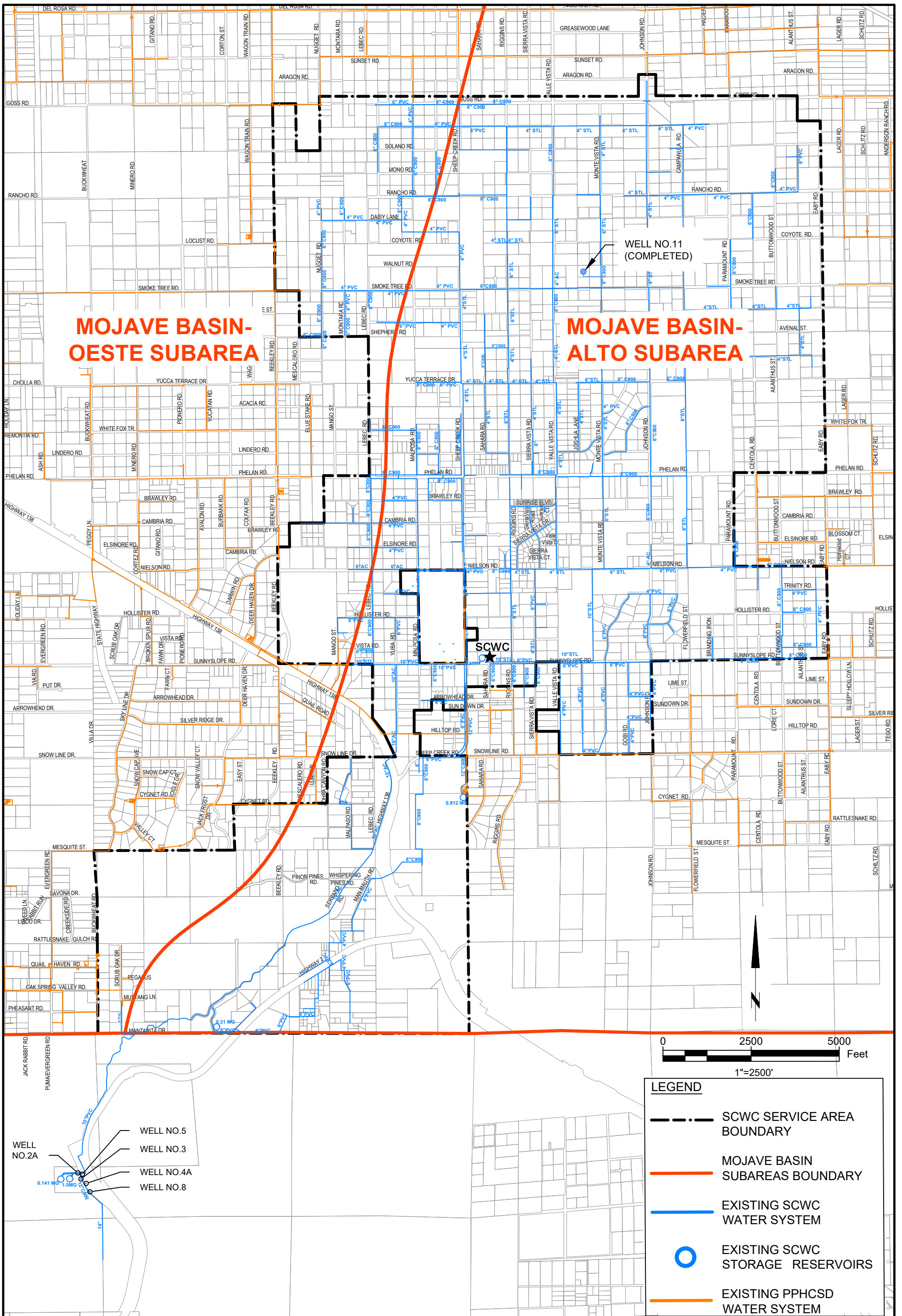
Table 2.1 Reduction of Water Allotments and Increased Overage Fees

| Adopted Water Allotment | Source | Date Implemented |
|--|---|-------------------------|
| Monthly Base Rate at \$55 All Shares 1,000 cf at \$0.50 per 100 cf Overages \$2.50 per 100 cf | Wrightwood Well Field | May 1, 2015 |
| Monthly Base Rate at \$55 First Share 1,000 cf at \$0.50 per 100 cf Other Shares 500 cf at \$0.50 per 100 cf Overages \$3.50 per 100 cf | Wrightwood Well Field | October 20, 2016 |
| Monthly Base Rate at \$55 First Share 1,000 cf at \$0.50 per 100 cf Other Shares 350 cf at \$0.50 per 100 cf Overages \$3.85 per 100 cf | Wrightwood Well Field | May 22, 2017 |
| Monthly Base Rate at \$55 First Share 1,000 cf at \$0.50 per 100 cf Other Shares 350 cf at \$0.50 per 100 cf Overages \$4.25 per 100 cf | Wrightwood Well Field | May 19, 2018 |
| Monthly Base Rate at \$55 First Share 750 cf at \$0.50 per 100 cf Other Shares 150 cf at \$0.50 per 100 cf Overages \$7.40 per 100 cf | Wrightwood Well Field | July 20, 2018 |
| Monthly Base Rate at \$55 Tier 1: First Share 750 cf at \$0.50 per 100 cf Other Shares 150 cf at \$0.50 per 100 cf Tier 2: Add'l Shares 150 cf at \$3.46 per 100 cf Tier 3: Overages \$6.32 per 100 cf | Tier 1 Wrightwood Well Field Tier 2 Well No. 11 Tier 3 Overages | September 20, 2018 |

In 2016, SCWC began taking steps to resolve the source capacity issue by initiating the installation of Well No. 11. Completing the well took about 24 months and is expected to be online by the end of 2018. As of August 31, 2018, SCWC transferred four (4) connections serving the Snowline Joint Unified School District to Phelan Piñon Hills Community Services District (PPHCSD) at the school district's request. As of October 1, 2018, SCWC has 1,387 active and non-active metered connections. **Table 2.2** lists all existing metered connections by user type.

Table 2.2 Existing Metered Connections

| User Type | Connections | Meter Sizes | | |
|------------------|--------------------|--------------------|-----------------|-----------------|
| | | 1" Meter | 2" Meter | 4" Meter |
| Commercial | 101 | 76 | 25 | 0 |
| Multi-Family | 13 | 9 | 4 | 0 |
| Schools | 17 | 7 | 9 | 1 |
| Churches | 14 | 13 | 1 | 0 |
| Landscape | 4 | 4 | 0 | 0 |
| Residential | 1,238 | 1,235 | 3 | 0 |
| Total | 1,387 | 1,344 | 42 | 1 |



**MOJAVE BASIN-
OESTE SUBAREA**

**MOJAVE BASIN-
ALTO SUBAREA**

SCWC

WELL NO.11
(COMPLETED)

WELL NO.5
WELL NO.3
WELL NO.4A
WELL NO.8

0 2500 5000
Feet
1"=2500'

- LEGEND**
- SCWC SERVICE AREA BOUNDARY
 - MOJAVE BASIN SUBAREAS BOUNDARY
 - EXISTING SCWC WATER SYSTEM
 - EXISTING SCWC STORAGE RESERVOIRS
 - EXISTING PPHCSD WATER SYSTEM



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SHEEP CREEK WATER COMPANY (SCWC)

SCWC SERVICE AREA MAP

FIGURE

1

**Feasibility Report for Sheep Creek Water Company
Addressing Water Source Capacity Issues**

Currently, the California Rural Water Association (CRWA) is applying for additional Proposition 1 funding on behalf of SCWC to provide short and long-term solutions to their water system deficiencies. Based on a recent income survey conducted by the California Rural Water Association, the SCWC service area is defined as a Disadvantaged Community (DAC). Based on the meeting held with DDW on January 7, 2019, SCWC understands that the State will make the final determination on the selected alternative shall funding from the Division of Financial Assistance be awarded to this project

This feasibility report evaluates two long-term solutions that will address their source capacity issue and bring SCWC’s water system back into compliance.

3.0 Existing Water Supply Sources

SCWC sole source of water supply are via pre-1914 water rights. Their five wells and water supply tunnel are located off the Angeles Crest Hwy (SR-2) within the El Mirage Valley Basin. SCWC recently added a sixth well (Well No. 11), which is located near the intersection of Walnut Road and Monte Vista Road. Well No. 11 lies within the Alto Subarea of the adjudicated Mojave Basin Area. The Mojave Basin Area is regulated by the Mojave Water Agency (MWA), the court-appointed Watermaster since 1933.

As a party to the judgment, but with zero allocation, SCWC will need to either lease rights, purchase rights, or pay for water produced by Well No. 11 and any future wells in the Alto Subarea, minus any water that SCWC imports into the Mojave Basin.

Table 3.1 Existing SCWC Water Rights

| Basin | Type of Water Right | Annual (AFY) | SCWC Exist Wells | Est. Cost for Water 2019 |
|---------------------|-----------------------------------|---------------------|-----------------------------------|---------------------------------|
| El Mirage Basin | Pre-1914 Water Right | 3,000 | Well Nos. 2A, 3A, 4A, 5, 8 Tunnel | \$0 |
| Mojave Basin Area | Pumping Right | 0 | Well No. 11 | \$639/ac-ft |
| Antelope Basin Area | Pumping Right | 0 | Well No. 10 | To be determined in 2019 |
| | Storage Agreements /Water Banking | 0 | | N/A |

4.0 Water Supply and Demand Analysis

The objective of this water supply-demand evaluation is to determine if SCWC will be able to meet customer demand with its existing and potential supply sources while adhering to regulatory requirements. The general approach of the assessment involves the following steps:

- Review and summarize available studies related to the SCWC’s water supplies in order to evaluate the risks associated with SCWC’s water supply portfolio. **Table 4.1** includes documents reviewed listed by source agencies.
- Evaluate the sources of water available to SCWC in order to determine the most efficient water supply strategy as the need becomes more defined and opportunities to increase production arise.

In addition, IEC has analyzed SCWC’s consumption, production, and groundwater level data between years 2008 and 2018⁽¹⁾ to evaluate several supply and demand scenarios. In developing the scenarios, the following factors were considered:

- Water Supply Portfolio: Existing, Near-Term (2018-2019), and Long-Term (2020-2024) supply source
- Demand Trends: Regulatory requirements⁽²⁾, consumption trends in the system from factors like drought conditions, customer conservation initiatives, demand reduction opportunities, and service area reduction.
- Reliability: Reducing risk of disruption of supply delivery to meet regulatory requirements by adding additional wells.

A detailed discussion of scenarios considered and assumptions is presented in the remainder of this section.

¹ Per California Department of Water Resources, the recent drought event occurred between 2012 and 2016

² Per California Code and Regulations (CCR) 64558 (2), the system must be able to meet the 10-year Max Day Demand at all times.

**Feasibility Report for Sheep Creek Water Company
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Table 4.1 – List of Documents Reviewed

| Document Title | Source |
|---|------------------------------------|
| Compliance Order 05-13-18R-002 Source Capacity Violation for Sheep Creek Water Company (3610109), August 30 th , 2018 | Division of Drinking Water |
| Consumer Confidence Report, 2016 | Sheep Creek Water Company website |
| SWRCB Feasibility Study Requirements, September 12 th , 2018 | Sheep Creek Water Company |
| Sheep Creek Water Company Consolidation Evaluation, May 2018 | California Rural Water Association |
| Sheep Creek Water Company Preliminary Engineering Report, November 19 th , 2018 | California Rural Water Association |
| Well Completion Report (Well 11), August 22 nd , 2018 | Sheep Creek Water Company |
| CEQA Study (Well 10) | Sheep Creek Water Company |
| California Regulations Related to Drinking Water, September 23 rd , 2016 | Division of Drinking Water |
| Additional Water Source Project, November 2016 | Sheep Creek Water Company |
| Sheep Creek Water Company Water Master Plan, December 2006 | Sheep Creek Water Company |

Water Supply-Demand Assessment

Water Supply: SCWC’s current water supply portfolio consists of five groundwater wells (2A, 3A, 4A, 5, and 8) and a tunnel (also classified as groundwater⁽³⁾) that flows continuously by gravity which is located in the Swarthout Canyon. Per California Rural Water Association’s 2018 Preliminary Engineering Report (CRWAPER), well production has dropped due to age, condition and ground water level declines as illustrated in **Figure 2**.

³ Refer page 2, SWRCB Compliance Order No. 05-13-18R-002 (Appendix B)

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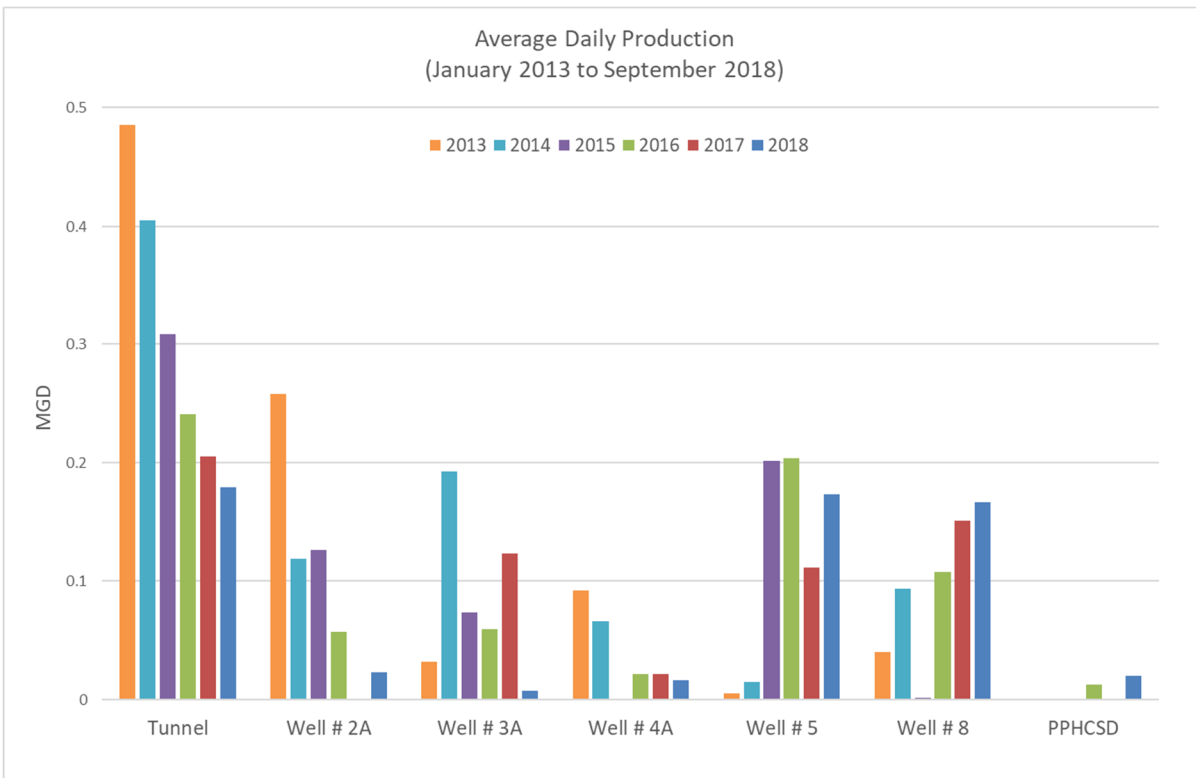


Figure 2. Average Daily Production Per Source (January 2013 through September 2018)
(Source: Sheep Creek Water Production Records)

Recognizing this trend, SCWC has proactively explored several well development projects in recent years and has been successful in developing Well 11. Pump test and well completion reports for Well 11 indicate production rates between 250 gpm and 300 gpm. Based on the recently completed “Hydrogeological Investigation of Swarthout Canyon, Sheep Creek Area and Mojave Basins”, prepared by California Rural Water Association, dated October 2018, six potential well locations were identified within the northern and central parts of the SCWC service area within the Alto Subarea of the Mojave Basin. PPHCSD owns one active well (Well 9B) located within the Alto Subarea with an operating production rate during the summer months of 260 gpm, +/- 1,300 ft deep. Based on the hydrogeological investigation performed by CRWA, other wells within the Alto Subarea have production rates ranging between 250 gpm to 350 gpm. For the purposes of this evaluation a well production rate of 250 gpm will be used for Well 11 and for proposed future wells. Well production rates and rated/design capacities for Existing, Near-Term, and Long-Term supply scenarios are shown in Table 4.2.

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Table 4.2 – Summary of Existing and Projected Supplies for Sheep Creek Water Company

| Supply Type | Source | Operational ⁽⁴⁾ Capacity | | | Rated Capacity | | |
|--------------------------|----------|-------------------------------------|-------------|--------------|--------------------|-------------|--------------|
| | | GPM | MGD | AFY | GPM | MGD | AFY |
| Existing | Well 2A | 30 | 0.04 | 48 | 400 ⁽⁵⁾ | 0.58 | 645 |
| | Well 3A | 25 | 0.04 | 40 | 400 ⁽⁶⁾ | 0.58 | 645 |
| | Well 4A | 60 | 0.09 | 97 | 800 ⁽⁷⁾ | 1.15 | 1290 |
| | Well 5 | 124 | 0.18 | 200 | 540 ⁽⁷⁾ | 0.78 | 871 |
| | Well 8 | 141 | 0.20 | 227 | 520 ⁽⁵⁾ | 0.75 | 839 |
| | Tunnel | 122 | 0.18 | 197 | n/a | n/a | n/a |
| Total | | 502 | 0.72 | 810 | 2,660 | 3.83 | 4,291 |
| Near-Term (2018-2019) | Well 2A | 30 | 0.04 | 48 | 400 | 0.58 | 645 |
| | Well 3A | 25 | 0.04 | 40 | 400 | 0.58 | 645 |
| | Well 4A | 60 | 0.09 | 97 | 800 | 1.15 | 1290 |
| | Well 5 | 124 | 0.18 | 200 | 540 | 0.78 | 871 |
| | Well 8 | 141 | 0.20 | 227 | 520 | 0.75 | 839 |
| | Well 11 | 250 ⁽⁵⁾ | 0.36 | 403 | 275 ⁽⁶⁾ | 0.40 | 444 |
| | Tunnel | 100 | 0.14 | 161 | n/a | n/a | n/a |
| Total | | 730 | 1.05 | 1,177 | 2,935 | 4.23 | 4,734 |
| Long-Term (2020-2024) | Well 2A | 30 | 0.04 | 48 | 400 | 0.58 | 645 |
| | Well 3A | 25 | 0.04 | 40 | 400 | 0.58 | 645 |
| | Well 4A | 60 | 0.09 | 97 | 800 | 1.15 | 1290 |
| | Well 5 | 124 | 0.18 | 200 | 540 | 0.78 | 871 |
| | Well 8 | 141 | 0.20 | 227 | 520 | 0.75 | 839 |
| | Well 11* | 250 | 0.36 | 403 | 275 | 0.40 | 444 |
| | Well 12* | 250 | 0.36 | 403 | 275 | 0.40 | 444 |
| | Well 13* | 250 | 0.36 | 403 | 275 | 0.40 | 444 |
| | Well 14* | 250 | 0.36 | 403 | 275 | 0.40 | 444 |
| | Well 15* | 250 | 0.36 | 403 | 275 | 0.40 | 444 |
| | Tunnel | 100 | 0.14 | 161 | n/a | n/a | n/a |
| Total | | 1,730 | 2.49 | 2,790 | 4,035 | 5.81 | 6,508 |

* Proposed Future Wells (assumed similar production value as Well 11)

Tunnel flows have also declined steadily as shown in **Figure 3A** especially in years 2016-2018 coming out of the recent drought event. At the current rate of decline, future tunnel flows are projected to be about 100 gpm. Therefore, 100 gpm for the tunnel flow was used in this analysis. **Figures 3B** and **3C** show tunnel production and well pumping levels declining consistently during post-drought years.

⁴ Source: July 2018 SCWC Production Report

⁵ Source: Well Pump Curve

⁶ Source: Well Completion Report

⁷ Source: Well Pump Curve & SCWC pump records

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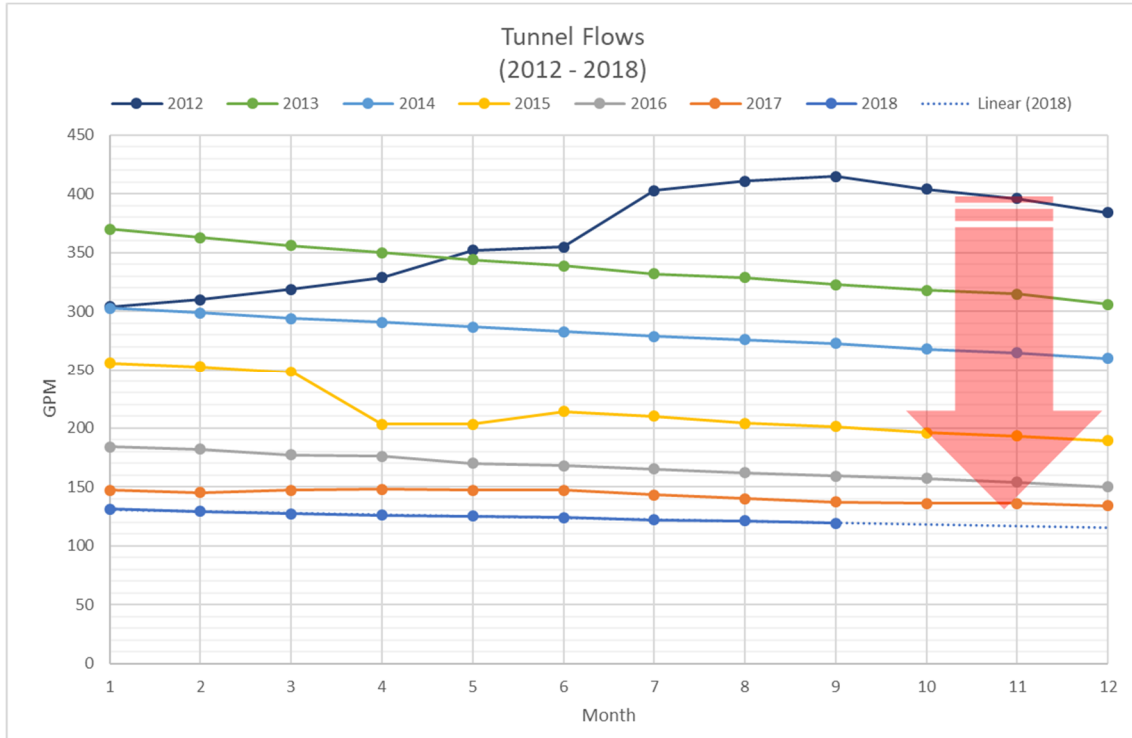


Figure 3A. Tunnel Flow Decline
(Source: Sheep Creek Water Company Production Records)

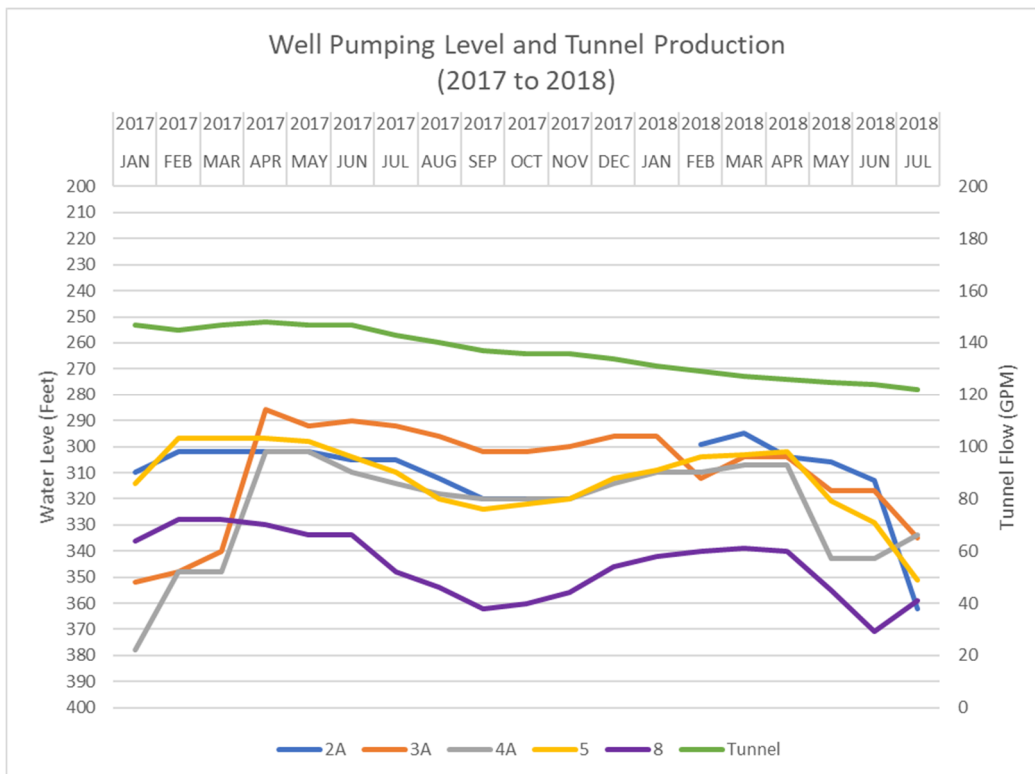


Figure 3B. Tunnel Flow Production (gpm) and Well Pumping Levels (feet)
(Source: Sheep Creek Water Company Production Records)

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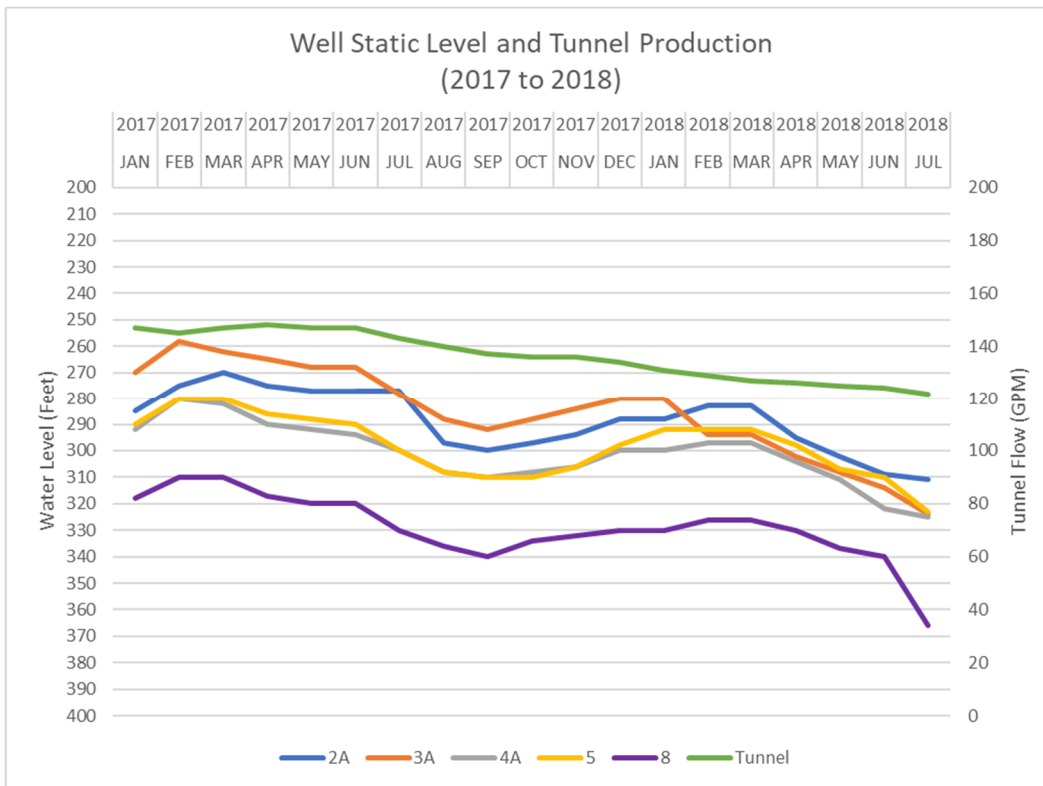


Figure 3C. Tunnel Flow Production (gpm) and Well Static Levels (feet)
(Source: Sheep Creek Water Company Production Records)

Demand Trends: The recent drought period in California occurred during 2012 through 2016. Per California Code and Regulations (CR) 64558 (2), the water system must be able to meet the 10-year Max Day Demand (MDD) at all times⁽⁸⁾. Upon review of SCWC’s production records, the highest 10-year Max Day Demand (MDD) of 1.78 MGD⁽⁹⁾ occurred during the drought period on July 12, 2014. When compared with the value cited in the Source Capacity Violation of 2.09 MGD⁽¹⁰⁾ it was apparent that there was a discrepancy in the production values recorded for Well 8 in 2014. Upon review of Well 8 runtime records and discussion with SCWC’s staff it was determined that recorded values of production on July 12, 2014 accounted for two days of runtime instead of one day. Production records for 2008 through 2018 were reviewed again to confirm that no other year recorded MDD values higher than 1.78 MGD and it was confirmed.

In 2014, SCWC met customer demand mainly due to a higher ground water table and with more than twice the supply from the tunnel compared to recent years. For comparison purposes, Well 8 produced an average of 450 gpm in 2014, but only 141 gpm in 2018. As shown on **Figure 4**, MDDs for 2016 and 2018 dropped in April and June respectively and the demands were met. However, due to low groundwater recharge rates and consecutive days of summer water

⁸ Per CCR 64554 (b), each pressure zone within the system should be evaluated in order to meet MDD and peak hourly demand (PHD). However, due to the scope and purpose of this effort, MDD and PHD were evaluated for the system in its entirety.

⁹ MDD values were derived from Sheep Creek Water Company’s daily production records

¹⁰ Refer page 20, SWRCB Compliance Order No. 05-13-18R-002 (Appendix B)

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consumption in August 2018 as well as August and September 2016, SCWC had to purchase water from PPHCSD. Based on discussions with SCWC’s staff, water was purchased in order to meet daily demands from large users like the Snowline Joint Unified School District (SJUSD). In 2018, SJUSD requested water service from PPHCSD, which reduces SCWC’s Near-Term (2018-2019) and Long-Term (2020-2024) demands. A list of SJUSD’s accounts and service status with SCWC are listed in **Table 4.3**. Currently, four (4) of the SJUSD’s 13 service meters have been physically disconnected from SCWC’s water system and are no longer served by SCWC. Removing these four (4) services reduces the 10-YR MDD from 1.78 MGD to approximately 1.77 MGD. In the future, when the seven (7) remaining service accounts are connected to PPHCSD’s system, the 10-YR MDD will be reduced to approximately 1.60 MGD (i.e. 10-YR MDD w/o SJUSD). Since SCWC did not have daily consumption records for SJUSD, MDD values for the school district were estimated from maximum month usage data. Calculations and assumptions are provided in **Appendix C**. Since those seven (7) remaining service accounts are still physically connected to SCWC’s water system, the recommended solution accounts for them in the demand. Based on the service connection moratorium established by the DDW⁽¹¹⁾ for SCWC, no additional growth is considered in this analysis.

Table 4.3 – Snowline Joint Unified School District Service Status

| Account | Location | Status | Future Plan |
|----------------|----------------------------|----------------------------|-----------------------------|
| 169 | Elementary 1" | Connected to SCWC | Will Remain |
| 578 | Elementary 2" | Connected to SCWC | Will Remain |
| 219 | 80 Acre SHS | Connected to PPHCSD | - |
| 220 | 80 Acre SHS | Connected to PPHCSD | - |
| 642 | 80 Acre 1" Spanish Hill | Connected to PPHCSD | - |
| 646 | 80 Acre 1" 4" By-pass | Connected to SCWC | Will be Connected to PPHCSD |
| 657 | 80 Acre 1" District Office | Connected to SCWC | Will be Connected to PPHCSD |
| 997 | 80 Acre 2" Green House | Connected to PPHCSD | - |
| 999 | Chapperal | Connected to SCWC | Will be Connected to PPHCSD |
| 1013 | 80 Acre 2" Maintenance | Connected to SCWC | Will be Connected to PPHCSD |
| 1014 | 80 Acre 2" Football | Connected to SCWC | Will be Connected to PPHCSD |
| 1045 | 80 Acre 2" Curriculum | Connected to SCWC | Will be Connected to PPHCSD |
| 1064 | 80 Acre 2" Eagle Summit | Connected to SCWC | Will be Connected to PPHCSD |

¹¹ Refer page 4, SWRCB Compliance Order No. 05-13-18R-002 (Appendix B)

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Reliability: Since SCWC water supply is primarily from groundwater sources, CCR 64554 (3) (c) states that such a system must be able to meet MDD without the largest well supply in service. This requirement was accounted for under both Near-Term and Long-Term scenarios to enhance system reliability.

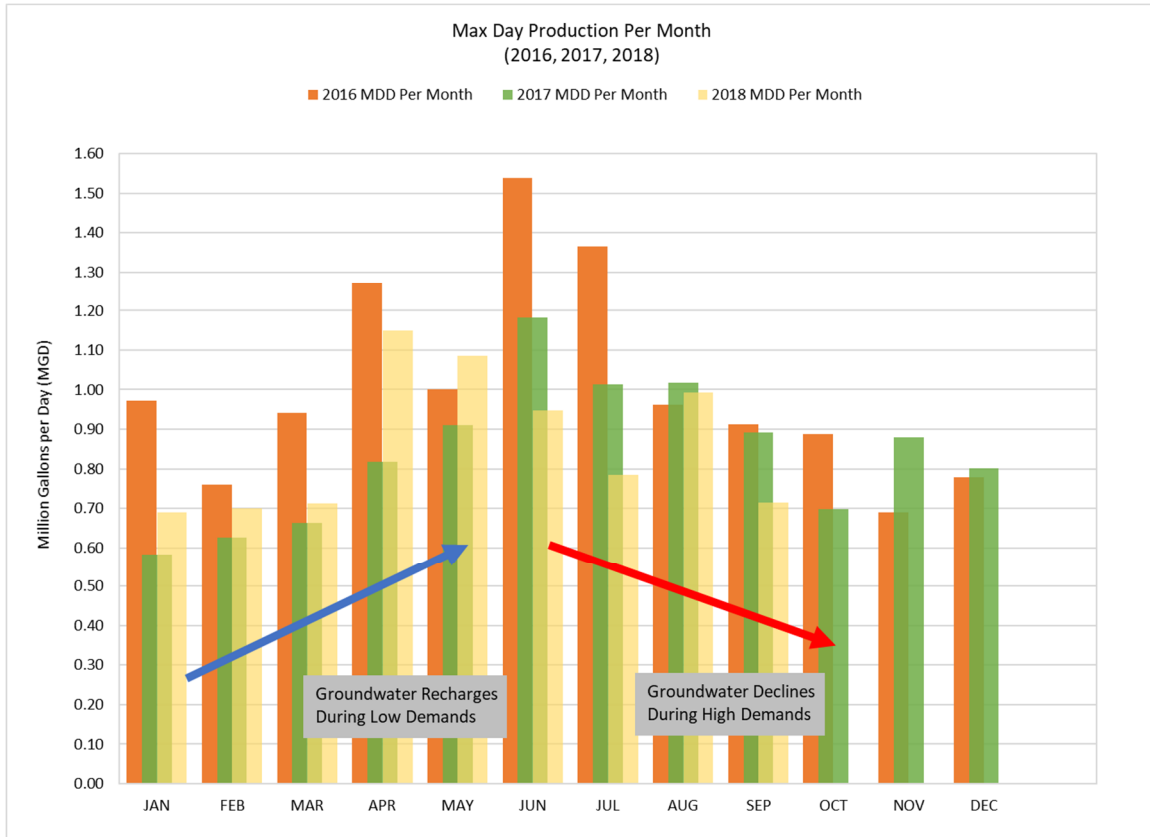


Figure 4. Maximum Production Per Month (2016 to 2018)
(Source: Sheep Creek Water Company Production Records)

Supply-Demand Evaluation: Table 4.4 summarizes various supply-demand scenarios evaluated.

- Scenarios 1 and 2 evaluate Existing (October 2018) supply and demand conditions.
- Scenarios 3, 4, and 5 evaluate Near-Term (2018-2019) supply and demand conditions.
- Scenarios 6 through 11 shows Long-Term (2020-2024) supply-demand conditions with additional well supplies.

Scenarios 3 through 10 were evaluated with largest source offline (0.36 MGD) and declining tunnel supply (i.e. 0.18 MGD to 0.14 MGD). Scenario 11 utilizes the reduced demand of 1.60 MGD, therefore, it can only be considered a future scenario until those remaining services are disconnected.

Tables 4.5A through 4.5E show the supply-demand breakdown per scenario. In summary, scenario 10 (refer to Table 4.5E) shows that with four (4) additional wells, the SCWC’s system is able to meet the 10-YR MDD regulatory requirement of 1.78 MGD.

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Table 4.4 – Supply-Demand Scenario Summary

| Scenario | Period | DEMAND | | | SUPPLY | | | | SUPPLY minus DEMAND | |
|----------|--------------------------|----------------------|--------------|------|--------------------|---------------|--------------|------|---------------------|-------|
| | | MDD Description | Total Demand | | Source | | Total Supply | | | |
| | | | AFY | MGD | Total Wells AFY | Tunnel AFY | AFY | MGD | AFY | MGD |
| 1 | Existing | 10-YR MDD | 1994 | 1.78 | 613 | 197 | 810 | 0.72 | -1184 | -1.06 |
| 2 | Existing | 10-YR MDD (w/o SUSD) | 1792 | 1.60 | 613 | 197 | 810 | 0.72 | -982 | -0.88 |
| 3 | Near-Term (2018-2019) | 10-YR MDD | 1994 | 1.78 | 613 | 161 | 774 | 0.69 | -1220 | -1.09 |
| 4 | Near-Term (2018-2019) | 10-YR MDD (w/o SUSD) | 1792 | 1.60 | 613 | 161 | 774 | 0.69 | -1018 | -0.91 |
| 5 | Near-Term (2018-2019) | August 2018 MDD | 1075 | 0.96 | 613 | 161 | 774 | 0.69 | -301 | -0.27 |
| 6 | Long-Term (2020-2024) | 10-YR MDD | 1994 | 1.78 | 1419 | 161 | 1581 | 1.41 | -413 | -0.37 |
| 7 | Long-Term (2020-2024) | 10-YR MDD (w/o SUSD) | 1792 | 1.60 | 1419 | 161 | 1581 | 1.41 | -211 | -0.19 |
| 8 | Long-Term (2020-2024) | 10-YR MDD | 1994 | 1.78 | 1823 | 161 | 1984 | 1.77 | -10 | -0.01 |
| 9 | Long-Term (2020-2024) | 10-YR MDD (w/o SUSD) | 1792 | 1.60 | 1823 | 161 | 1984 | 1.77 | 192 | 0.17 |
| 10 | Long-Term (2020-2024) | 10-YR MDD | 1994 | 1.78 | 2226 | 161 | 2387 | 2.13 | 393 | 0.35 |
| 11 | Long-Term (2020-2024) | 10-YR MDD (w/o SUSD) | 1792 | 1.60 | 2226 | 161 | 2387 | 2.13 | 595 | 0.53 |

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Addressing Water Source Capacity Issues**

Scenarios 1 & 2: Meeting 10-YR MDD with Existing Supply (Without Well 11)

- Scenario 1 in Table 4.4 shows that SCWC is not able to meet the 10-YR MDD regulatory requirement of 1.78 MGD as of October 2018. Well 11 was not considered to be in operation.
- Scenario 2 shows that SCWC is not able to meet the future 10-YR MDD (w/o SJUSD) of 1.60 MGD.

Conclusion: As shown in Table 4.5A, SCWC will have a supply deficit 1.06 MGD and 0.88 MGD for the 10-YR MDD and future 10-YR MDD w/o SJUSD, respectively.

Table 4.5A – Existing Water Supply Portfolio and Demand Breakdown

Supply in October 2018 (no Well 11)

| Source | Operational Capacity | | |
|---------|----------------------|------|-----|
| | GPM | MGD | AFY |
| Well 2A | 30 | 0.04 | 48 |
| Well 3A | 25 | 0.04 | 40 |
| Well 4A | 60 | 0.09 | 97 |
| Well 5 | 124 | 0.18 | 200 |
| Well 8 | 141 | 0.20 | 227 |
| Tunnel | 122 | 0.18 | 197 |

| | Summary | MGD |
|------------|-------------------------------------|-------|
| | Total Supply | 0.72 |
| Scenario 1 | Demand (10-YR MDD) | 1.78 |
| | Supply minus Demand (10-YR MDD) | -1.06 |
| Scenario 2 | Demand (10-YR MDD w/o SUSD) | 1.60 |
| | Supply minus Demand (10YR w/o SUSD) | -0.88 |

Scenarios 3, 4 & 5: Meeting Near-Term (2018-2019) Demands with Well 11 Operational

- Scenarios 3 and 4 shows that SCWC is not able to meet the 10-YR MDD regulatory requirement of 1.78 MGD and the future 10-YR MDD (w/o SJUSD) of 1.60 MGD even with Well 11 added to the supply portfolio.
- Scenario 5 shows that SCWC may even be short of supply to meet near-term projected MDD of 0.96 MGD, which is estimated from 2018 MDD values w/o SJUSD connections.

Conclusion: As shown in **Table 4.5B**, SCWC will have a supply deficit 1.09 MGD and 0.91 MGD for the 10-YR MDD and future 10-YR MDD w/o SJUSD, respectively.

Table 4.5B – Near-Term Water Supply and Demands with Well 11

Supply Near-Term

| Source | Operational Capacity | | |
|------------------|----------------------|-------------|------------|
| | GPM | MGD | AFY |
| Well 2A | 30 | 0.04 | 48 |
| Well 3A | 25 | 0.04 | 40 |
| Well 4A | 60 | 0.09 | 97 |
| Well 5 | 124 | 0.18 | 200 |
| Well 8 | 141 | 0.20 | 227 |
| Tunnel | 100 | 0.14 | 161 |
| Well 11 * | 250 | 0.36 | 403 |

* Offline

| | Summary | MGD |
|------------|--|-------|
| | Total Supply (largest well offline) | 0.69 |
| Scenario 3 | Demand (10-YR MDD) | 1.78 |
| | Supply minus Demand (10-YR MDD) | -1.09 |
| Scenario 4 | Demand (10-YR MDD w/o SUSD) | 1.60 |
| | Supply minus Demand (10YR MDD w/o SUSD) | -0.91 |
| Scenario 5 | August 2018 MDD | 0.96 |
| | Supply minus Demand (August 2018 MDD) | -0.27 |

Scenario 6 through 10: Meeting Long-Term (2020-2024) Demand with Well and Additional Future Wells

- Scenarios 6, 7, and 8 shows that by adding two or three additional wells, SCWC is still not able to meet the 10-YR MDD regulatory requirement of 1.78 MGD as shown in **Tables 4.5C and 4.5D**.
- Scenario 9 shows that when SJUSD services are removed from the system, SCWC could meet the future 10-YR MDD w/o SJUSD of 1.60 MGD with a surplus supply of 0.17 MGD by adding three (3) additional wells as shown in **Table 4.5D**.
- Scenario 10 shows that with four (4) additional wells, the system will be able to meet the 10-YR MDD regulatory requirement of 1.78 MGD as shown in **Table 4.5E**.

Conclusion: Scenario 10 provides SCWC with the ability to meet the 10-YR MDD regulatory requirement of 1.78 MGD by adding four (4) new supply wells with a surplus supply of 0.35 MGD.

Table 4.5C – Long-Term Water Supply and Demands with 2 Future wells (Wells 12 & 13)

Supply Long-Term

| Source | Operational Capacity | | |
|-----------|----------------------|------|-----|
| | GPM | MGD | AFY |
| Well 2A | 30 | 0.04 | 48 |
| Well 3A | 25 | 0.04 | 40 |
| Well 4A | 60 | 0.09 | 97 |
| Well 5 | 124 | 0.18 | 200 |
| Well 8 | 141 | 0.20 | 227 |
| Tunnel | 100 | 0.14 | 161 |
| Well 11 | 250 | 0.36 | 403 |
| Well 12 | 250 | 0.36 | 403 |
| Well 13 * | 250 | 0.36 | 403 |

* Offline

| | Summary | MGD |
|------------|--|-------|
| | Total Supply (largest well offline) | 1.41 |
| Scenario 6 | Demand (10-YR MDD) | 1.78 |
| | Supply minus Demand (10-YR MDD) | -0.37 |
| Scenario 7 | Demand (10-YR MDD w/o SUSD) | 1.60 |
| | Supply minus Demand (10YR w/o SUSD) | -0.19 |

Table 4.5D – Long-Term Water Supply and Demands with 3 Future wells (Wells 12,13, &14)

Supply Long-Term

| Source | Operational Capacity | | |
|-----------|----------------------|------|-----|
| | GPM | MGD | AFY |
| Well 2A | 30 | 0.04 | 48 |
| Well 3A | 25 | 0.04 | 40 |
| Well 4A | 60 | 0.09 | 97 |
| Well 5 | 124 | 0.18 | 200 |
| Well 8 | 141 | 0.20 | 227 |
| Tunnel | 100 | 0.14 | 161 |
| Well 11 | 250 | 0.36 | 403 |
| Well 12 | 250 | 0.36 | 403 |
| Well 13 | 250 | 0.36 | 403 |
| Well 14 * | 250 | 0.36 | 403 |

* Offline

| Summary | | MGD |
|--|--|-------|
| Total Supply (largest well offline) | | 1.77 |
| Scenario 8 | Demand (10-YR MDD) | 1.78 |
| | Supply minus Demand (10-YR MDD) | -0.01 |
| Scenario 9 | Demand (10-YR MDD w/o SUSD) | 1.60 |
| | Supply minus Demand (10YR w/o SUSD) | 0.17 |

Feasibility Report for Sheep Creek Water Company
Addressing Water Source Capacity Issues

Table 4.5E – Long-Term Water Supply and Demands with 4 future wells (Wells 12,13,14, and 15)

Supply Long-Term

| Source | Operational Capacity | | |
|-----------|----------------------|------|-----|
| | GPM | MGD | AFY |
| Well 2A | 30 | 0.04 | 48 |
| Well 3A | 25 | 0.04 | 40 |
| Well 4A | 60 | 0.09 | 97 |
| Well 5 | 124 | 0.18 | 200 |
| Well 8 | 141 | 0.20 | 227 |
| Tunnel | 100 | 0.14 | 161 |
| Well 11 | 250 | 0.36 | 403 |
| Well 12 | 250 | 0.36 | 403 |
| Well 13 | 250 | 0.36 | 403 |
| Well 14 | 250 | 0.36 | 403 |
| Well 15 * | 250 | 0.36 | 403 |

* Offline

| | Summary | MGD |
|-------------|--|------|
| | Total Supply (largest well offline) | 2.13 |
| Scenario 10 | Demand (10-YR MDD) | 1.78 |
| | Supply minus Demand (10-YR MDD) | 0.35 |
| Scenario 11 | Demand (10-YR MDD w/o SUSD) | 1.60 |
| | Supply minus Demand (10YR w/o SUSD) | 0.53 |

**Feasibility Report for Sheep Creek Water Company
Addressing Water Source Capacity Issues**

Figure 5 shows a summary of the demand and supply estimates discussed compared to the monthly MDD from 2016 through 2018 derived from SCWC production reports.

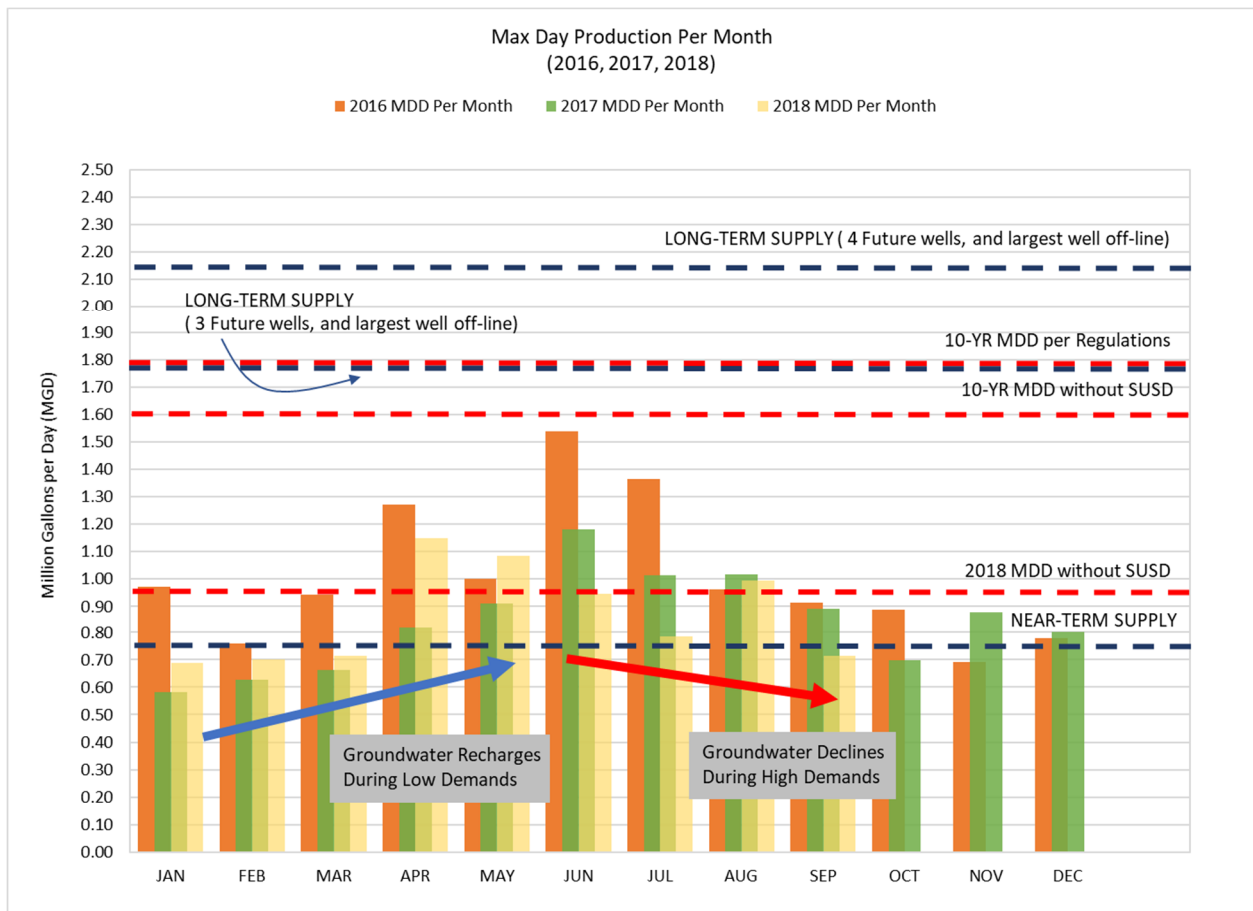


Figure 5. Maximum Production Per Month (2016 to 2018) compared to MDD scenarios
(Source: Sheep Creek Water Company Production Records)

Evaluating Storage Needs: Existing storage capacity in the system is 6.119 million gallons (MG). **Table 4.6** shows the number of consecutive days the storage volume alone will be able to meet MDD and peak hourly demand (PHD) in the system when all tanks are at full capacity. Per CCR 64554 (a) (2), SCWC is required to meet four (4) hours of PHD with source capacity, storage capacity, and/or emergency source connections. **Table 4.7** shows that SCWC is able to meet these regulatory requirements (4hrs x PHD) with its current storage capacity.

Table 4.6 – Storage Capacity and Demands

| Total Storage Capacity = 6.119 MG | | | | |
|-----------------------------------|-------|-------|----------------|----------------|
| Demand Type | MDD | PHD | MDD | PHD |
| | 10-YR | 10-YR | 10-YR w/o SUSD | 10-YR w/o SUSD |
| Demand (MGD) | 1.78 | 2.67 | 1.6 | 2.4 |
| Storage Utilization (days) | 3.44 | 2.29 | 3.82 | 2.55 |

Typically, volume required for storage takes into account operational, fire protection, and emergency storage. The following is an excerpt from the American Water Works Association (AWWA) Manual 50 (pg. 69), Water Resource Planning on determining storage needs:

“For most systems, regulatory storage is typically about 25 percent of the maximum daily demand. This allows reservoirs to be used for flow equalization because water fills the storage tanks during periods of low demand and drains during periods of high demand. Fire suppression storage is that volume required to supply the maximum fire flow, and emergency storage is for use in the event of a water supply system failure. There is no particular standard specifying how much emergency storage a water purveyor should have. The amount of storage required depends on available water supplies, inter-connections to other utilities, reliability of power sources, the presence of alternative power sources, and the reliability of the water system as a whole.”

For this analysis, conservative values for operational (30% x MDD⁽¹²⁾), fire flow (4hrs x 4000gpm⁽¹³⁾), and emergency storage (100% MDD⁽⁹⁾) criteria were used. In all cases, as noted in **Table 4.7**, SCWC’s existing and long-term storage needs will not exceed its current capacity, not accounting for additional growth.

Table 4.7 – Storage Requirements

| Storage Capacity (Gallons) | | |
|-----------------------------------|-----------|--------------------|
| Minimum Requirements | 10-YR MDD | 10-YR MDD w/o SUSD |
| Regulatory (4hrs x PHD) | 445,000 | 400,000 |
| Fire Protection (4hrs x 4000 gpm) | 960,000 | 960,000 |
| Equalization Volume (30% MDD) | 534,000 | 480,000 |
| Emergency Storage (100% MDD) | 1,780,000 | 1,600,000 |
| Total Storage | 3,274,000 | 3,040,000 |
| Total Storage (MG) | 3.27 | 3.04 |

¹² Refer to pg. 2-11, SCWC Water Master Plan, December 2006

¹³ Typical for Commercial/Industrial Buildings

5.0 Development of Alternatives

Two alternatives were developed in close coordination with SCWC and DDW. The compliance order specifies that, at minimum, one alternative shall include consolidating SCWC's water system with a nearby water purveyor, in this case, PPHCSD. The two alternatives evaluated herein are:

1. Maintain SCWC as a private water purveyor by drilling and operating additional water supply wells
2. Interconnect and consolidate SCWC system with PPHCSD

The items evaluated for each alternative are the technical feasibility to accomplish the objective of resolving the source capacity issue and the financial impact to the SCWC to accomplish this objective.

Compliance with Waterworks Standard

SCWC was formed in 1913 and some components of the water system are over 100 years old. The *"Preliminary Engineering Report (PER) Sheep Creek Water Company"*, prepared by California Rural Water Association (CRWA), dated November 19, 2018 includes a comprehensive, system-wide condition assessment of SCWC's water system. CRWA is providing on-going technical assistance to address global water system deficiencies, estimated at over \$12 million. The scope of the study prescribed herein focuses on resolving source capacity issues; the upgrades recommended are limited to infrastructure directly impacted where proposed improvements relate to the evaluated alternatives.

Pending State Legislation for Lowering MCL for Hexavalent Chromium

The scope of this study does not include the cost of removing hexavalent chromium (CR-6) or the feasibility of adding such facilities to either SCWC or PPHCSD. Once the State issues the new maximum contaminate level (MCL) for CR-6 in Drinking Water Sources, such an evaluation will be necessary. At this time, the new MCL is expected to be less than 10 ppb. Based on information from PPHCSD, seven existing wells currently indicate levels of CR-6 above 10 ppb in the Oeste Subarea of the Mojave Basin. SCWC's Well 11 has not indicated detectable levels of CR-6 nor has PPHCSD's Well 9, both of which are in the Alto Subarea of the Mojave Basin.

Approach to Planning Level Costs

Planning level construction costs for identified facilities were developed using industry standards developed by the Association of Advancement for Cost Engineering (AACE International). Our approach applies a single contingency (e.g., percentage of base cost) using a Class 4 estimate, which reflects between 1% to 15% design completion. The mid-range level of accuracy was applied to the base estimates, which correspond to a 50% contingency.

The operating and maintenance life cycle costs were provided for a thirty (30) year period, assuming an inflation rate of three percent (3%) and an interest rate of three percent (3%).

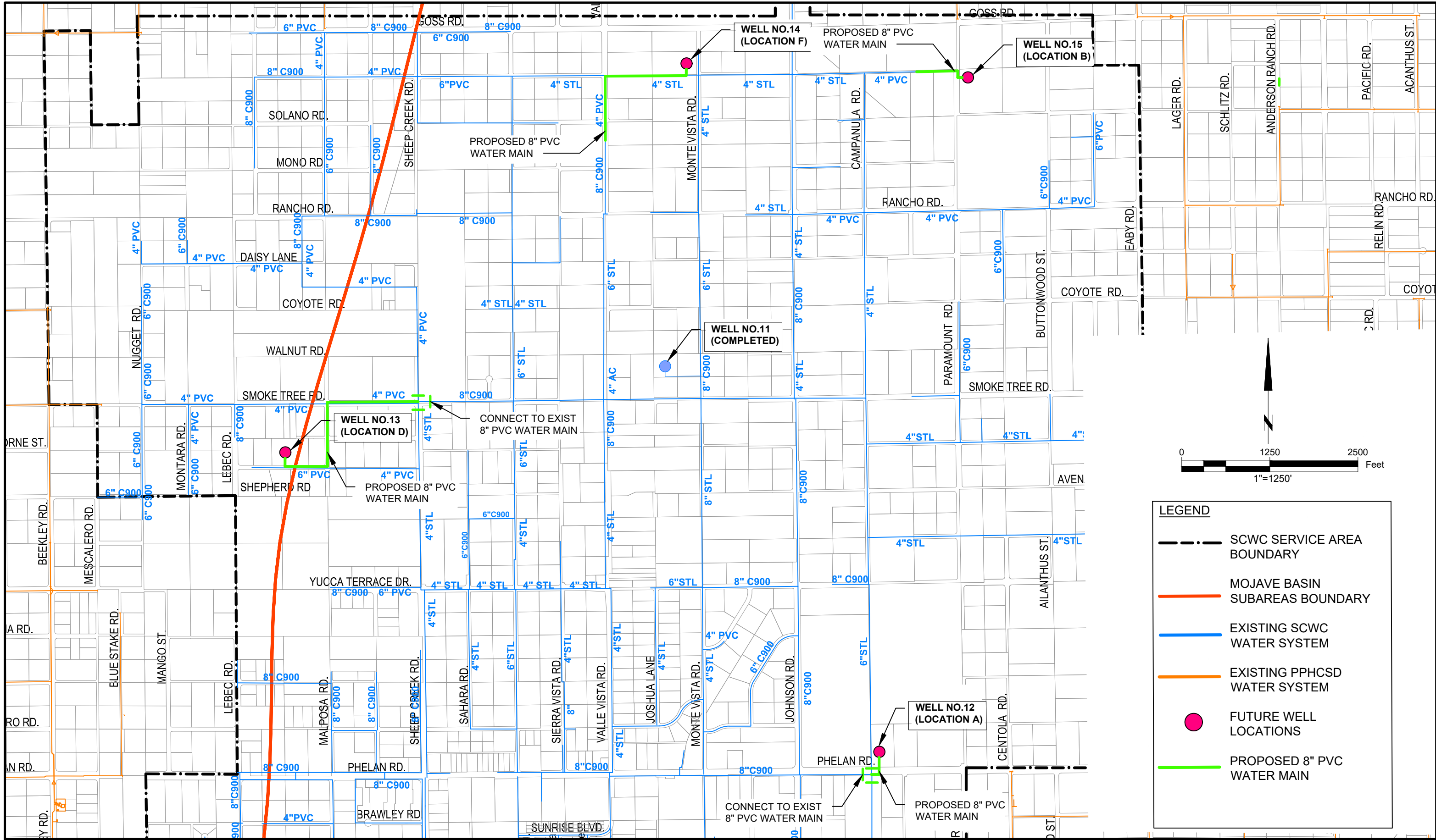
Alternative 1- Maintain SCWC as a Private Water Purveyor by Drilling and Operating Additional Water Supply Wells

This alternative consists of adding four (4) new supply wells to SCWC’s system as recommended in the Supply and Demand Analysis section presented above.

The scope of this study does not include a well siting study. Therefore, as recommended by the “Preliminary Engineering Report (PER) Sheep Creek Water Company”, prepared by California Rural Water Association (CRWA), dated November 19, 2018, the planning level costs herein were developed using the PER’s proposed alternatives for drilling additional wells in the Alto Subarea of the Mojave Basin. Further investigations and well pilot testing are being performed by CRWA and are not included in this scope. Based on four (4) assumed well site locations as shown in **Figure 6**, a conceptual design was developed for Alternative 1. The hydraulics of the water system will need to be evaluated during final design to confirm the actual pressures of the distribution system at the points of connection, to calculate the total dynamic head at each well pump and optimize pump performance. It is assumed that the same pumping characteristics of Well 11 apply to the future wells. **Table 5.1** lists the actual depths of Well 11 and corresponding wellhead facility and conveyance systems.

Table 5.1 Design Assumptions Based on Completed Well 11

| Description | Well 11 (Completed) | Assumptions for Future Wells |
|--|--|---|
| Well Production Rate | Actual 250 gpm | 250 gpm |
| Existing Ground Elev | 3,900 feet | |
| Well Depth | Actual 1,500 feet | 1,200 to 1,500 feet |
| Well Casing Size | 14/16 inches diameter | 14/16 inches diameter |
| Pumping Water Elev | Actual 2,913 feet (depth 987 feet) | |
| Static Water Elev | Actual 2,964 feet (depth 936 feet) | |
| Pump and Motor | 150 hp (200 hp VFD) | 150 hp (200 hp VFD) |
| Length of Pipe to Connect to the Distribution System | Actual 1,200 lf of 8-inch diameter PVC (C900) pipe | Varying lengths of 8-inch diameter PVC pipe |
| Wellhead Treatment | Disinfection Only | Disinfection Only |
| Property | APN 3069-321-18 2.5 acres | 2.5 acres |



SHEEP CREEK WATER COMPANY (SCWC)

ALTERNATIVE 1

FIGURE 6



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Cost Evaluation

For the purposes of the estimating the cost of future wells, and offsite piping, the cost breakdown for the recently completed Well 11 was used (refer to **Appendix A**). A summary of the planning level capital costs and operating and maintenance cost for Alternative 1 are summarized in **Table 5.2**. A detailed cost breakdown of Alternative 1 is provided in **Exhibit 5.1**.

Table 5.2 Summary of Planning Level Budget for Alternative 1

| Description | Total | Cost per Connection | Cost Per Share |
|---------------------------------------|---------------|----------------------------|-----------------------|
| Planning Level Budget | \$5.8 million | \$4,200 | \$700 |
| Additional Annual O&M Costs | \$230,000 | \$165.83 | \$28.75 |
| Net Present Value Additional O&M Cost | \$6.5 million | \$4,700 | \$800 |
| 2019 Cost of Water for Well 11 | \$95,900 | \$69 | \$12 |

Implementation Schedule

Assuming the California Rural Water Association proceeds with the pilot well testing early 2019, the SCWC can begin developing the well sites. The current schedule shown in **Exhibit 5.2** assumes SCWC will develop one well site per year, thus the additional four wells can potentially be completed by the fourth quarter of 2022. If additional funding becomes available to SCWC, the schedule can potentially be updated.

Alternative 2- Consolidation with PPHCSD

This alternative consists of consolidating with PPHCSD. PPHCSD covers 128 square miles, has over 6,800 connections, and serves the unincorporated communities of Phelan and Pinion Hills. PPHCSD has expressed concerns with SCWC’s deficient water facilities as described in CRWA’s PER. The cost of water system upgrades to bring SCWC’s entire system up to California Waterworks Standards and PPHCSD’s Standards for public water systems are estimated at over \$12 million per the CRWA PER. For the purposes of this consolidation evaluation, Alternative 2 will not include \$12 million in systemwide upgrades, instead the consolidation alternative will be limited to include the following priorities, which are necessary to operate these systems together:

- Installing flow control facilities at the connections and infrastructure to connect both water systems (pipelines, valves, appurtenances)
- Install fire hydrants/blowoffs at all dead ends (implement PPHCSD’s flushing plan)
- Install automatic meter reading devices (to match PPHCSD’s system)

Evaluating Source Capacity of Combined System

PPHCSD’s 10-yr MDD of 4.8 MGD and has an existing source capacity of 5.1 MGD. SCWC’s 10-yr MDD is 1.78 MGD and a source capacity of 1.1 MGD, including the recently added Well 11. Therefore, combining the systems results in a combined 10-yr MDD of 6.6 MGD and a combined source capacity of 6.2 MGD. The largest well in the combined system is PPHCD’s Well 14 with a capacity of 1.0 MGD (735 gpm). With the largest PPHCSD well offline, the combined source capacity is deficient by 0.4 MGD. To offset this deficiency, Alternative 2 will include the addition of one future well to the system.

System Connections

PPHCSD has suggested the three connection locations and corresponding pipelines as shown in **Figure 7**. It is expected that once the two water systems are connected, having consistently higher pressures in the SCWC service area may cause failures in the historically low-pressure system (i.e. water main breaks, appurtenance leaking, etc). Further analysis is required to determine if there are needs for rezoning or installing additional pressure reducing stations in the SCWC system. At this time however, our analysis indicates that there are no fatal flaws with moving forward with connecting both systems. It is assumed that at each connection a flow control facility will be needed; this is accounted for in the capital cost estimate.

Cost Evaluation

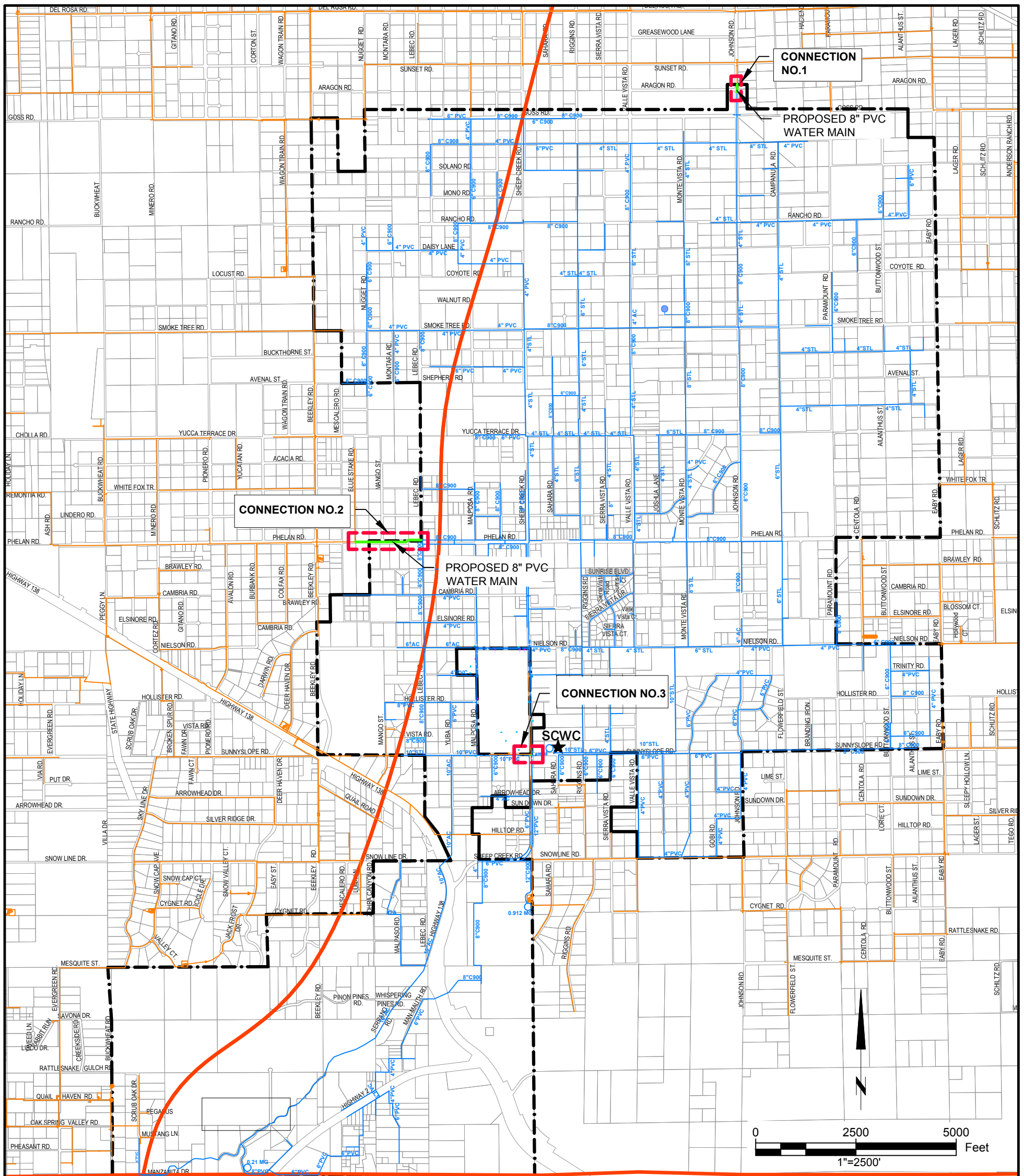
A summary of the planning level capital costs and operating and maintenance cost for Alternative 2 are summarized in **Table 5.3**. A detailed cost breakdown of Alternative 2 is provided in **Exhibit 5.3**. Although not included in this analysis, it is possible that SCWC users may have a fee added to their water bill by PPHCSD, unless State funding covers the costs of upgrading SCWC’s water system to California’s Waterworks Standards.

Table 5.3 Summary of Planning Level Budget for Alternative 2

| Description | Total | Cost per Connection | Cost Per Share |
|---------------------------------------|---------------|----------------------------|-----------------------|
| Planning Level Budget | \$3.3 million | \$2,400 | \$418 |
| Additional Annual O&M Costs | \$120,000 | \$86.52 | \$15 |
| Net Present Value Additional O&M Cost | \$3.4 million | \$2,400 | \$422 |

Implementation Schedule

This consolidation is contingent on the timeline for State approval of Proposition 1 funding (application submitted by CRWA). The approximate schedule shown in **Exhibit 5.4**, assuming no major hindrances to the process, the consolidation could be completed within four (4) years. Therefore, assuming the funding process takes 12 months (typical State process is 8-months) and the project begins early 2020, the project could potentially be completed by the fourth quarter of 2022.



CONNECTION NO.1

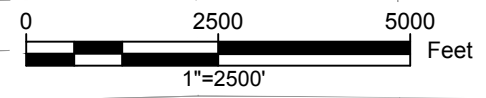
PROPOSED 8" PVC WATER MAIN

CONNECTION NO.2

PROPOSED 8" PVC WATER MAIN

CONNECTION NO.3

SCWC



WELL NO.5
WELL NO.3
WELL NO.4A
WELL NO.8

WELL NO.2A

0.141 MG
1.0MG

| LEGEND | |
|--------|--|
| | SCWC SERVICE AREA BOUNDARY |
| | MOJAVE BASIN SUBAREAS BOUNDARY |
| | EXISTING SCWC WATER SYSTEM |
| | EXISTING PPHCSD WATER SYSTEM |
| | PROPOSED CONNECTIONS FOR CONSOLIDATION |
| | PROPOSED 8" PVC WATER MAIN |



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SHEEP CREEK WATER COMPANY (SCWC)

ALTERNATIVE 2

FIGURE

3

6.0 Comparative Analysis and Recommendation

The key factors that were compared between the two alternatives are as follows:

Table 6.1 Comparison of Alternatives

| Key Comparable Factors | Alternative 1 | Alternative 2 |
|--|---------------------------------------|---|
| Source Capacity Issue Resolved | Yes | Yes |
| Planning Level Construction Cost <i>Per Connection</i> | \$4,200 | \$2,400 |
| Planning Level Construction Cost <i>Per Share</i> | \$700 | \$418 |
| NPV Additional O&M Cost <i>Per Connection</i> | \$4,700 | \$2,400 |
| NPV Additional O&M Cost <i>Per Share</i> | \$800 | \$422 |
| 2019 MWA Cost of Water for Well 11 <i>Cost Per Connection</i> | \$69.14 | \$0 |
| 2019 MWA Cost of Water for Well 11 <i>Cost Per Share</i> | \$12 | \$0 |
| Implementation Schedule | Completed 4 th QTR 2022 | Completed 4 th QTR 2022 |
| Monthly Water User Base Fee (Excluding consumption charges) | All Meters \$55 | 1" Meter \$27.89 2" Meter 81.39 4" Meter \$246.74 |

Both Alternative 1 and Alternative 2 offer long-term solutions to the source capacity issue. Based on discussions with SCWC’s General Manager and the Board, the preferred alternative at this time is Alternative 1. In our professional opinion, since the SCWC is currently moving towards solving their source capacity issue and have completed Well No 11 and will be initiating a well siting study through CRWA to continue increasing their source supply, we recommend the SWRCB move forward with developing a Compliance Plan for SCWC to resolve their source capacity issue.

Non-engineering factors excluded from this feasibility study may require further analysis, consideration and resolution during the next phase:

1. Based on the meeting held with DDW on January 7, 2019, SCWC understands that the State will make the final determination on the selected alternative shall funding from the Division of Financial Assistance be awarded to this project
2. Technical, managerial, and financial (TMF) capability of SCWC
3. Impact of new water rates and water connection fees on existing SCWC users
4. Opportunities to negotiate Temporary Transfer agreements with parties within the Alto Subarea and negotiate lower water purchase rates
5. Legal and administrative cost associated with consolidation
6. Impacts to the Mojave Basin with the development of future wells (initial conversations with the Mojave Water Agency (MWA) determined no immediate impacts to the Alto Subarea since due to replacement of water resources with State Water Project)

Exhibit 5.1:
Alternative 1 – Planning
Level Cost

Exhibit 5.1
Sheep Creek Water Company
Alternative 1
Planning Level Capital Cost Estimate

| Description | Unit | Quantity | Cost/Unit | Subtotal |
|---|------|----------|-----------|--------------------|
| Drill 1,500 foot 16" Well | EA | 4 | \$500,000 | \$2,000,000 |
| 150 HP Submersible Motor & Pump ¹ | EA | 4 | \$125,480 | \$501,919 |
| Electrical and Instrumentation ¹ | LS | 4 | \$47,845 | \$191,379 |
| Well Head and Site Work ¹ | LS | 4 | \$37,586 | \$150,345 |
| Well 12 Offsite Piping | LF | 240 | \$80 | \$19,200 |
| Well 13 Offsite Piping | LF | 2,800 | \$80 | \$224,000 |
| Well 14 Offsite Piping | LF | 2,100 | \$80 | \$168,000 |
| Well 15 Offsite Piping | LF | 750 | \$80 | \$60,000 |
| Subtotal | | | | \$3,314,800 |
| Contingency (50%) | | | | \$1,657,400 |
| Total Planning Level Construction Cost | | | | \$4,972,200 |
| Administration, Engineering, CM (10%) | | | | \$497,200 |
| CEQA (Combine Projects) | | | | \$56,600 |
| Property Acquisition for Four Well Site Locations (2.5 acres/each) ² | | | | \$280,000 |
| Total Planning Level Budget | | | | \$5,806,000 |
| Cost Per Connection (1,387 total) | | | | \$4,200 |
| Cost Per Share (8,000 total) | | | | \$700 |

¹ 2018 Actual Construction Cost for SCWC Well 11 (Not including SCWC staff time)

² 2018 Property Value and Acquisition Costs for Well 11 for \$28,000/acre

| Opinion of Probable Operation and Maintenance Costs | |
|---|-------------------------|
| 2017 Actual SCWC O&M Expense (Only Production/Distribution) | \$ 323,633 -> |
| Estimated Annual O&M for Well 11 and 4 Additional Wells | \$ 230,000 -> |
| TOTAL Estimated Annual O&M Cost | \$ 553,600 -> |

³ Number of shares used was 8,000

| O&M Summary | |
|---------------------|-----------------------------|
| Cost Per Connection | Cost Per Share ³ |
| \$ 233.33 | \$ 40.45 |
| \$ 165.83 | \$ 28.75 |
| \$ 399.16 | \$ 69.20 |
| \$ 67.51 | \$ 11.70 |
| \$ 5.63 | \$ 0.98 |

<<== ESTIMATED ANNUAL O&M INCREASE

<<== ESTIMATED MONTHLY O&M INCREASE

| Opinion of Net Present Value Operation and Maintenance Costs | |
|--|-----------------|
| 30-year Life Cycle O&M Costs | \$ 6,476,000 |
| Cost Per Connection (1,387 total) | \$ 4,700 |
| Cost Per Share (8,000 total) | \$ 800 |

| Cost of Replacement Water (purchase from MWA) | |
|---|-----------------|
| 2019 Well 11 Cost of MWA Water \$639 ac-ft (Operate 8hrs/day, 150 ac-ft per year) | \$ 95,900 |
| 4 Future Wells Cost of Replacement Water (600 ac-ft per year) | Unknown |
| Annual Cost Per Connection (1,387 total) | \$ 69.14 |

Exhibit 5.2:
**Alternative 1 – Preliminary
Implementation Schedule**

EXHIBIT 5.2 Alternative 1 Implementation Schedule

| ID | Task Name | Duration | Start | Finish | 2019 | | | 2020 | | | | 2021 | | | | 2022 | | | | 2023 | | | |
|----|-------------------------------------|------------------|---------------------|---------------------|-------------------------|----|----|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|
| | | | | | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 |
| 1 | Project | 1000 days | Tue 2/5/19 | Fri 12/30/22 | | | | | | | | | | | | | | | | | | | |
| 2 | Well Sitting Study | 4 mons | Tue 2/5/19 | Wed 5/29/19 | | | | | | | | | | | | | | | | | | | |
| 3 | Pilot Well Testing | 6 mons | Thu 5/30/19 | Tue 11/19/19 | | | | | | | | | | | | | | | | | | | |
| 4 | CEQA Clearance | 8 mons | Wed 11/20/19 | Wed 7/15/20 | | | | | | | | | | | | | | | | | | | |
| 5 | Property Acquisition | 60 days | Thu 7/16/20 | Wed 10/7/20 | | | | | | | | | | | | | | | | | | | |
| 6 | Bid Project/Award Contract | 30 days | Thu 7/16/20 | Wed 8/26/20 | | | | | | | | | | | | | | | | | | | |
| 7 | Construction | 610 days | Thu 8/27/20 | Fri 12/30/22 | | | | | | | | | | | | | | | | | | | |
| 8 | Well No 12 | 175 days | Thu 8/27/20 | Fri 4/30/21 | | | | | | | | | | | | | | | | | | | |
| 9 | Drill Well | 10 days | Thu 10/8/20 | Wed 10/21/20 | | | | | | | | | | | | | | | | | | | |
| 10 | Equipment Lead Time | 60 days | Thu 8/27/20 | Thu 11/19/20 | | | | | | | | | | | | | | | | | | | |
| 11 | SCE Application for Service | 12 wks | Thu 8/27/20 | Thu 11/19/20 | | | | | | | | | | | | | | | | | | | |
| 12 | Construct Well Site and Offsite Pip | 90 days | Thu 10/22/20 | Fri 2/26/21 | | | | | | | | | | | | | | | | | | | |
| 13 | County Permit | 30 days | Mon 3/1/21 | Fri 4/9/21 | | | | | | | | | | | | | | | | | | | |
| 14 | DDW Permit | 15 days | Mon 4/12/21 | Fri 4/30/21 | | | | | | | | | | | | | | | | | | | |
| 15 | Well 12 Complete | 0 days | Fri 4/30/21 | Fri 4/30/21 | 4/30 | | | | | | | | | | | | | | | | | | |
| 16 | Well No 13 | 145 days | Mon 5/3/21 | Fri 11/19/21 | | | | | | | | | | | | | | | | | | | |
| 17 | Drill Well | 10 days | Mon 5/3/21 | Fri 5/14/21 | | | | | | | | | | | | | | | | | | | |
| 18 | Equipment Lead Time | 60 days | Mon 5/3/21 | Fri 7/23/21 | | | | | | | | | | | | | | | | | | | |
| 19 | SCE Application for Service | 12 wks | Mon 5/3/21 | Fri 7/23/21 | | | | | | | | | | | | | | | | | | | |
| 20 | Construct Well Site and Offsite Pip | 90 days | Mon 5/17/21 | Fri 9/17/21 | | | | | | | | | | | | | | | | | | | |
| 21 | County Permit | 30 days | Mon 9/20/21 | Fri 10/29/21 | | | | | | | | | | | | | | | | | | | |
| 22 | DDW Permit | 15 days | Mon 11/1/21 | Fri 11/19/21 | | | | | | | | | | | | | | | | | | | |
| 23 | Well 13 Complete | 0 days | Fri 11/19/21 | Fri 11/19/21 | 11/19 | | | | | | | | | | | | | | | | | | |
| 24 | Well No 14 | 145 days | Mon 11/22/21 | Fri 6/10/22 | | | | | | | | | | | | | | | | | | | |
| 25 | Drill Well | 10 days | Mon 11/22/21 | Fri 12/3/21 | | | | | | | | | | | | | | | | | | | |
| 26 | Equipment Lead Time | 60 days | Mon 11/22/21 | Fri 2/11/22 | | | | | | | | | | | | | | | | | | | |
| 27 | SCE Application for Service | 12 wks | Mon 11/22/21 | Fri 2/11/22 | | | | | | | | | | | | | | | | | | | |
| 28 | Construct Well Site and Offsite Pip | 90 days | Mon 12/6/21 | Fri 4/8/22 | | | | | | | | | | | | | | | | | | | |
| 29 | County Permit | 30 days | Mon 4/11/22 | Fri 5/20/22 | | | | | | | | | | | | | | | | | | | |
| 30 | DDW Permit | 15 days | Mon 5/23/22 | Fri 6/10/22 | | | | | | | | | | | | | | | | | | | |
| 31 | Well 14 Complete | 0 days | Fri 6/10/22 | Fri 6/10/22 | 6/10 | | | | | | | | | | | | | | | | | | |
| 32 | Well No 15 | 145 days | Mon 6/13/22 | Fri 12/30/22 | | | | | | | | | | | | | | | | | | | |
| 33 | Drill Well | 10 days | Mon 6/13/22 | Fri 6/24/22 | | | | | | | | | | | | | | | | | | | |
| 34 | Equipment Lead Time | 60 days | Mon 6/13/22 | Fri 9/2/22 | | | | | | | | | | | | | | | | | | | |
| 35 | SCE Application for Service | 12 wks | Mon 6/13/22 | Fri 9/2/22 | | | | | | | | | | | | | | | | | | | |
| 36 | Construct Well Site and Offsite Pip | 90 days | Mon 6/27/22 | Fri 10/28/22 | | | | | | | | | | | | | | | | | | | |
| 37 | County Permit | 30 days | Mon 10/31/22 | Fri 12/9/22 | | | | | | | | | | | | | | | | | | | |
| 38 | DDW Permit | 15 days | Mon 12/12/22 | Fri 12/30/22 | | | | | | | | | | | | | | | | | | | |
| 39 | Well 15 Complete | 0 days | Fri 12/30/22 | Fri 12/30/22 | Well 15 Complete 12/30 | | | | | | | | | | | | | | | | | | |

Exhibit 5.3:
Alternative 2 - Planning
Level Cost

Exhibit 5.3
Sheep Creek Water Company
Alternative 2
Planning Level Capital Cost Estimate

| Description | Unit | Quantity | Cost/Unit | Total Cost |
|---|------|----------|-----------|---------------------|
| Connection 1 Flow Control Facility | LS | 1 | \$100,000 | \$ 100,000 |
| Connection 1 Offsite Piping | LF | 225 | \$80 | \$ 18,000 |
| Connection 2 Flow Control Facility | LS | 1 | \$100,000 | \$ 100,000 |
| Connection 2 Offsite Piping | LF | 1,700 | \$80 | \$ 136,000 |
| Connection 3 Flow Control Facility | LS | 1 | \$100,000 | \$ 100,000 |
| Connection 3 Offsite Piping | LF | 100 | \$80 | \$ 8,000 |
| Drill 1,500 foot 16" Well ¹ | EA | 1 | \$500,000 | \$ 500,000 |
| 150 HP Submersible Motor & Pump ¹ | EA | 1 | \$125,480 | \$ 125,500 |
| Electrical and Instrumentation ¹ | LS | 1 | \$47,845 | \$ 47,800 |
| Well Head and Site Work ¹ | LS | 1 | \$37,586 | \$ 37,600 |
| Install Blowoff at Dead Ends | EA | 27 | \$2,000 | \$ 54,000 |
| Install Automatic Meter Reading Devices | EA | 1,387 | \$500 | \$ 693,500 |
| Subtotal: | | | | \$ 1,920,400 |
| Contingency (50%) | | | | \$ 960,200 |
| Total Planning Level Construction Cost | | | | \$ 2,880,600 |
| Cross Connection Survey | | | | \$ 60,000 |
| Administration, Engineering, CM (10%) | | | | \$ 288,100 |
| CEQA (Combine Projects) | | | | \$ 45,000 |
| Property Acquisition for One Well Site Location (2.5 acres/each) ² | | | | \$ 70,000 |
| Total Planning Level Budget | | | | \$ 3,343,700 |
| Cost Per Connection (1,387 total) | | | | \$ 2,400 |
| Cost Per Share (8,000 total) | | | | \$418 |

¹ 2018 Actual Construction Cost for SCWC Well 11 (Not including SCWC staff time)

² 2018 Property Value and Acquisition Costs for Well 11 for \$28,000/acre

| Opinion of Probable Operation and Maintenance Costs | |
|---|-------------------|
| 2017 Actual PPHCSD O&M Expense | N/A (4) |
| Estimated Annual O&M for One Additional Well | \$ 60,000 |
| Estimated Annual O&M for Flow Control Facilities | \$ 60,000 |
| TOTAL Estimated Annual O&M Cost | \$ 120,000 |

³ Number of shares used was 8,000

⁴ PPHCSD's Annual O&M cost is not applicable under Alternative 2. It is possible that an assessment district will be formed and the cost to upgrade the system to meet State Waterworks Standards would apply to SCWC service area at a later date.

| Opinion of Net Present Value Operation and Maintenance Costs | |
|--|-----------------|
| 30-year Life Cycle O&M Costs | \$ 3,379,000 |
| Cost Per Connection (1,387 total) | \$ 2,400 |
| Cost Per Share (8,000 total) | \$422 |

| O&M Summary | |
|---------------------|-----------------------------|
| Cost Per Connection | Cost Per Share ³ |
| | |
| \$ 43.26 | \$ 7.50 |
| \$ 43.26 | \$ 7.50 |
| \$ 86.52 | \$ 15.00 |
| \$ 7.21 | \$ 1.25 |

<<== ESTIMATED ANNUAL O&M INCREASE

<<== ESTIMATED MONTHLY O&M INCREASE

Exhibit 5.4:
Alternative 2 - Preliminary
Implementation
Schedule

EXHIBIT 5.4 Alternative 2 Implementation Schedule

| ID | Task Name | Duration | Start | Finish | 2019 | | | | 2020 | | | | 2021 | | | | 2022 | | | | 2023 | | |
|----|-------------------------------------|-----------------|--------------------|---------------------|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|------|--|--|
| | | | | | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | | |
| 1 | Project | 945 days | Tue 2/5/19 | Mon 10/17/22 | | | | | | | | | | | | | | | | | | | |
| 2 | Proposition 1 Funding | 12 mons | Tue 2/5/19 | Mon 1/27/20 | | | | | | | | | | | | | | | | | | | |
| 3 | Notice To Proceed | 0 days | Mon 1/27/20 | Mon 1/27/20 | | | | | | | | | | | | | | | | | | | |
| 4 | Well Sitting Study | 4 mons | Tue 1/28/20 | Tue 5/19/20 | | | | | | | | | | | | | | | | | | | |
| 5 | Pilot Well Testing | 6 mons | Wed 5/20/20 | Tue 11/3/20 | | | | | | | | | | | | | | | | | | | |
| 6 | CEQA Clearance | 8 mons | Wed 11/4/20 | Fri 6/18/21 | | | | | | | | | | | | | | | | | | | |
| 7 | Cross Connection Survey | 60 days | Mon 6/21/21 | Fri 9/10/21 | | | | | | | | | | | | | | | | | | | |
| 8 | Bid Project/Award Contract | 60 days | Mon 6/21/21 | Fri 9/10/21 | | | | | | | | | | | | | | | | | | | |
| 9 | Construction | 285 days | Mon 9/13/21 | Mon 10/17/22 | | | | | | | | | | | | | | | | | | | |
| 10 | Install 110 Blowoffs | 60 days | Mon 9/13/21 | Fri 12/3/21 | | | | | | | | | | | | | | | | | | | |
| 11 | Equipment Lead Time | 8 wks | Mon 9/13/21 | Fri 11/5/21 | | | | | | | | | | | | | | | | | | | |
| 12 | SCE Application for Service | 12 wks | Mon 9/13/21 | Fri 12/3/21 | | | | | | | | | | | | | | | | | | | |
| 13 | Well No 15 | 145 days | Mon 11/8/21 | Mon 5/30/22 | | | | | | | | | | | | | | | | | | | |
| 14 | Drill Well | 10 days | Mon 11/8/21 | Fri 11/19/21 | | | | | | | | | | | | | | | | | | | |
| 15 | Construct Well Site and Offsite Pip | 90 days | Mon 11/22/21 | Mon 3/28/22 | | | | | | | | | | | | | | | | | | | |
| 16 | County Permit | 30 days | Tue 3/29/22 | Mon 5/9/22 | | | | | | | | | | | | | | | | | | | |
| 17 | DDW Permit | 15 days | Tue 5/10/22 | Mon 5/30/22 | | | | | | | | | | | | | | | | | | | |
| 18 | Well 15 Complete | 0 days | Mon 5/30/22 | Mon 5/30/22 | | | | | | | | | | | | | | | | | | | |
| 19 | Connection No. 1 | 40 days | Tue 5/31/22 | Mon 7/25/22 | | | | | | | | | | | | | | | | | | | |
| 20 | Flow Control Facility | 20 days | Tue 5/31/22 | Mon 6/27/22 | | | | | | | | | | | | | | | | | | | |
| 21 | Pipeline | 20 days | Tue 6/28/22 | Mon 7/25/22 | | | | | | | | | | | | | | | | | | | |
| 22 | Connection No. 2 | 40 days | Tue 6/28/22 | Mon 8/22/22 | | | | | | | | | | | | | | | | | | | |
| 23 | Flow Control Facility | 20 days | Tue 6/28/22 | Mon 7/25/22 | | | | | | | | | | | | | | | | | | | |
| 24 | Pipeline | 20 days | Tue 7/26/22 | Mon 8/22/22 | | | | | | | | | | | | | | | | | | | |
| 25 | Connection No. 3 | 40 days | Tue 8/23/22 | Mon 10/17/22 | | | | | | | | | | | | | | | | | | | |
| 26 | Flow Control Facility | 20 days | Tue 8/23/22 | Mon 9/19/22 | | | | | | | | | | | | | | | | | | | |
| 27 | Pipeline | 20 days | Tue 9/20/22 | Mon 10/17/22 | | | | | | | | | | | | | | | | | | | |

Mon 1/14/19

Appendix A

Meetings, notifications administrative expenses**California Environmental Quality Act**

| | | |
|------------|--|------------|
| 11/14/2016 | Tom Dodson and Associates- Initial Study | \$8,275.00 |
| 12/14/2016 | Tom Dodson and Associates- Initial Study | \$1,656.00 |
| 1/13/2017 | Tom Dodson and Associates- Initial Study | \$2,960.00 |
| 2/17/2017 | Tom Dodson and Associates- Initial Study | \$622.50 |
| 6/19/2017 | Tom Dodson and Associates- Initial Study | \$787.50 |
| 10/18/2017 | Tom Dodson and Associates- Mitigation | \$975.00 |
| 10/16/2017 | Tom Dodson and Associates- Mitigation | \$450.00 |
| 12/20/2017 | Tom Dodson and Associates- Mitigation | \$1,250.00 |
| 4/16/2018 | Tom Dodson and Associates- Mitigation | \$2,012.50 |
| 4/16/2018 | Jericho Systems- Nesting Bird Survey | \$315.00 |
| 5/17/2018 | Tom Dodson and Associates- Mitigation | \$300.00 |

Agency Fees

| | | |
|------------|---------------------------------------|------------|
| 5/23/2017 | SBC- Land Use Services- Initial Study | \$3,100.00 |
| 12/20/2017 | Tom Dodson and Associates- NOD Fees | \$2,266.25 |
| 3/21/2018 | SWRCB- WDID Number | \$526.00 |

Engineering- SWPPP

| | | |
|-----------|------------------------|------------|
| 3/31/2018 | Albert Webb Associates | \$387.00 |
| 5/26/2018 | Albert Webb Associates | \$172.00 |
| 9/29/2018 | Albert Webb Associates | \$2,257.50 |

Assessment collections

| | | |
|--------|--|------------|
| Aug-17 | | \$4,632.80 |
| Mar-18 | | \$8,251.26 |
| Aug-18 | | \$4,824.58 |

Property purchase

\$70,148.05

Legal/Escrow Expenses

| | | |
|-----------|-------------------------------------|-------------|
| 2/21/2017 | Gresham- Property Contract | \$1,598.00 |
| 3/22/2017 | Gresham- Property Contract | \$3,376.00 |
| 6/14/2017 | Gresham- Property Contract | \$1,056.00 |
| 6/21/2017 | UPS Store - Carter Notary | \$30.25 |
| 7/19/2017 | Gresham- Property Contract | \$144.00 |
| 7/30/2018 | SBC- Land Use Services- Address | \$158.00 |
| 8/10/2018 | Flagstar Bank Wire Transfer- Escrow | \$2,500.00 |
| 8/21/2018 | Flagstar Bank Wire Transfer- Escrow | \$46,000.00 |
| 8/23/2018 | Flagstar Bank Wire Transfer- Escrow | \$350.00 |
| 8/7/2018 | Gresham- Property Purchase | \$2,359.00 |
| 9/10/2018 | Gresham- Property Purchase | \$10,156.80 |
| 10/8/2018 | Gresham- Property Purchase | \$2,420.00 |

Drill 1,500 foot 16" well with mil-slot casing

| | | |
|-----------|------------------------------|--------------|
| 4/27/2018 | Layne- Mob, Permit, Drilling | \$145,206.00 |
|-----------|------------------------------|--------------|

| | | |
|--|--|--------------|
| 5/23/2018 | Layne- Mob, Drilling, Casing, Air Lift | \$180,565.60 |
| 6/26/2018 | Layne- Casing, Swab Pump | \$56,626.60 |
| 8/1/2018 | Layne- Swab Pump, Test Pumping | \$79,648.23 |
| Vertical turbine motor, pump, column pipe, tube and shaft | | |
| 9/24/2018 | Layne- Pum, Motor, Wire, Column Pipe | \$125,479.69 |
| 9/24/2018 | Layne- Well Foundation | \$8,571.43 |
| Electrical equipment, conduit wiring | | |
| Southern California Edison | | |
| 8/8/2018 | Deposit- Rights Check | \$2,500.00 |

| | |
|---------------------------------------|-------------|
| SCE Electrical Service & Meter Panels | \$6,000.00 |
| | \$45,000.00 |
| | \$15,000.00 |

Well Electrical

| | | |
|------------|--|-------------|
| 8/31/2018 | Center Electric- Long Lead Filter | \$1,781.53 |
| 8/31/2018 | Center Electric- 200hp VFD Cabinet | \$29,380.00 |
| 11/20/2018 | Center Electric- Conduit, Wire, Controls | \$13,327.87 |
| 10/2/2018 | Weber Concrete | \$855.32 |

Generator Rental

Well Head & Site Work

Site Work

| | | |
|------------|----------------------------------|------------|
| 10/2/2018 | Weber Concrete | \$2,494.68 |
| 10/12/2018 | All American Fence | \$6,715.00 |
| 10/18/2018 | Ledesmon Trucking- Gravel Purge | \$525.00 |
| 11/5/2018 | Shed World- Chlorine/VFD Housing | \$4,951.11 |

Environmental protection

| | | |
|----------|--------------------------------|----------|
| 4/3/2018 | Hub Construction- Straw Wattle | \$383.51 |
|----------|--------------------------------|----------|

Water Quality

| | | |
|-----------|--|------------|
| 8/17/2018 | Clinical Lab- Title 22 Sampling | \$3,214.00 |
| 9/27/2018 | USA Blue Book- Chlorine Pump Equipment | \$953.08 |

Pipe Work

| | | |
|-----------|-------------------------------|------------|
| | Inland Water Works | \$8,663.84 |
| | SCWC Labor & Equipment | |
| 8/14/2018 | Caltrol- Actuator Valves | \$2,220.00 |
| 8/21/2018 | McCall's Meters- Flow Meter | \$2,771.73 |
| 10/9/2018 | Home Depot- Bolts Pipe Stands | \$143.66 |

Offsite pipeline upgrades

| | |
|-----------|--------------|
| Materials | \$106,493.27 |
|-----------|--------------|

Permits, Road Repairs, Engineering

| | | |
|-----------|---|----------|
| 3/13/2018 | SBC Public Works- Smoketree Road Permit | \$680.00 |
| | SCWC Labor & Equipment | |

Labor & Equipment

| | | |
|------------|--|------------|
| 7/25/2018 | Jeff Brown | \$630.00 |
| 8/1/2018 | Daniel Edmond | \$720.00 |
| 8/9/2018 | Jeff Brown | \$1,204.00 |
| 8/9/2018 | Daniel Edmond | \$1,462.50 |
| 8/15/2018 | Jeff Brown | \$630.00 |
| 8/20/2018 | Daniel Edmond | \$150.00 |
| 8/23/2018 | Jeff Brown | \$420.00 |
| 10/25/2018 | Desert Design- Water Truck & Excuvator | \$3,100.00 |
| 10/26/2018 | Jeff Brown | \$175.00 |
| 12/4/2018 | Craig Cummings | \$120.00 |

Meals \$322.40

Well #11 Well Head Material

| | | |
|----------------------------------|--------|--------|
| 1 6" x 4" FL Reducer | 63 | 63 |
| 2 4" x 2" FL Tee | 90 | 180 |
| 3 4" x 12" FL Spool | 115 | 345 |
| 1 4" x 24" FL Spool | 146 | 146 |
| 2 4" x 36" FL Spool | 175 | 350 |
| 2 4" x 60" FL Spool | 234 | 468 |
| 1 4" x 48" FL Spool | 204 | 204 |
| 1 4" x 72" FL Spool | 257 | 257 |
| 1 4" FL Tee | 100 | 100 |
| 1 4" FL Mueller Check Valve | 540 | 540 |
| 1 4" FL CLA-VAL | 2600 | 2600 |
| 5 4" FL LR 90 | 105 | 525 |
| 2 2" Companion Flange | 15 | 30 |
| 2 2" Gal Tee | 6.99 | 13.98 |
| 3 2" Gal Close Nipple | 7.85 | 23.55 |
| 1 2" x 1" Gal Bushing | 6.98 | 6.98 |
| 1 1" Galv Nipple | 2.99 | 2.99 |
| 1 2" Drain Valve | 225 | 225 |
| 1 1" Gate Valve | 55 | 55 |
| 1 2" ARI Rolling Diaphragm Valve | 568.24 | 568.24 |
| 1 1" Ari Valve | 124 | 124 |
| 2 30" Pipe Stands | 275 | 550 |
| 26 4" Bolts | 5 | 130 |
| 24 4" Gaskets | 2 | 48 |
| 2 2" Bolts | 2.25 | 4.5 |
| 2 2" Gaskets | 2 | 4 |
| 3 4" FL x PO Adaptor | 54 | 162 |
| 4 4" Fitting Restraints | 27 | 108 |
| 3 4" Bell Restraint | 36 | 108 |
| 1 4" FL x PO Valve | 520 | 520 |

| | | |
|--------------------|------|-------|
| 1 6" Valve Can Set | 20 | 20 |
| 80 4" C900 PVC | 2.27 | 181.6 |

Smoketree Line Replacement Material

| | | |
|-----------------------------------|--------|---------|
| 4790 8" C900 PVC DR14 | 9.6 | 45984 |
| 700 8" C900 PVC DR18 | 7.15 | 5005 |
| 60 6" C900 PVC DR14 | 6.75 | 405 |
| 60 6" C900 PVC DR18 | 4.07 | 244.2 |
| 20 4" C900 PVC DR14 | 2.27 | 45.4 |
| 23 8" FL BF Valve | 671 | 15433 |
| 6 6" FL x PO Gate Valve | 740 | 4440 |
| 1 4" FL PO Gate Valve | 520 | 520 |
| 5 8" FL TEE | 184 | 920 |
| 5 8" x 6" FL x PO TEE | 130 | 650 |
| 1 8" x 6" FL TEE | 200 | 200 |
| 1 8" x 4" FL TEE | 200 | 200 |
| 2 8" FL Cross | 235 | 470 |
| 1 8" x 6" FL Reducer | 104.79 | 104.79 |
| 25 8" FL x PO Adaptor | 83.99 | 2099.75 |
| 5 6" FL x PO Adaptor | 92 | 460 |
| 2 4" PO 90 | 49.65 | 99.3 |
| 36" PO Mueller Hydrant | 2250 | 0 |
| 1 48" PO Mueller Hydrant | 2325 | 2325 |
| 3 54" PO Mueller Hydrant | 2700 | 8100 |
| 2 12" Mueller Hydrant Extension | 500 | 1000 |
| 1 18" Mueller Hydrant Extension | 574 | 574 |
| 1 24" Mueller Hydrant Extension | 671 | 671 |
| 33 8" Fitting Restaint | 49 | 1617 |
| 18 6" Fitting Restraint | 33 | 594 |
| 5 4" Fitting Restraint | 27 | 135 |
| 36 8" Bell Restraint | 80 | 2880 |
| 3 6" Bell Restraint | 50 | 150 |
| 1 8" FCA- 8.05od | 230 | 230 |
| 4 8" 501 Romac Coupling | 231 | 924 |
| 2 8" 501R Extended Romac Coupling | 245 | 490 |
| 59 8" x 6" Bolts | 6 | 354 |
| 2 4" Bolts | 5 | 10 |
| 48 8" Gaskets | 4 | 192 |
| 10 6" Gaskets | 3 | 30 |
| 2 4" Gaskets | 2 | 4 |
| 23 8" Valve Can Set | 23.14 | 532.22 |
| 8 6" Valve Can Set | 20 | 160 |
| 210 1" Kicker Pipe | 2.1 | 441 |
| 1 Chlorine Tablets #5 Jar | 16 | 16 |
| 6 Detector Tape- Roll | 18 | 108 |

2 Permatex- Tube

8 16
98833.66
106493.27

| | | TOTAL PROJECT |
|---|--------------|--------------------------|
| Meetings, notifications administrative expenses | | |
| California Environmental Quality Act | | \$28,312.25 |
| Tom Dodson and Associates- Initial Study, Mitigation | \$19,603.50 | |
| Agency Fees | \$5,892.25 | |
| Engineering- SWPPP | \$2,816.50 | |
| Assessment collections | | \$17,708.64 |
| Assessment # 1 August 2017 | \$4,632.80 | |
| Assessment # 2 March 2018 | \$8,251.26 | |
| Assessment # 3 June 2018 | \$4,824.58 | |
| Property purchase | | \$70,148.05 |
| Legal Expenses- Property Contract | \$6,174.00 | |
| Escrow Expenses | \$48,850.00 | |
| Legal Expenses- Property Purchase | \$14,935.80 | |
| Misc- Fees | \$188.25 | |
| Drill 1,500 foot 16" well with mil-slot casing | | \$470,617.86 |
| Layne- Permit, Drill, Casing, Air Lift, Swab & Test Pump | \$462,046.43 | |
| Layne- Concrete Foundation | \$8,571.43 | |
| 150 HP Submersible motor & pump, 1,100' 5" column pipe, wire | | \$125,479.69 |
| Layne- Supply & Install Pumping Equipment | \$125,479.69 | |
| Electrical equipment, conduit wiring | | \$47,844.72 |
| Southern California Edison | \$2,500.00 | |
| SCE Electrical Service & Meter Panels | | |
| VFD cabinet and control | \$45,344.72 | |
| Conduit, wiring, labor | | |
| Well Head & Site Work | | \$37,586.20 |
| Site Work- Concrete, Fencing, Housing, Protection | \$19,236.38 | |
| Environmental protection | \$383.51 | |
| Water Quality | \$4,167.08 | |
| Pipe Work | \$13,799.23 | |
| Smoketree Line Replacement Project | | \$116,107.17 |
| Material | \$106,493.27 | |
| Permits, Road Repairs, Engineering | \$680.00 | |
| Labor & Equipment | \$8,933.90 | |
| TOTAL SMOKETREE WELL #11 PROJECT COST- | | \$913,804.58 |

Appendix B

State Water Resources Control Board

Division of Drinking Water

August 30, 2018

System No. 3610109

Chris Cummings, General Manager
Sheep Creek Water Company
P.O. Box 291820
Phelan, CA 92329

COMPLIANCE ORDER NO.05-13-18R-002 SOURCE CAPACITY VIOLATION

Enclosed is Compliance Order No.05-13-18R-002 (hereinafter "Order"), issued to the Sheep Creek Water Company public water system (hereinafter "System"), public water system. Please note there are legally enforceable deadlines associated with this Order.

The System will be billed at the State Water Resources Control Board's (hereinafter "State Water Board"), hourly rate for the time spent on issuing this Order. California Health and Safety Code (hereinafter "CHSC"), Section 116577, provides that a public water system must reimburse the State Water Board for actual costs incurred by the State Water Board for specified enforcement actions, including but not limited to, preparing, issuing and monitoring compliance with an order. At this time, the State Water Board has spent approximately 2 hour(s) on enforcement activities associated with this violation.

The System will receive a bill sent from the State Water Board in August of the next fiscal year. This bill will contain fees for any enforcement time spent on the System for the current fiscal year.

Any person who is aggrieved by a citation, order or decision issued under authority delegated to an officer or employee of the state board under Article 8 (commencing with CHSC, Section 116625) or Article 9 (commencing with CHSC, Section 116650), of the Safe Drinking Water Act (CHSC, Division 104, Part 12, Chapter 4), may file a petition with the State Water Board for reconsideration of the citation, order or decision. Appendix 1 to the enclosed Citation contains the relevant statutory provisions for filing a petition for reconsideration (CHSC, Section 116701).

Petitions must be received by the State Water Board within 30 days of the issuance of the citation, order or decision by the officer or employee of the state board. The date of issuance is the date when the Division of Drinking Water mails a copy of the citation, order or decision. If the 30th day

falls on a Saturday, Sunday, or state holiday, the petition is due the following business day by 5:00 p.m.

Information regarding filing petitions may be found at:

http://www.waterboards.ca.gov/drinking_water/programs/petitions/index.shtml

If you have any questions regarding this matter, please contact Hector Cazares of my staff at (909) 383-4312 or me at (909) 383-4328.

Sincerely,



Eric J. Zúñiga, P.E.
District Engineer
San Bernardino District
Southern California Field Operations Branch

Enclosures

Certified Mail No. 7017 0660 0001 1704 7559

cc: Joy Chakma, San Bernardino County EHS, via email at Joy.Chakma@dph.sbcounty.gov
Diana Almond, San Bernardino County EHS via email at Diana.Almond@dph.sbcounty.gov

2
3 STATE OF CALIFORNIA
4 STATE WATER RESOURCES CONTROL BOARD
5 DIVISION OF DRINKING WATER
6

7 **Name of Public Water System:** Sheep Creek Water Company

8 **Water System No:** 3610109

9
10 **Attention:** Chris Cummings, General Manager

11 P.O. Box 291820

12 Phelan, CA 92329
13

14 **Issued:** August 30, 2018
15

16 **COMPLIANCE ORDER FOR VIOLATION OF CALIFORNIA HEALTH AND SAFETY**
17 **CODE SECTION 116555(a)(3) AND**
18 **CALIFORNIA CODE OF REGULATIONS, TITLE 22, SECTION 64554**
19

20 **SOURCE CAPACITY VIOLATION**

21 **2018**
22

23 The California Health and Safety Code (hereinafter "CHSC"), Section 116655 authorizes
24 the State Water Resources Control Board (hereinafter "State Water Board"), to issue a
25 compliance order to a public water system when the State Water Board determines that
26 the public water system has violated or is violating the California Safe Drinking Water
27 Act (hereinafter "California SDWA"), (CHSC, Division 104, Part 12, Chapter 4,

1 commencing with Section 116270), or any regulation, standard, permit, or order issued
2 or adopted thereunder.

3
4 The State Water Board, acting by and through its Division of Drinking Water (hereinafter
5 “Division”), and the Deputy Director for the Division, hereby issues Compliance Order
6 No.05-13-18R-002 (hereinafter “Order”) pursuant to Section 116655 of the CHSC to the
7 Sheep Creek Water Company (hereinafter “System”), for violation of CHSC, Section
8 116555(a)(3), requiring a reliable and adequate supply of pure, wholesome, healthful,
9 and potable water, and California Code of Regulations (hereinafter “CCR”), Title 22,
10 Section 64554, setting source capacity requirements.

11
12 A copy of the applicable statutes and regulations are included in Appendix 1, which is
13 attached hereto and incorporated by reference.

14 15 **STATEMENT OF FACTS**

16 The System is classified as a community public water system with a population of 3,354
17 serving 1,183 connections. The System operates under Domestic Water Supply Permit
18 No. 78-007 issued by the State Water Board on February 9, 1978.

19
20 The System relies on five (5) groundwater wells: Wells 2A, 3A, 4A, 5, 8 and one (1)
21 tunnel source which is also classified as groundwater. The System submitted production
22 yield records to the Division on August 1, 2018, which demonstrated a significant
23 decrease in the capacity of all sources over the past ten (10) years.

24
25 Based on the most recent ten (10) years of production data, the System reported the
26 highest MDD as 2,090,000 gallons per day in 2014. The lowest MDD was reported by
27 the System in 2017 as 1,060,000 gallons per day. In accordance with California Code of
28 Regulations, Title 22, Section 64554(a), a public water system must at all times have

1 adequate source capacity to meet the highest 10-year MDD, which here would be
2 2,090,000 gallons from 2014. Using the System's most current production yield records
3 from July 2018, the System is producing a combined source flow of 720,000 gallons per
4 day, and therefore does not meet the maximum day demand (MDD) requirements.
5 Summaries of production data, system demand data, and a source capacity evaluation
6 were used to determine compliance with source capacity requirements and are included
7 in Appendix 4.

8
9 A water exchange agreement was signed on July 31, 2018 for an emergency
10 interconnection for the System with Phelan Pinon Hills CSD (hereinafter "CSD").
11 Because the agreement between the System and the CSD does not specify a minimum
12 flow that will be provided to the System and the water flow is intended to be used for
13 emergencies, the water flow from the interconnection cannot be considered when
14 calculating the System's compliance with source capacity MDD requirements.

15
16 On August 22, 2018 the System notified the Division of an impending water production
17 shortage. The System reported that on August 10, 2018 they began to receive water
18 from the CSD through their interconnection. After notifying the Division of the impending
19 water shortage, the System stated that they will continue relying on water purchased
20 from the CSD. The notification sent to the Division has been attached to this Order as
21 Appendix 4.

22
23 CHSC, Section 116555(a)(3) requires all public water systems to provide a reliable and
24 adequate supply of pure, wholesome, healthful, and potable water and CCR, Title 22,
25 Section 64554(a) requires that public water systems shall at all times have the capacity
26 to meet the System's maximum day demand (MDD) as established by Section 64554
27 subsection (b).

1 **DETERMINATION**

2 Based on the above Statement of Facts, the State Water Board has determined that
3 without additional source capacity, the System may not be able to provide an adequate
4 and reliable supply of water to its customers and has failed to comply with requirements
5 from CHSC, Section 116555(a)(3) and CCR, Title 22, Section 64554. The Division has
6 the authority under Sections 116655 (a)(2) and 116655 (b)(4) of the CHSC to take steps
7 necessary to prevent increasing water demands for the System until such time that an
8 adequate and proven source capacity is provided.

9
10 **DIRECTIVES**

11 To ensure that the water supplied by the System is at all times reliable and adequate,
12 the System is hereby directed to take the following actions:

- 13
- 14 1. Effective immediately, upon receipt of this Order, the Division imposes a service
15 connection moratorium on the System and directs the System to not make any
16 additional service connections to its water system, including any such service
17 connections for which a “will serve” letter was issued at any time by the System,
18 but for which a building permit was not issued prior to the date of this Order. As
19 used in this Order, “will serve” letter means any form of notice, representation or
20 agreement that the System will supply water to a property, parcel or structure.
21
 - 22 2. By **September 20, 2018**, the System must identify any and all properties for which
23 “will serve” letters have been issued, but a service connection has not been made.
24
 - 25 3. By **September 20, 2018**, the System must advise the owner(s) of those properties
26 that were issued will serve letters, and all appropriate local planning agencies that
27 the “will serve” letter issued for such property is null and void and may not be
28 relied upon for any purpose.
29

- 1 4. By **September 28, 2018**, the System must provide to the Division the following
2 documents:
3
- 4 a) Copies of all “will serve” letters issued by the System at any time for which a
5 service connection has not been made, including the address(es) or parcel
6 number(s) of the respective property(ies);
7
8 b) A list of properties that were provided “will serve” letters and have a building
9 permit(s) by the date of this order, including the address(es) or parcel
10 number(s) of the respective property(ies);
11
12 c) a list of the property owners and applicable planning agencies it notified that
13 its “will serve” letters are null and void along with a certification that the
14 required notification was completed by the System; and
15
16 d) a current list of all service connections, including the address of each.
- 17
- 18 5. On or before **November 20, 2018**, the System must submit to the Division a
19 completed feasibility study that must review the proposed options for meeting the
20 System’s water demand requirements. The Study must include consolidation with
21 nearby public water systems as an option. The feasibility study must discuss cost
22 estimates, including the operation and maintenance (O&M) costs, and the
23 potential environmental impacts of each of the options considered. The report
24 should identify a preferred alternative and include discussion on the reliability of
25 the selected preferred alternative, and an explanation for why the other options
26 were rejected.
- 27
- 28 6. After Division approval of the preferred alternative, prepare for Division approval
a Corrective Action Plan, identifying how it will implement the preferred alternative
to ensure that the System delivers an adequate and reliable water supply to its
consumers and addresses the System’s demand requirements. The plan must

1 include a time schedule for completion of each of the phases of the project, such
2 as design, financing, environmental review, construction, and startup, and a date
3 as of which the System will be in compliance with source capacity requirements,
4 which must be no later than **May 31, 2019**, unless the System is able to
5 demonstrate why a later compliance date is necessary.

6
7 7. On or before **December 20, 2018**, submit the Corrective Action Plan required
8 under Directive No. 6 above, to the State Water Board's office located at 464 W.
9 4th Street, Room 437 San Bernardino, CA 92401.

10
11 8. Perform the State Water Board approved Corrective Action Plan, and each and
12 every element of said plan, according to the time schedule set forth therein.

13
14 9. On or before **December 20, 2018** and every three months thereafter, submit a
15 report to the State Water Board in the form provided as Appendix 2 showing
16 actions taken during the previous quarter (calendar three months) to comply with
17 the Corrective Action Plan.

18
19 10. On or before **September 20, 2018** complete and return to the State Water Board
20 the "Notification of Receipt" form attached to this Order as Appendix 3.
21 Completion of this form confirms that the System has received this Order and
22 understands that it contains legally enforceable directives with due dates.

23
24 All submittals required by this Order, with exception of analytical results, must be
25 electronically submitted to the State Water Board at the following address. The subject
26 line for all electronic submittals corresponding to this Order must include the following
27 information: Water System name and number, compliance order number and title of the
28 document being submitted.

1 Eric J. Zúñiga, District Engineer

2 Dwpdist13@waterboards.ca.gov

3
4 The State Water Board reserves the right to make modifications to this Order as it may
5 deem necessary to protect public health and safety. Such modifications may be issued
6 as amendments to this Order and shall be effective upon issuance.

7
8 Nothing in this Order relieves the System of its obligation to meet the requirements of
9 the California SDWA (CHSC, Division 104, Part 12, Chapter 4, commencing with Section
10 116270), or any regulation, standard, permit or order issued or adopted thereunder.

11 12 **PARTIES BOUND**

13 This Order shall apply to and be binding upon the System, its owners, shareholders,
14 officers, directors, agents, employees, contractors, successors, and assignees.

15 16 **SEVERABILITY**

17 The directives of this Order are severable, and the System shall comply with each and
18 every provision thereof notwithstanding the effectiveness of any provision.

19 20 **FURTHER ENFORCEMENT ACTION**

21 The California SDWA authorizes the State Water Board to issue a citation or order with
22 assessment of administrative penalties to a public water system for violation or continued
23 violation of the requirements of the California SDWA or any regulation, permit, standard,
24 citation, or order issued or adopted thereunder including, but not limited to, failure to
25 correct a violation identified in a citation or compliance order. The California SDWA also
26 authorizes the State Water Board to suspend or revoke a permit that has been issued to
27 a public water system if the public water system has violated applicable law or
28 regulations or has failed to comply with an order of the State Water Board, or to petition

1 the superior court to take various measures against a public water system that has failed
2 to comply with an order of the State Water Board, including issuance of an injunction to
3 enforce a compliance plan, enjoining further service connections, or any other relief that
4 may be required to ensure compliance with the SDWA and applicable regulations. The
5 State Water Board does not waive any further enforcement action by issuance of this
6 Order.

7
8 **RIGHT TO PETITION**

9 CHSC section 116701(a) provides that any person aggrieved by this order may, within
10 30 days of the date of this order, petition the State Board for reconsideration. See
11 Appendix 1 for section 116701(b), which sets out the requirements for a petition.

12
13
14
15 *Sean F. McCarthy*
16 Sean F. McCarthy, P.E.

August 30, 2018
Date

17 Chief, South Coast Section

18 Southern California Field Operations Branch

19
20 Appendices [5]:

- 21 1. Applicable Statutes and Regulations
 - 22 2. Quarterly Progress Report
 - 23 3. Source Capacity Evaluation
 - 24 4. Notification of impending water shortage from System to Division
 - 25 5. Notification of Receipt Form
- 26
27



28 Certified Mail No. 7017 0660 0001 1704 7559