SAN LUIS WATER DISTRICT

2020 Water Management Plan

(2020 Criteria)

Final Approved by USBR – August 24, 2021

DATE SIGNED: **8-25-2021**

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A. History

San Luis Water District (SLWD or District) is located on the western side of the San Joaquin Valley near the City of Los Banos (see **Appendix B**). The earliest agricultural ventures in the area now included in SLWD took place prior to 1900 and consisted of the growing of small grains. Irrigation by private parties started in the late 1920's through the use of shallow wells. The availability of groundwater was limited, and the quality was relatively poor.

In the early 1950's the Delta-Mendota Canal (DMC), a major feature of the Central Valley Project (CVP), was constructed by the United States Bureau of Reclamation (USBR or Reclamation). During and after construction of the DMC, major development of farmland occurred on the western side of the San Joaquin Valley and led to the formation of SLWD and other water districts in the area.

SLWD was formed on January 23, 1951. The original size of SLWD was 50,576 gross acres (approximately 79 square miles). As a result of several inclusions and exclusions, the current gross acreage of SLWD is 64,554.

Historic population data for SLWD is not available. The current population within SLWD, including rural and urban areas, is approximately 1,900. The great majority of this population resides in and around the community of Santa Nella, which is located in the extreme northern portion of SLWD. Most of SLWD area is and will remain rural farmland with very few residents.

Irrigated acreage data is available beginning from 1960. Over the years, there has been a large shift in crop types from row crops to permanent crops (trees and vines).

Negotiations between SLWD and Reclamation for a water service contract began on January 24, 1951 when the District formally applied to Reclamation for CVP water. Pending completion of the long-term contract, SLWD began receiving water from the DMC in May of 1952 under temporary contracts with Reclamation. Improvement District No. 1 (ID 1) was formed in 1958 and currently consists of approximately 19,790 acres. A distribution system for ID 1 was completed in 1959. SLWD entered into a long-term contract with Reclamation on February 25, 1959 for a firm water supply of 93,300 acre-feet (AF). Temporary annual contracts were executed between 1964 and 1974 to provide for the delivery of municipal and industrial (M&I) water from the DMC.

The San Luis Unit of the CVP was constructed during the 1960's. SLWD began receiving agricultural and M&I service from the San Luis Canal (SLC) in 1967 through annual temporary contracts with Reclamation. Included as part of the construction of the San Luis Unit were nine CVP pumping facilities to provide water service to SLWD lands that are upslope of the SLC. Improvement District No. 2 (ID 2) and Improvement District No. 3 (ID 3), currently consisting of 5,640 and 10,690 acres, respectively, were formed in 1972 and receive service from the above-mentioned pumping facilities. On June 18, 1974, Reclamation and SLWD entered into a new long-term water service contract that provided for both agricultural and M&I service from either the DMC or SLC and increased SLWD's firm water supply to 128,000 AF. This contract does not identify specific quantities of agricultural versus M&I water nor does it identify specific quantities to be delivered from the DMC versus the SLC. SLWD also entered into a contract with Reclamation at this same time for a Public Law 130 construction loan to build distribution facilities for ID 2 and ID 3. These facilities were constructed during 1975 and 1976. Water deliveries to ID 2 and ID 3 began in January and March of 1977, respectively.

SLWD's water service contract was amended in 1975, as a result of excluding land from the District, to reduce the contract quantity by 2,920 AF. SLWD's current contract quantity is 125,080 AF.

Appendix C details SLWD's various water service contracts with Reclamation for project water. Contracts for non-project water, such as survival water contracts executed in 1977 and Warren Act contracts, are not included in **Appendix C**.

The Reclamation contract is SLWD's only long-term water supply. SLWD does not own any groundwater wells and has no other long-term contracts for surface or groundwater supplies. Approximately 6,000 acres within SLWD overlie usable groundwater supplies. The quality of the groundwater is poor, averaging in excess of 1,000 parts per million of total dissolved solids. Some of this acreage is served exclusively by wells, while in other cases the wells are used to supplement project water supplies. All wells in this area are privately owned and operated. SLWD does not have specific pumping information regarding these wells, but it is estimated each year that approximately 12,000 AF of groundwater is pumped annually. The District has plans to meter all of these wells within the next five years.

Recent Endangered Species Act (ESA) impacts have sharply constrained Delta pumping and reduced water supplies from the District's long-term CVP contract. These changes have reduced CVP allocations to SLWD from a historic average of 109,000 AF (1956-2007) to about 26,000 AF (2011-2020). Supplemental water transfers have always been used extensively by SLWD; however, the projected decreases in average CVP allocations will result in expensive supplemental water becoming the largest share of SLWD's water portfolio.

Virtually all of the transfers into SLWD are for a single year only and cannot be relied upon as a long-term supply. The District also has an extensive internal water transfer program for landowners and water users to better manage their water supplies to meet their needs.

Increasing water costs have caused significant changes in SLWD cropping patterns. Higher value permanent crops, such as orchards and vineyards have replaced row crops. Every indication is that the conversion away from row crops and towards orchards and vineyards will continue. **Table 5** in **Appendix G** illustrates the fact that over 75% of the irrigated land in SLWD was planted to permanent crops in 2020. Due to the increasing cost of supplemental water supply for the past five years, and the poor reliability of the CVP, the District cropping has been limited to permanent plantings with a slight decrease in overall cropping since 2015. The major limiting factors to

continued conversion are water supply and water supply reliability. The current unreliable nature of SLWD's water supply also acts as a detriment to continued conversion. There is an understandable reluctance by landowners to make the significant capital investments associated with an orchard or vineyard when the water supply is so uncertain and the long-term historic trend is a reduction in water supply reliability.

Irrigation methods have also changed over time. There has been a significant conversion to drip and micro irrigation systems over the last 15 years that has paralleled the above-mentioned crop conversion. In 2020, drip or micro irrigation systems were used in about 95% of irrigated acreage in the District. SLWD anticipates further increases of this percentage over time.

1. Date district formed: 1/23/1951

Date of first Reclamation contract: 1952 (temporary contract)

Original size (acres): 50,576 *Current year (water year)*: 2020*

*Data used in this WMP is for the 2020 'water year' which extends from March 1, 2020 to February 28, 2021.

2. Current size, population, and irrigated acres

	Year: 2020
Size (acres)	64,554
Population served	2008
Irrigated acres	32,928

3. Water supplies delivered in water year 2020

Water Source	*AF*
Federal urban water (Tbl 1)	549
Federal agricultural water (Tbl 1)	19,916
State water (Tbl 1)	0
Other Wholesaler (define) (Tbl 1)	0
Local surface water (Tbl 1)	0
Upslope drain water (Tbl 1)	0
District groundwater[1] (Tbl 2)	0
Banked water (Tbl 1)	0
Transferred water (Tbl 1)	55,354
Recycled water (Tbl 3)	0
Other (define) (Tbl 1)	0
Total	**75,819**

[1] The District does not own or operate any groundwater wells.

4. Annual entitlement under each right and/or contract

	AF/Y	*Source*	*Contract #*	*Availability period(s)*
Reclamation Urban	0			
Reclamation Agriculture	125,080	DMC/SLC	14-06-200-7773A	Ag and M&I supply, when contract water is available

5. Anticipated land-use change (for Ag contractors, also include changes in irrigated acres)

Some agricultural land has been converted to other uses, such as solar fields or endangered species mitigation banks. This trend is expected to continue due to water reliability issues. Currently SLWD has one residential development (59 residential connections) within its boundaries. Some other developments have been proposed for the area, but their timeline is unknown. There are no expected increases in urban demands since SLWD will likely require new urban developments to de-annex from the district due to lack of reliable water supplies.

6. Cropping patterns (Agricultural only)

Original Plan (1999)		*Previous Plan (2015 Data)*		*Current Plan (2020)*	
Crop Name	***Acres***	***Crop Name***	***Acres***	***Crop Name***	***Acres***
Alfalfa	2,176	Almonds	19,926	Almonds	21,135
Almonds	9,204	Wheat	4,396	Wheat	1,999
Beans	2,312	Pistachios	1,975	Pistachios	2,782
Cotton	11,518	Cotton	1,907	Cotton	1,326
Melons	4,858	Pasture & Range, Non-Irrigated	1,845	Pasture & Range, Non-Irrigated	1,905
Tomatoes	4,104	Tomatoes	1,540	Tomatoes	1,813
Other (<5%)	8,760	*Other (<5%)*	5,910	*Other (<10%)*	4,238
Total	**42,932**	***Total***	**37,499**	***Total***	**35,198**

7. Major irrigation methods (by acreage) (Agricultural only)

Original Plan (1999)		*Previous Plan (2015 Data)*		*Current Plan (2020)*	
Irrigation Method	***Acres***	***Irrigation Method***	***Acres***	***Irrigation Method***	***Acres***
Surface	16,326	Surface	3,646	Surface	1,307
Sprinkler	15,267	Sprinkler	434	Sprinkler	1,659
Drip & Micro	9,584	Drip & Micro	25,410	Drip & Micro	27,627
Total	**41,177**	***Total***	**29,490**	***Total***	**30,594**

Note: The difference between total acreage in Tables 6 and 7 for the Current Plan (2020) comes from the inclusion of dry farming (1,986.5), the use of stock water (287.0 ac), and well water usage without reported irrigation type (2,330.5), in Table 6.
Note: Surface Irrigation is a combination of furrow and border strip irrigation.

B. Location and Facilities

See **Appendix B** for maps containing the following: incoming flow locations, turnouts, outflow points, conveyance systems, reservoirs, District boundaries, drainage areas, and State and Federal facilities. The District does not have wells, groundwater facilities or water quality monitoring locations.

1. Incoming flow locations and measurement methods

Location Name	*Physical Location*	*Type of Measurement Device*	*Accuracy*
Delta-Mendota Canal	25 Turnouts	Propeller Meter	6%+/-
San Luis Canal	12 Turnouts	Venturi	6%+/-
San Luis Canal	23 Turnouts (Direct Service)	Propeller	6%+/-

2. Current year Agricultural Conveyance System

Miles Unlined - Canal	*Miles Lined - Canal*	*Miles Piped*	*Miles - Other*
3.2	14.3	52.0	0

The unlined canal section has been evaluated for lining but is not a good candidate due to its location in a flood zone. During floods the canal frequently fills with water and silt. SLWD uses high density polyethylene for canal liners, and this material can be easily damaged during de-silting operations. As a result, SLWD is investigating special design features or technologies to allow canal lining.

3. Current year Urban Distribution System

Miles AC Pipe	*Miles Steel Pipe*	*Miles Cast Iron Pipe*	*Miles PVC Pipe*
0	0	0	1.2

4. Storage facilities (tanks, reservoirs, regulating reservoirs)

Name	*Type*	*Capacity*	*Distribution or Spill*
Treated Water Tank	Bolted Steel	122,000 gallons	Neither

5. Description of the agricultural spill recovery system and outflow points

SLWD has 8 small reservoirs used to capture operational spills for pumping the water back into the delivery system. With the installation of automatic gate controllers and other canal improvements, operational spills are rare and of very limited volume.

6. Agricultural delivery system operation

Scheduled	*Rotation*	*Other (describe)*
100%		

7. Restrictions on water source(s)

Source	*Restriction*	*Cause of Restriction*	*Effect on Operations*
Federal CVP supply from the San Luis Canal and Delta-Mendota Canal	Contract limitations for CVP water supply (water shortage provisions of water service contract)	Water supply limitations, application of the ESA, and Delta water quality requirements	Variable water supply

8. Proposed changes or additions to facilities and operations for the next 5 years
No changes or additions to the District's facilities are proposed in the next 5 years (2021-2025). The District is fully developed and has a mature water conservation program.

Agricultural water demands are expected to remain relatively constant into the future. Urban demands are expected to decrease since SLWD is in the process of de-annexing Santa Nella County Water District. In addition, in the future SLWD will likely require that new urban developments also de-annex from the District.

C. Topography and Soils

1. Topography of the District and its impact on water operations and management
In general, SLWD's terrain slopes from west to east. Interstate 5 is the approximate dividing line between the hilly terrain to the west and the relatively level land to the east. Elevations within SLWD vary from 150 to 700 feet above sea level.

The hilly terrain in the western portion of SLWD prevents the use of surface irrigation methods. Virtually the entire acreage of ID 2 and ID 3 is irrigated with sprinkler or drip/micro irrigation systems.

Approximately 5,200 acres within SLWD have poor drainage. Drainage from this area is managed by a combination of public and private entities. Drainage from the majority of this land (3,752 acres) is managed by Charleston Drainage District (CDD). CDD collects and returns most of the drainage to reuse areas within CDD. The remaining portion of this drainage is collected and processed by the San Joaquin River Improvement Project. Pacheco Water District (PacWD) manages the drainage from another 792 acres. Drainage from the remaining 650 acres is managed privately. The location of the drainage areas in relation to the rest of SLWD is shown on the vicinity map in **Appendix B.**

Soil Problem	*Estimated Acres*	*Effect on Water Operations and Management*
Salinity	0	*No known salinity issues*
High water table	0	*No known high water table issues*
High or low infiltration rates	0	*No known infiltration rate issues*
Poor Drainage	5,200	*Managed by others (see Section 2.F)*

Reclamation has performed an Irrigation Suitability/Land Classification analysis for SLWD. Of the acres within SLWD eligible to receive a water allocation, approximately 10% were identified as Class 1 soils, 44% as Class 2, 42% as either Class 3 or 4, and 3% as Class 6. Classes 1 through 3 represent arable lands that are highly, moderately, and marginally suitable for irrigated farming, respectively. Class 4 represents lands suited for special uses and Class 6 represents land that is non-arable and non-irrigable.

2. District soil association map (Agricultural only)
See **Appendix B** for a table listing the soil units in SLWD.

3. Agricultural limitations resulting from soil problems (Agricultural only)
None.

D. Climate

1. General climate of the district service area

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Eto	1.13	1.98	3.64	5.42	7.29	8.23	8.59	7.74	5.63	3.87	1.93	1.15	56.6
Precipitation	1.62	1.69	1.43	0.59	0.36	0.07	0.03	0.03	0.10	.045	0.74	1.31	8.0
Average Temperature	44	48	53	58	64	72	76	75	71	62	51	44	60
Average Maximum Temperature	55	60	66	71	78	88	93	92	88	79	66	56	74
Average Minimum Temperature	36	38	41	44	49	56	59	58	55	47	39	34	46

Weather station ID: CIMIS Station 56 – Los Banos

Data period: June 1988 to January 2021

According to data from the National Centers for Environmental Information for the station in Los Banos, the area will have at least 290 freeze-free days in a year. The amount of freeze-free days is based on a 50% probability level and a frost temperature of 32 degrees F with the last frost date being February 10 and the first frost date being November 28.

2. Impact of microclimates on water management within the service area

During much of the irrigation season, the northern reaches of the District (ID 3) are prone to high winds generated over Pacheco Pass. Sprinkler irrigation is generally not practical in this area due to wind disruption of the sprinkler head pattern.

E. Natural and Cultural Resources

1. Natural resource areas within the service area

There are no natural resource areas within the District's service area.

Name	Estimated Acres	Description
None	0	

2. Description of district management of these resources in the past or present

Not applicable.

3. Recreational and/or cultural resource areas within the service area

There are no recreational or cultural resource areas within the District's service area. The District is adjacent to, but just outside of, the San Luis Recreation area.

Name	Estimated Acres	Description
None	0	

F. Operating Rules and Regulations

1. Operating rules and regulations

A copy of SLWD's Rules and Regulations is contained in **Appendix D**. The Rules and Regulations have been updated several times since 2015 including changes to Rule No. 7 pertaining to water transfers into and out of the district. Adopted changes include the removal of all permanent water transfers. Only annual and multi-year water transfers of less than 5 years are allowed when permitted by the SLWD Manager. This is the second amendment to Rule No. 7.

2. Water allocation policy (Agricultural only)

See Rule No. 6 of the district's Rules and Regulations (**Appendix D**).

Rule No. 6 provides information regarding water allocations. SLWD annually allocates the available CVP supply on a pro-rata acreage basis to all eligible parcels that have requested water for that particular year.

The allocation process for any extra water purchased by SLWD is determined annually. Under severe water shortages, extra water has generally been made available on a pro-rata acreage basis, while under above-normal water conditions extra water has generally been sold on a first-come-first-served basis.

3. Official and actual lead times necessary for water orders and shut-off (Agricultural only)

SLWD requires 24-hour notice for any change in a water delivery (i.e., order, adjustment, or cancellation). The 24-hour requirement is a result of SLWD's need to provide 24-hour notice of water deliveries to the California Department of Water Resources (DWR) and the San Luis & Delta-Mendota Water Authority (SLDMWA). However, SLWD often accepts water delivery changes from water users on less than 24-hour notice as long as the changes will not adversely impact operations of the DMC or SLC.

4. Policies regarding return flows (surface and subsurface drainage from farms) and outflow (Agricultural only)

Rule No. 4 (**Appendix D**) requires landowners to construct and maintain adequate drainage facilities so that adjacent or lower lying lands are not harmed by runoff and to ensure that water is being beneficially used. As a result of the high cost of SLWD water and the limited supply available, all irrigation runoff (tail water) is kept on-farm. Discharge of tail water is prohibited by Rule No. 4. The majority of land within SLWD does not have a drainage outlet. A small area of SLWD, consisting of approximately 5,200 acres, has a drainage outlet to the San Joaquin River Improvement Project.

5. Policies on water transfers by the District and its customers

Rule No. 7 (**Appendix D**) addresses water transfers. SLWD encourages and supports water transfers. However, since SLWD is chronically short of water, growers may only transfer water out to lands they own in other CVP districts, and the transfers cannot be permanent. A guiding principle for transfers out of the District is that such transfers shall not create an adverse impact on SLWD landowners and/or water users. In addition, the District has an extensive internal water transfer program.

G. Water Measurement, Pricing, and Billing

1. Agricultural Customers

The district had approximately 108 farming entities during the water year 2019-2020. The number of farming entities varies slightly from year to year.

Refer to BMP A.1. Information on water measurement for agricultural contractors is completed under BMP A.1 on page 26.

2. Urban Customers

a. *Total number of metered connections:* 163

b. *Total number of connections not billed by quantity:* 0

c. *Total number of metered and un-metered connections: 163*

d. Percentage of water that was measured at delivery point: 100%

e. Percentage of delivered water that was billed by quantity: 100%

f. Measurement device table

Meter Size and Type	*Number*	*Accuracy[1] (+/- percentage)*	*Reading Frequency (Days)*	*Calibration Frequency (Months)*	*Maintenance Frequency (Months)*
5/8-3/4" nutating disc	118[2]	+/- 5.5%	monthly	60	as needed
1" nutating disc	4	+/- 5.5%	monthly	60	as needed
1" Propeller	7	+/- 5.5%	monthly	60	as needed
1 ½" nutating disc	2	+/- 5.5%	monthly	60	as needed
2" nutating disc	3	+/- 5.5%	monthly	60	as needed
2" propeller	17	+/- 5.5%	monthly	60	as needed
3" propeller	2	+/- 5.5%	monthly	60	as needed
4" propeller	4	+/- 5.5%	monthly	60	as needed
6" propeller	2	+/- 5.5%	monthly	60	as needed
8" propeller	1	+/- 5.5%	monthly	60	as needed
10" propeller	2	+/- 5.5%	monthly	60	as needed
Venturi[3]	1	+/- 6%	twice week	annually	as needed
Total Meters	**163**				
Total Customers	**104**				

Notes

(1) Historically the District has calibrated meters only on an “as needed” basis and has not maintained calibration records. During the 2016-2020 Plan period, the District implemented a comprehensive program to test and calibrate all meters at least once every five years. All District meters have been calibrated and found that every meter reads within the allowable error of less than 5%.

(2) Includes two meters each for 59 customers, one for treated water and one for non-treated irrigation water.

(3) Wholesale turnout delivers water to Santa Nella County Water District. Meter is owned, maintained, and calibrated by DWR.

Wholesale M&I water is delivered from a metered turnout on the SLC to Santa Nella County Water District (SNCWD). DWR owns, maintains, and calibrates the master meter at the turnout.

SNCWD operates and maintains its own treatment plant and distribution system. SNCWD delivered 322 AF to approximately 560 service connections in 2020. SLWD does not have specific information regarding the number of maintenances, calibration, and frequency of meter reading for the SNCWD system.

All M&I water delivered directly to the customer by the district is metered, and the water use is billed on a monthly basis. All new developments are required to install meters on all connections (treated and untreated water). All meters purchased and installed have an initial factory calibrated accuracy of +/- 2%.

3. Agricultural and Urban Rates

a. Current year agricultural and/or urban water charges - including rate structures and billing frequency

See **Appendix E** for detailed information on agricultural water rates and fees.

Urban water fees are collected monthly and are summarized in the table below.

Urban Water Rates (2020)			
Description	***Monthly***	***CCF[1]***	***AF***
Service Fee	$10.50	-	-
Treated water (indoor use)	-	$27.78	$12,078
Raw water (outdoor use)	-	$0.45	$195

1) CCF = 100 cubic feet or 748 gallons

b. Annual charges collected from agricultural customers

Fixed Charges			
Assessment Code	***Acres / Parcels***	***Rate***	***Total***
AS0032-Standby Charge-Per Acre	56,794.44	$4.70	$266,933.87
AS0033-Standby Charge-Per Parcel	514	$4.70	$2,415.80
AS0435-ID No. 3 O&M Standby Charge	11,096.93	$20.00	$221,938.60
			$491,288.27

*Assessments summarized in this table do not provide for any water deliveries. With the exception of the $4.70 Standby charge and the $20.00 O&M charge for ID 3, all water delivery charges are quantity based and determined exclusively by metered usage.

Volumetric charges			
Charges ($ unit)	***Charge units***	***Units billed during year***	***$ collected ($ times units)****
(Ag) $171.42-$700 Average $359.55/AF	$/AF	76,763 AF	$27,754,401
(Untreated M&I) $113.35-$218.56 Average $156.23/AF**	$/AF	529 AF	$82,647
(Treated M&I) $3,390/AF	$/AF	25 AF	$84,750

*The $ collected is an estimate and is not an audited value. There is significant variability in the value of the water types delivered by the District. The water types delivered in the District range from allocated water (where costs are only delivery fees) to water acquired by the District to supplement its water supply. The cost of supplemental water can vary significantly depending on year type. Furthermore, the water is sold in blocks to growers prior to the water passing the meter, so any water the District sold may not be delivered in the year it's bought, therefore the charges only represent the rate of which the District sold water, not necessarily the value of the water that was delivered in any given year. The value of the water delivered to each user varies depending upon the supply of CVP allocated water and supplemental water that the user has requested. Since the charge ($/unit) includes the running average for the supplemental pools developed by the District to augment allocations, the $ collected may not be an accurate representation of what the District actually received.
**Average water costs for M&I supplies are lower than for ag. CVP M&I capital obligations have been retired and ag supplies include more expensive supplemental sources. Due to the M&I reliability preference, the great majority of M&I supply is derived from the District's long term CVP contract.

Subsequent to 2009 implementation of Biologic Opinions for Delta Smelt and salmonids, associated Delta pumping constraints reduced average SLWD CVP allocations (5-year, 10-year, 15-year, and 20-year weighted average supply has been 7%, 21%, 32%, and 40%, respectively). The difference between CVP allocations and demand must be satisfied by costly supplemental water. Prices for supplemental water are market driven and vary dramatically by source and water year type.

c. *Describe the contractor's record management system*

SLWD has a sophisticated data management system for water usage information and accounts. The water supply shortages that began occurring in 1990 resulted in SLWD having to implement and modify policies affecting both water and financial operations. For example, prior to water shortages, SLWD's primary water function was to meter deliveries to all water users and to bill accordingly. Water shortages forced SLWD to formally allocate the limited supply. In addition, shortages resulted in significantly more water transfers and introduced many additional types or categories of water, each with unique associated costs.

SLWD collaborated with others in developing a custom personal computer-based data management system. In general, the District wanted the software to manage all water transactions (allocations, orders, transfers, deliveries, etc.) and most financial transactions (billings, cash receipts, and accounts receivable). A separate accounting program would be used to handle general ledger, accounts payable, and payroll transactions. The District also desired features to facilitate the management of parcel, name, field, and turnout information. This custom software was named STORM and is now in use by numerous districts.

All SLWD water information, such as turnout deliveries, allocations, transfers, etc. is managed with STORM. This data is available to growers in a variety of formats. Data regarding water usage and remaining water quantities is routinely distributed on a monthly basis and is also made

available upon request. STORM can accommodate the tracking of water usage data to the field level if field information is supplied when water is ordered.

Water delivery data for turnouts and SLWD pumping plants on the DMC and SLC since 1958 is available. Water delivery information from SLWD turnouts since 1977 is available. This data has been computerized and is available upon the request of a landowner or water user.

Water charges for both agricultural and M&I customers are almost exclusively based on usage (water-based) charges. All parcels are assessed a standby charge to cover a portion of SLWD's administrative costs. With the exception of the stand-by charge the balance of water costs are usage based. One minor exception of note is ID 3, where deliveries are too small to cover Operations & Maintenance (O&M) revenue requirements. Parcels within the Improvement Districts are assessed one or more additional charges to repay capital costs associated with their respective water distribution systems. All assessments and standby charges are paid in two equal installments due January 1 and September 1 of each year.

Reclamation's cost of the allocated supply plus the SLDMWA's costs for operating and maintaining the federal delivery system is billed to landowners. A water application and a deposit billing are sent to landowners annually. The water application allows landowners to purchase none, a portion, or the entire amount of water available for that particular year. Failure to return a completed water application and to pay the deposit by March 1, results in the loss of a water allocation for that year. The final water billing detailing the exact quantity allocated to each parcel, the associated cost, the deposit payment made, and the remaining quantity owed is sent in June and is due July 1.

Water usage charges are billed on a monthly basis and include SLWD administrative charges, Reclamation's Restoration Fund charge, O&M charges associated with Improvement District or M&I development distribution systems, and other miscellaneous charges. Billings are generally generated by the tenth of the month following usage and become delinquent the tenth of the second month following usage. A uniform rate structure is used for water usage charges. STORM allows a tremendous amount of flexibility in assigning water rates for water usage billings. Water rates can be assigned to water categories, turnouts, fields, water users, or to any combination of these variables. Over 13,000 water rate assignments have been entered and are analyzed as part of each water usage billing. The STORM billing process uses a linear optimization algorithm to calculate the lowest possible cost for each water user. This process involves analyzing the actual location and quantity of water usage, the type and quantity of water supply available to a given water user, and the above-mentioned water rate possibilities. This sophisticated billing process has allowed SLWD to handle the billing complexities associated with multiple types of water and multiple water rates while at the same time simplifying the billing process for water users through the assurance that the bill generated represents the least possible cost. Water rate information is provided in **Appendix E**.

The Rules and Regulations in **Appendix D** contain additional information regarding charges and billing procedures. Rule No. 8 of Article I addresses water allocation, water delivery, and standby and assessment charges. Paragraph III of Article II specifically addresses billing and collection procedures for domestic water and/or sewer service.

See **Appendix F** for a sample water bill, which are sent to growers monthly. The bill clearly shows how much water was used and that it is billed on a volumetric basis. SLWD can provide extra copies of the bills for the past several years upon grower request.

H. Water Shortage Allocation Policies

1. Current year water shortage policies or shortage response plan - specifying how reduced water supplies are allocated

The available CVP supply is allocated on a pro-rata acreage basis to all eligible parcels whose owners have requested an allocation for that particular year. SLWD's water service contract requires that all agricultural water that is converted to M&I use be treated as an agricultural supply in the event of a water shortage. Consequently, all parcels within SLWD are generally treated equally for allocation purposes (Rule No. 6, **Appendix D**). The one exception to this is Reclamation's practice during recent water shortage years of allocating SLWD a quantity of M&I water based on "historical" M&I usage prior to 1990. When this has occurred, SLWD has generally maintained this same distinction when allocating water to property. No preference is given based on the type of crop being grown.

SLWD could not survive without the importation of supplemental supplies. Historically those supplies augmented the District's CVP allocations. In recent years, that trend has been reversed and a majority of the District's supplies are imported from sources other than its long-term CVP contract. Both the District and individual growers must aggressively pursue other water supplies to avoid loss of permanent crops.

Additional information on water allocation procedures is included in Rule No. 6 of the Rules and Regulations (**Appendix D**).

SLWD also has a Drought Management Plan found in **Appendix I**. The plan documents the water shortage allocation policy, procedure for determining drought severity, policy for declaring droughts, operational adjustments to droughts, mitigation actions, and impact of droughts on revenues.

2. Current year policies that address wasteful use of water and enforcement methods

The General Manager has the authority to immediately terminate water deliveries to any water user that is wasting water (See Rule No. 4 in **Appendix D**). The limited quantity of extremely expensive water available to SLWD water users has virtually eliminated wasteful use and the need to exercise this authority.

I. Evaluate Policies of Regulatory Agencies Affecting the Contractor and Identify Policies that Inhibit Good Water Management.

The criteria and policies governing the Bay-Delta have restricted water deliveries to SLWD. Both the quantity and reliability of water deliveries to the District have been seriously eroded. These policies need to be revised or the water supply augmented, if SLWD is ever to receive a reliable water supply again.

Section II: Inventory of Water Resources

A. Surface Water Supply

SLWD's only long-term source of water is Contract No. 14-06-200-7773A with Reclamation for 125,080 AF/year. This supply equates to a maximum supply of 2.1 AF per acre to those parcels within SLWD eligible to receive an allocation. SLWD does not have a contract for SWP water nor does it have any other source of local surface supply.

1. Surface water supplies in acre feet, imported and originating within the service area, by month (Table 1)

See Water Inventory Tables, Table 1 (**Appendix G**).

2. Amount of water delivered to the District by each of the District sources for the last 10 years

See Water Inventory Tables, Table 8 (**Appendix G**).

B. Groundwater Supply

1. Groundwater extracted by the district and delivered, by month (Table 2)

None by SLWD. See Table 2 in **Appendix G** and Section 2.B.5 below.

2. Groundwater basin(s) that underlies the service area

Name	Size (Square Miles)	Usable Capacity (AF)	Safe Yield (AF/Y)
Delta Mendota	187.5	Unknown	115,000+ historic
Los Banos Creek Valley Sub Area	7.5	Unknown	10,000-15,000 estimated

Note: Only a small portion of these basins underlie SLWD

3. Map of District-operated wells and managed groundwater recharge areas

The District does not own any wells or currently operate managed groundwater recharge areas.

4. Description of conjunctive use of surface and groundwater

The District participates in the Meyers Family Farms Groundwater Bank, which is described below under 6. Groundwater Banking Plan.

5. Groundwater Management Plan

In 2014, the California legislature passed the Sustainable Groundwater Management Act (SGMA) to bring aquifers to a sustainable condition. SLWD is located above Northern & Central Delta-Mendota region of the Delta-Mendota Subbasin. The region is located at the western edge of the subbasin and lies within five counties including San Joaquin, Stanislaus, Merced, Fresno, and San Benito. SLWD and seven other federal contractors in the same geographic area cooperated in the development of a Groundwater Sustainability Plan (GSP) in compliance with SGMA. A copy of the GSP be found on the SLWD website.

The Delta-Mendota sub-basin of the San Joaquin Basin underlies a portion of SLWD. The San Joaquin Basin is a 13,500 square-mile basin with a storage capacity of 570,000,000 AF and a usable capacity of 80,000,000 AF (DWR Bulletins 118-75 and 118-80).

SLWD does not own or operate any groundwater wells. There are approximately 22 private agricultural wells located several miles south of Los Banos that provide all or a portion of the water supply to approximately 6,000 acres within the District Service Area (DSA). There are no agricultural wells within the three improvement districts. SLWD estimates that landowner wells within the DSA pump approximately 12,000 AF annually.

The horizontal groundwater flow direction in the semi-confined zones is northeast, towards the San Joaquin River from the Coast Ranges, typically causing subsurface outflow from the area. In the confined zone beneath the Corcoran Clay, water tends to move southwesterly.

SLWD has participated with the SLDMWA and other neighboring districts in the approval and implementation of annual programs to allow individual landowners to pump groundwater into the DMC for credit.

6. Groundwater Banking Plan

SLWD does not have a groundwater recharge or banking project of its own. SLWD has stored water in the Kern Water Bank in the past. Meyers Family Farms has developed private groundwater banking facilities located outside SLWD. A primary purpose of the facilities is to provide a more secure water supply for the individual's orchards located within SLWD. The District assists by facilitating the water exchange with USBR so banked water can be returned to the District. The District currently has 5,000 acre-feet stored in this bank.

C. Other Water Supplies

1. "Other" water used as part of the water supply

SLWD has no other long-term supplies of either surface or ground water. Due to ESA-driven water allocation reductions and drought, SLWD routinely purchases supplemental water on the open market. Most such purchases are for one year; however, a few supplemental water sources are based on five-year agreements.

The only other source of water for SLWD is precipitation. SLWD has assumed that 50% of the precipitation in December and January and 100% of the remaining precipitation is considered effective.

D. Source Water Quality Monitoring Practices

1. Potable Water Quality (Urban only)

SLWD operates a water treatment facility supplying treated water to homes and several commercial customers. A copy of the District's latest Consumer Confidence Report is included as **Appendix H**.

2. Agricultural water quality concerns: *Yes* _____ *No* X

SLWD does not independently monitor surface water quality in the DMC or SLC. Water quality in these canals is monitored by the SLDMWA and the DWR and is available to SLWD upon request. Agricultural and M&I use is not limited by the quality in either of these canals.

3. Description of the agricultural water quality testing program and the role of each participant, including the District, in the program

DWR routinely monitors water quality in the SLC at numerous points for total dissolved solids (TDS), electrical conductivity (EC), salinity, chlorides, and numerous other constituents. The SLDMWA monitors water quality in the DMC at numerous locations, routinely testing TDS, EC, salinity, selenium, boron, arsenic, and mercury. See **Appendix L** for a comprehensive description of the monitoring plan.

All groundwater wells participating in the DMC pump-in program (where growers are paid to pump groundwater into the DMC) are analyzed at least once every three years for agricultural constituents. Wells upstream of check 13 are tested for the full suite of Title 22 Drinking Water standards. **See Appendices L** and **M** for more information. The District contracts with certified labs to collect and analyze samples.

The District is a member of the West Side San Joaquin River Watershed Coalition pursuant to the Regional Board's Irrigated Lands Regulatory Program. Water quality samples are occasionally taken at four sample points in the District. EC and toxicity analyses are initially performed. If laboratory flora or fauna responses indicate toxicity, samples are further analyzed for pesticides and herbicides. Flows at the District's sampling points occur infrequently and only during substantial local storm events.

4. Current water quality monitoring programs for surface water by source (Agricultural only)

DWR routinely monitors water quality in the SLC at numerous points for TDS, EC, salinity, chlorides, and numerous other constituents. The SLDMWA monitors water quality in the DMC at numerous locations, routinely testing TDS, EC, salinity, selenium boron, arsenic, mercury, and other constituents. **See Appendix L** for more information.

5. Current water quality monitoring programs for groundwater by source (Agricultural only)

See **Appendix M** for sample laboratory reports from wells participating in the DMC Groundwater Pump-in program.

E. Water Uses within the District

1. Agricultural

See Water Inventory Tables, Table 5 - Crop Water Needs in **Appendix G**

2. Types of irrigation systems used for each crop in current year

The table below lists the acreage of different irrigation methods used in SLWD. Data is not available to correlate irrigation system use with exact acreage of each crop type. However,

based on past data and local knowledge, the typical crops used for each irrigation method are provided.

Irrigation System	Acreage	Percent	Typical Crop Types
Border Strip / Furrow	1,307	4%	Border Strip - Alfalfa, Corn, cotton, Wheat
			Furrow - Alfalfa, Corn, Cotton, Melons, Oats, Tomatoes, Vegetables, Mixed (Fresh Market), Wheat
Sprinkler	1,659	6%	Alfalfa, Almonds, Cherries, Cotton, Melons
Low Volume	27,627	90%	Alfalfa, Almonds, Apples, Apricots, Cherries, Citrus, Corn, Cotton, Melons, Oats, Olives, Peaches, Pistachios, Prunes, Tomatoes, Vines, Walnuts
Total	30,594	100%	

Note: The difference between total acreage in this table and the table in Section A.6 comes from the inclusion of dry farming (1,986.5), the use of stock water (287.0 ac), and well water usage without reported irrigation type (2,330.5).

3. Urban use by customer type in current year

Customer Type	*Number of Connections*	*Year 2020 Use (AF)*
Single-family	59	66
Commercial	6	17
Wholesale	1	322
Other	10	144
Total	83	549

The District serves urban water uses with a portion of its M&I water supply and the urban water use total should not be confused with the District's M&I total water use. Urban water users include the San Luis Hills water system, truck plaza businesses, and Santa Nella County Water District (SNCWD). San Luis Hills water users are served by the District and have a dedicated line for raw outdoor water and a dedicated line for treated indoor water. Santa Nella County Water District receives wholesale urban water from the District to serve their connections.

No increases in urban use are anticipated. In fact, urban use within SLWD is expected to decrease as SLWD and SNCWD are actively working to de-annex SNCWD from SLWD. Under the proposed de-annexation, SLWD would partially assign a portion of its current CVP allocation to SNCWD. Additionally, the latest water permit issued for the San Luis Hills area mandates that no new residential or commercial connections be made to SLWD. The only feasible development would need to utilize groundwater, which would not occur on any significant level due to the lack of good quality groundwater throughout most of the District

4. Urban Wastewater Collection/Treatment Systems serving the service area

Treatment Plant	Treatment Level (1, 2, 3)	AF	Disposal to / uses
San Luis Hills/Plaza	3 (Tertiary)	23	Landscaping, spray field, & fire control
	Total	23	
Total discharged to ocean and/or saline sink		0	

SLWD owns and operates a 75,000 gallon per day tertiary treatment wastewater facility. This facility has been operational since 1994 and is designed to serve approximately 60 homes and several commercial businesses (San Luis Hills/Plaza). The treated effluent is stored on site in a lined pond. A minimal amount is used for landscape irrigation associated with the commercial users, and the balance is discharged as necessary to a designated spray field. Water in the lined storage pond can also be used for fire control.

5. Groundwater recharge in current year (Table 6)

Recharge Area	Method of Recharge	AF	Method of Retrieval
Myers Groundwater Bank	Infiltration	112	Exchange

Geologic conditions preclude intentional groundwater recharge in most of SLWD. There is no managed groundwater recharge occurring within SLWD. Minimal deep percolation infiltrates to a usable groundwater source and is considered incidental groundwater recharge, while the remainder infiltrates to a saline sink or in areas that have no usable groundwater. Outside of the District boundaries, SLWD participates in the Myers Groundwater Bank and deposited 112 AF in 2020.

6a. Transfers and exchanges into the service area in current year – (Table 1)

In nearly all year types, SLWD must transfer into the District additional supplies to meet water needs. Over the past 20 years increasingly diminished CVP water allocations have exacerbated the water supply shortfall.

The number of “internal” transfers is dependent upon the CVP allocation and SLWD’s allocation policy. Another key factor affecting the number of internal transfers is SLWD’s allocation policy. For a number of years, SLWD allocated water directly to water users (i.e., lessees or landowners farming their own property). Beginning in 1993, SLWD decided to allocate water to landowners. Each landowner was then responsible for transferring some or all of the allocation to the actual water user on his/her property. This change was made to ensure that landowners had complete control of the water allocation associated with their property. This policy change greatly increased the number of internal transfers.

In 2020 SLWD performed numerous small transfers with many different agencies. This situation is typical since SLWD can have difficulty securing large or long-term transfers, and typically multiple small transfers are needed to meet water demands. Details of all the transfers are not considered relevant and are not provided here, but SLWD did transfer in 41,868 AF in 2020.

6b. Transfers and exchanges out of the service area in current year – (Table 6)

Given the chronic shortfall of CVP allocations, transfers out of the District are generally limited in number and quantity. Grower transfers out of the District are prohibited except for a grower transferring to lands they hold in other districts. In addition, the District has adopted policies further limiting transfers out of the District during low allocation years.

In 2020, SLWD transferred 4,807 AF out of the District.

7. Wheeling, or other transactions in and out of the District boundaries – (Table 6)

SLWD has an annual wheeling arrangement with Central California Irrigation District (CCID) and Reclamation for approximately 400 AF of water. Approximately 150 acres in the DSA near the northern boundary of SLWD do not have a distribution system from the DMC or the SLC. Since this property is located adjacent to CCID's Outside Canal, arrangements have been made for CCID to wheel a portion of SLWD's federal water supply to this property.

From Whom	*To Whom*	*2020 (AF)*	*Use*
CCID	SLWD	229	Irrigation
	Total		

SLWD does not have any other major wheeling agreements.

SLWD participates in the "Water Reallocation Agreement Among the United States, Santa Clara Valley Water District, and the San Luis & Delta-Mendota Water Authority," executed in April of 1997. The main purpose of the agreement is to encourage Santa Clara Valley Water District (SCVWD) to maximize the use of SWP and local water supplies and to minimize the use of CVP supplies, thereby making more CVP supplies available to other contractors with the SLDMWA. Prior to this agreement, SCVWD had been reluctant to minimize the use of CVP supplies since Reclamation's M&I allocation formula was based, in part, on historical usage. The agreement calls for certain districts within the SLDMWA to provide the difference between 75% of SCVWD's contractual supply and 75% of SCVWD's historical usage in those water short years when Reclamation's M&I allocation process would be applicable. In return for this increased level of certainty, SCVWD agreed to provide 100,000 AF of water, within a 10-year period, to those districts providing the increased certainty. SLWD is one of the districts providing the increased certainty. This agreement runs through 2023. SCVWD has delivered their 100,000 acre-foot obligation. Signatories to this agreement, including SLWD, have specific reciprocal obligations if in the future certain M&I shortage conditions occur.

8. Other uses of water

Other than those stated above, the District has no additional uses of water.

Other Uses	*AF*
None	

F. Outflow from the District (Agricultural only)

Aside from runoff generated only in substantial storm events, no water flows out of the District except limited subsurface drainage from a drainage management area. These drainage flows are measured and managed by Charleston Drainage District (CDD).

Specific drainage volumes for 2020 are not yet available from CDD. However, in past years they collected approximately 2,000 AF of drain water. Of that amount, some is recycled and blended to irrigate crops, while the rest is delivered to the San Joaquin River Improvement Project (SJRIP) area or discharged to the San Joaquin River. The drain water is mingled with other drainage flows and there is no way to breakout reused drainage verses drainage that is discharged.

The District's drainage area (approximately 5,200 acres) is part of a 97,000-acre regional drainage entity known as the Grassland Basin Drainers (GBD). The GBD are formed together through an Activity Agreement under the umbrella of the SLDMWA. The GBD have entered into an agreement with Reclamation for use of a portion (28 miles) of the San Luis Drain to discharge subsurface drainage from these lands to the San Joaquin River.

These subsurface drainage waters are high in salinity, boron, and selenium. The subsurface drain water was historically discharged northerly into Grassland Water District and beneficially used for wetland purposes. In 1983 selenium was discovered to be detrimental to waterfowl in the wetlands areas. In order for the Grassland Drainers to continue to be able to discharge drain water to the San Joaquin River, an alternative management program was required.

In 1996 the Grassland Bypass Project was implemented to manage these subsurface drainage waters as they flow through the wetlands. This resulted in the use agreement for the San Luis Drain. The use agreement includes strict limits on how much drainage water (selenium and salt load) can be discharged to the San Joaquin River which subsequently were adopted by the Regional Water Quality Control Board into waste discharge requirements. The GBD have implemented a multi-phased management program to control drainage discharges.

The GBD have implemented policies to reduce and control drainage including limitation of tail water, selenium load allocation, a tradable selenium loads policy, and a monitoring program. Lands within SLWD have installed improved on-farm water application equipment through State Revolving Fund loans and have also installed a drain water recycling system to limit drainage discharge and conserve water supplies.

Further information on regional drainage issues can be found in the Westside Regional Drainage Plan in **Appendix K**. Additional information regarding long-term management within the Grassland Drainage Area can be found in the "Long-Term Drainage Management Plan for the Grassland Drainage Area," dated September 30, 1998, and as updated July 1, 1999. In addition, an annual report is prepared for the Grassland Bypass Project. Copies of these documents are available upon request.

1. Surface and subsurface drain/outflow

Outflow point	*Location description*	*AF[1]*	*Type of measurement*	*Accuracy (%)*	*% of total outflow*	*Acres drained*
SLWD Drainage Area	See **Appendix B**	700 (est.)	Propeller Meters	+/-6%	100%	5,194

1 – Value is estimated since 2020 data is not yet available from Charleston Drainage District

Outflow point	*Where the outflow goes*	*Type Reuse*
SLWD Drainage Area	Used on the SJRIP	Irrigation

Drainwater leaving the District is either reused on the SJRIP or discharged through the Grassland Bypass Project to the San Luis Drain. All drain water is measured by propeller meter at three pump stations. The drain water is mingled with other drainage flows and there is no way to breakout reused drainage verses drainage that is discharged.

Beginning in 2007, CDD began implementing an aggressive recycling program that recirculates the majority of the produced drain water back into the irrigation system to reduce the overall drainage production.

Additional details on the regional drainage plan are provided in **Appendix K**.

2. Description of the Outflow (surface and subsurface) water quality testing program and the role of each participant in the program

The District does not test the quality of outflow water. However, the Grassland Bypass Project does test water quality for subsurface drainage.

3. Outflow (surface drainage & spill) Quality Testing Program

Analyses Performed	*Frequency*	*Concentration Range*	*Average*	*Reuse Limitation?*
Selenium	Bi-weekly	0.05 mg/L to 0.15 mg/L	.08 mg/L	selected crops/blending
Boron	Bi-weekly	4.8 mg/L to 6.8 mg/L	6.1 mg/L	selected crops/blending
EC	Daily	748 µs/cm to 6700 µs/cm	~5100 µs/cm	selected crops/blending

Water quality analyses are typically performed bi-weekly, as grab samples at the discharge point. EC reading are taken daily, Monday through Friday (holidays excepted).

Laboratory analyses are performed for selenium and boron. Field measurements for EC are performed using a calibrated field EC meter. Concentrations vary widely throughout the month and year. Approximate ranges by constituent are summarized above.

4. *Provide a brief discussion of the District's involvement in Central Valley Regional Water Quality Control Board programs or requirements for remediating or monitoring any contaminants that would significantly degrade water quality in the receiving surface waters.*

> *Districts included in the drainage problem area, as identified in "A Management Plan for Agricultural Subsurface Drainage and Related Problems on the Westside San Joaquin Valley (September 1990)," should also complete Water Inventory Table 7 and Addendum C (include in plan as Attachment J)*

The District is not responsible for groundwater remediation or contaminant plume management; therefore, they are not involved directly in any Central Valley Regional Water Quality Control Board programs. Those responsibilities are assigned to other agencies such as cities, counties, the USEPA, or California Department of Toxic Substances Control. SLWD tries to stay informed of contaminant plumes and their management and remediation within District boundaries. SLWD also takes practical measures to prevent groundwater quality degradation.

The District conforms to requirements of the Regional Board's Irrigated Lands Regulatory Program by way of its membership in West Side Water Quality Coalition, support for which is funded by an assessment voluntarily imposed on each irrigated acre in the District. The District promotes the application of best management practices to improve the quality of run-off during major storm events.

G. Water Accounting (Inventory)

Go to Chapter 5 for Agricultural Water Inventory Tables and Instructions.

Go to Chapter 6 for Urban Water Inventory Tables and Instructions.

Section III: Best Management Practices (BMPs) for Agricultural Contractors

A. Critical Agricultural BMPs

1. Measure the volume of water delivered by the district to each turnout with devices that are operated and maintained to a reasonable degree of accuracy, under most conditions, to +/- 6%

a. *Number of active delivery points (turnouts and connections):* 212[3]

b. *Number of delivery points serving more than one farm:* 14 (at 4 different sites)

c. *Number of measured delivery points (meters and measurement devices):* 235

d. *Percentage of delivered water that was measured at a delivery point:* 100%

e. *Total number of delivery points not billed by quantity:* 0

f. *Delivery point measurement device table*

Measurement Type	*Number*	*Accuracy (+/- %)*	*Reading Frequency (Days)*	*Calibration Frequency (Months)*	*Maintenance Frequency (Months)*
Orifices					
Propeller meter	235[1]	+/-6%	See Below	60	annually
Weirs					
Flumes					
Venturi	7[2]	+/- 6%		60	
Metered gates					
Acoustic doppler					
Other (define)					
Total	**242**				

1. Includes 70 meters maintained and calibrated by SLDMWA and DWR
2. Owned, maintained, and calibrated by DWR
3 Excludes inactive services which have been blind flanged

One hundred percent (100%) of the water deliveries within SLWD are metered. Deliveries through turnouts serving the DSA and through SLWD turnouts are metered with volumetric propeller meters. All pumping plants are equipped with venturi-type differential pressure flow meters. Meters on the DMC and SLC are maintained and calibrated by the SLDMWA and the DWR, respectively. The meters for turnouts on SLWD's distribution system are maintained and calibrated by SLWD. Every SLWD meter is inspected and maintained annually. Historically calibration has been performed when determined necessary by SLWD or when requested by a water user. All meters purchased by SLWD are accurate to within two percent when purchased

Meter readers routinely time the flow in District meters to confirm totalizer accuracy. The District has historically performed formal calibration tests of meters only on an "as needed" basis, only when discrepancies are noted. SLWD has not historically maintained calibration records for each meter. However, since the 2015 Water Management Plan update the district has maintained each meter and found all meters read within the allowable error of no greater than 6%.

The SLDMWA and DWR read meters weekly to semi-weekly. SLWD meters within IDs 1 and 2 are read daily, and ID 3 meters are read weekly.

There are approximately 125 water users within SLWD. Fourteen metered turnouts serve more than one customer. At these fourteen locations, in addition to the master meter, additional in-line propeller meters have been installed on each point of use. These sub-meters are on located on private property, are owned and maintained by the water users, and are used to allocate by user the total amount measured at each master meter. At all times the amount of water allocated to the sub meters equals the total recorded on the District's meter.

The SLDMWA calibrates 29 meters on the DMC, pursuant to a maintenance and measurement program approved by USBR. DWR reads, maintains, and calibrates 41 meters on the SLC.

The District also plans to start metering flow on all private wells within the next five years. The District does not own any wells.

The District's dispute policy is documented in their Rules and Regulation (see **Appendix D**). Rule No. 19 – Handling Disputes, discusses the process that would be used for disputes regarding meter readings and billings.

2. Designate a water conservation coordinator to develop and implement the Plan and develop progress reports

Name: Steven Stadler, P.E. *Title:* District Engineer

Address: PO Box 2135, Los Banos, CA 93635

Telephone: (209) 826-4043 *E-mail:* sstadler@slwd.net

Steven Stadler, P.E., the District Engineer, is the designated Conservation Coordinator. He is currently responsible for coordinating all District activities and goals discussed in the Water Management Plan. Specifically, the Water Conservation Coordinator assisted with planning new facilities, attending regular Board meetings, and implementing Best Management Practices. All these tasks further the goals and objectives in the USBR Best Management Practices Guidelines. Steven Stadler is currently designated to continue his role as the Conservation Coordinator. His responsibilities will include management and on-going evaluation of BMPs, identifying new water conservation and water management programs, maintaining records on BMPs including water supply statistics and expenditures, and preparing annual and five-year updates to the Water Management Plan. The is a part-time job for the District Engineer who also has several other responsibilities.

3. Provide or support the availability of water management services to water users

See Attachment 2, Notices of District Education Programs and Services Available to Customers.

The District maintains an extensive library of educational materials available upon request. Brochures and other literature are also made available for general distribution to interested parties.

The District holds a minimum of two workshops per year which all landowners and growers are strongly encouraged to attend. In the past the workshops have focused on water supply issues

and District policies. Beginning in the fall of 2021, participants will also be informed of evolving water management services and practices. Subjects will include topics such as on-farm evaluations, water quality management, pump testing, irrigation system conversions, and funding for grower projects.

The District has included links on the District website to informational webpages related to irrigation information and irrigation technology. Links include the Cal Poly Irrigation Training and Research Center website as well as Groundwater Sustainability and Irrigated Lands Regulatory Program plans.

The District regularly sends information to growers through the mail. During the past few years these have primarily included newsletters related to the Irrigated Lands Regulatory Program and Sustainable Groundwater Management Act. Copies of some of the SGMA newsletters are found in **Attachment 2**. Topics addressed included the Sustainable Groundwater Management Act, Groundwater Sustainability Plan preparation, groundwater sustainability, water quality and public outreach opportunities.

a. On-Farm Evaluations

1) On farm irrigation and drainage system evaluations performed or funded by the District using a mobile lab type assessment during the past five years

	Total in district	*# surveyed last year*	*# surveyed in current year*	*# projected for next year*	*# projected 2nd yr in future*
Irrigated acres					
Number of farms	0	0	0	0	0

The table above shows that the District has not performed or funded any on-farm evaluations, however, as described below, the District is facilitating grower efforts to perform evaluations.

Mobile Lab services were first made available to SLWD customers in 1986. Since then, they have been offered through several funding sources including SLWD, Los Banos Resource Conservation District, San Joaquin Valley Drainage Program, USDA Agricultural Research Service Water Management Unit, SLDMWA, USBR, and the Irrigation Training and Research Center at California Polytechnic University, San Luis Obispo. SLWD now posts organizations that will perform on-farm evaluations on the SLWD website.

Given rapidly increased water costs and diminished supplies, SLWD growers have become keenly aware of the need for on-farm efficiency. Given the soaring cost of water and limited availability, many, if not most growers, rely on irrigation consultants or trained farm staff for on-farm evaluations.

SLWD performed an in-depth agronomic analysis on all the farms within the Charleston Drainage District from 2013 – 2018 as part of their Drainwater Master Plan. The analysis presented an initial assessment of the water quality irrigation suitability constraints related to blending drain water with the district's surface water supply for use in Improvement Districts No.1 and No. 2. The analysis identified key water quality

thresholds based on district cropping patterns and quantified possible blending ratios based on idealized conditions. The District will make the data from the analysis available upon request.

In addition, in the future, the District will present an exhibit on on-farm evaluation funding opportunities (if any are presently available) with a representative present at the District's fall grower's workshop.

2) Timely field and crop-specific water delivery information to the water user

All SLWD delivery points are metered and totalized allowing customers to read meters serving their property as frequently as desired. The District also provides customers with documented monthly water use statements detailing water use by turnout within ten (10) days after the end of the month following delivery. SLWD routinely provides reports detailing all activity on a customer's water account (allocations, transfers, usage, etc.) along with actual deliveries through each turnout. The delivery report will also include deliveries to each field if a customer has chosen to supply field information. These reports are mailed to all customers at least monthly and are provided at any time upon request by phone, e-mail, or fax.

b. Real-time and normal irrigation scheduling and crop ET information

Due to the high cost of water, most growers are keenly aware that irrigation efficiency is critical. In SLWD most growers employ irrigation consultants or have on staff experts. A spot phone survey revealed that daily and weekly evapotranspiration (ET) data is typically accessed from California Irrigation Management Information System (CIMIS), Westlands Water District web site, and daily reports broadcast on KMJ radio.

Ground truthing by soil probing and crop observation is also critical to optimizing irrigation schedules and crop coefficients. Soil moisture data is collected by hand boring, soil probe, and increasingly by permanent probes which transmit real time soil moisture data. Private systems installed by larger growers in San Luis Water District have telemetered weather stations transmitting real time ET and other data from their dedicated weather stations. Several companies provide such instrumentation and routinely market such products to SLWD growers.

A large majority of district farmers have real time ET and soil moisture probes to set irrigation schedules. Within the next five years, the District will perform a survey of growers on who use these monitoring tools.

Although it is believed that growers throughout SLWD are aware of how to access this information, the District has posted the location of the local CIMIS station on its website.

c. Surface, ground, and drainage water quantity and quality data provided to water users

SLWD does not independently monitor surface, ground, or drainage water quality. Water quality data for the DMC and the SLC, which are the sole sources of SLWD's water supply, are available from Reclamation, DWR, and/or the SLDMWA upon request.

As mentioned previously in this Plan, SLWD does not own or operate any groundwater wells. Private wells are used as a sole or supplemental source in only a small portion of SLWD. In those years where certain wells are allowed to discharge into the DMC, the SLDMWA conducts a thorough monitoring and management program regarding water quality.

The District's Groundwater Sustainability Plan contains significant information on the quality of groundwater in SLWD and surrounding areas. A copy of the plan is provided on the District's website (https://slwdwater.com/).

An extensive drain water quantity and quality monitoring program is conducted within the drainage area as part of the Grasslands Bypass Project (**Attachment 1**).

d. Agricultural water management educational programs and materials for farmers, staff, and the public

The District holds a minimum of two workshops per year which all landowners and growers are strongly encouraged to attend. In the past the workshops have focused on water supply issues and District policies. Beginning in the fall of 2021, participants will also be informed of evolving water management services and practices. Subjects will include topics such as on-farm evaluations, water quality management, pump testing, irrigation system conversions, and funding for grower projects. The District had planned to being this educational program in fall 2020, but the growers workshop was cancelled due to the pandemic.

The District regularly sends information to growers through the mail. During the past few years these have primarily included newsletters related to the Irrigated Lands Regulatory Program and Sustainable Groundwater Management Act. Copies of some of the SGMA newsletters are found in **Attachment 2**. Topics addressed included the Sustainable Groundwater Management Act, Groundwater Sustainability Plan preparation, groundwater sustainability, water quality and public outreach opportunities.

e. Other

None.

4. Pricing structure - based at least in part on quantity delivered

SLWD's water pricing structure is based almost entirely on volumetric delivery charges. With the exception of a standby charge, all of the District's water charges are quantity based. All water related costs are collected based on the volume of water delivered (see **Appendix G**). The District pricing structure also includes several incentive pricing policies that are discussed in Section 3.B.4 – Incentive Pricing. Refer to **Appendix E** for tables showing the District's water rates.

5. Evaluate and improve efficiencies of district pumps

When delivering water, District staff compares pump output against historic capacity. Underperforming pumps are refurbished when possible. Pumps are tested for efficiency every 5 years and 30 have been completed in the last 4 years. This program is funded by the San Luis & Delta-Mendota Water Authority.

	Total in district	# surveyed last year	# surveyed in current year	# projected for next year
Wells	0			
Lift pumps	30	6	6	6

B. Exemptible BMPs for Agricultural Contractors

(See Planner, Chapter 2, Addendum B for examples of exemptible conditions)

1. Facilitate alternative land use

Drainage Characteristic	Acreage	Potential Alternate Uses
High water table (<5 feet)	0	None identified by SLWD
Poor drainage	5,200	Solar Development, Dry Land Farming, Habitat
Groundwater Selenium concentration > 50 ppb		To be determined by Charleston Drainage District, See Attachment 1
Lower productivity	15,000-18,000	Dry-land farming, urban development, energy projects, grazing and/or habitat

A generalized description of the District's 64,554 acres can be *approximated* as follows:

Ownership	Acreage	Uses
Private	27,856	Permanent Crops
Private	7,341	Annual Crops
Private	21,424	Frequently fallowed, grazing, habitat, roads, easements, future M&I
Private	1,916	M&I, Rural Residential, future M&I
USA	5,534	CVP project facilities, habitat, parks
State	481	Habitat, highway corridors

Approximately 15,000-18,000 acres of the District is generally lower producing due to soil type and/or micro-climate. Over time, it has been increasingly difficult for these lands to support the relentlessly increasing cost of water and production. They will likely remain permanently fallowed and their water supply transferred to more productive lands. Additional lands are periodically fallowed due to increasingly frequent water supply shortages. In low allocation years, many row crops are abandoned, and water supplies moved to permanent crops.

Less than 50% of the District is currently irrigated. Due to reduced water supply allocations and the shift towards higher valued permanent crops some lands will no longer be used for farming purposes. While some landowners are currently fallowing land on an annual basis to use the water allocation on permanent crops, very little water has been permanently stripped from farmland for these other uses. The District's Board of Directors has developed policies and procedures to facilitate and manage this shift in land and water use (See Rule No. 7.D. in **Appendix D**).

Multi-Year Lease Program

The District exercised a "Multi-Year" Lease Program, where-by landowners transfer their water rights to the District for either three or five years in return for an annual payment of $40 per acre. The result was a guaranteed annual income per acre to participating landowners, regardless of the CVP allocation, without the obligation to pay for their water allocation. In turn this water is

made available to higher value crops. This program continued through 2020 and is likely to continue into the future. The requirements of the program are explained in Rule No. 7 in the Rule and Regulations (**Appendix D**).

Land Retirement

The Record of Decision for USBR's San Luis Drainage Feature Re-evaluation identifies land retirement as a suitable alternative to the provision of drainage service. Out of the 5,200 acres in SLWD determined to be "drainage impaired," the District has secured a permanent, recorded, non-irrigation covenant from a landowner who has proposed the development of a solar energy project on these lands. This is an on-going process to develop the land. The remaining SLWD lands with a subsurface drainage problem will be retired, converted to alternative land uses, or provided drainage service. See **Attachment 1** for details.

The District also generally supports and encourages conversion to other land uses that use less water than irrigated crops, such as solar fields and endangered species mitigation banks. The District also supports non-irrigation covenants to help reduce water demands or to convert impaired lands to other uses.

2. Facilitate use of available recycled urban wastewater

Sources of Recycled Urban Waste Water	*AF/Y Available*	*AF/Y Currently Used in District*
San Luis Hills/Plaza Treatment Facility (2015)	23	4*

**Treated water in the lined reservoir is used for fire control and landscape irrigation as needed*

The only available source of recycled water is from SLWD's wastewater treatment facility, which treats to a tertiary level. This plant serves portions of the San Luis Hills community. As mentioned previously in this Plan, only a minor amount of development is served by this facility, and the annual production of treated wastewater is only 23 AF (2020). A portion of this total is required to remain in a lined reservoir for fire suppression purposes, and as much as possible is used for landscape needs associated with the businesses served by the facility. Any remaining amount is discharged to a designated spray field. No other uses are cost effective. No crop irrigation occurs within two miles of the treatment facility.

The District is close to de-annexing the Santa Nella County Water District and will likely require that new urban developments also de-annex from the District. Consequently, the district sees no other potential opportunities for sources of wastewater to recycle.

3. Facilitate the financing of capital improvements for on-farm irrigation systems

Approximately 95% of irrigated land is already drip or low flow systems. In addition, some of the crops not using low flow irrigation systems may not be conducive to those methods. As a result, this BMP has limited benefit to the District. Nevertheless, SLWD will continue to promote on-farm irrigation improvements.

SLWD previously supported a State Revolving Fund loan program to assist local growers with irrigation efficiency enhancements. The loan program is no longer available.

The District now provides links on their website for grant programs that fund irrigation system conversion. The programs linked on the SLWD website are related to financial and technical resources to support water management efficiencies for interested growers. More specifically, the website links include programs through Natural Resources Conservation Service (NRCS), and California Department of Food and Agriculture (CDFA).

4. Incentive pricing

Structure of incentive pricing	*Related goal*
Formal District Clearing House for Internal Water Trades	Encourages more efficient water use at the farm level
Bilateral Farm Trades	Encourages more efficient water use at the farm level
High unit water cost	Encourages more efficient water use at the farm level

Reclamation's Incentive Pricing handbook, dated June 1998, identified six examples of programs that meet the requirement of the incentive pricing BMP. SLWD has implemented three of these examples to encourage more efficient water use at the farm level. Following is a description of each of these programs:

Formal District Clearing House For Internal Water Trades – As previously explained, internal water transfers are used extensively by water users within SLWD. All internal transfers are administered by the District. The District maintains a specific water account for each water user that details the various categories of water available to the user and the transactions specific to each category (i.e., allocations, usage, transfer in or out, etc.). Written transfer agreements are required to transfer water from one user to another. Any financial arrangements between the buyer and seller are handled outside of the District transfer process. Water users are provided summaries, at least monthly, that detail all transactions, including transfers, to their water account.

In addition to internal transfers, SLWD allows landowners the opportunity to transfer some or all of their allocated supply to the District (Multi-Year Lease Program) in return for financial compensation. This water is then combined with other water acquired by the District and sold to water users within the District that request additional water supplies.

Bilateral Farm Trades – Because SLWD has chronically short water supplies, growers may only transfer water out of the District if they are transferring to land they own or lease in another district. Such transfers require the water user to execute a written transfer agreement with the District and the District to execute a formal transfer agreement, requiring Reclamation approval, with the receiving district. SLWD does not charge any type of transfer fee but does collect district administrative and O&M charges that would have been applicable had the transferred water been delivered within the District.

High Volumetric Pricing – In order to qualify as an acceptable program, Reclamation's Incentive Pricing handbook requires that: (i) the district's water supply is less than ET and the average on-farm efficiency is greater than 80%; or (ii) that the district's volumetric rates are higher than $75 per acre-foot. Section 2 of this Plan documented the water supplies available to the District and the ET of the various crops grown within the District. SLWD's water supply is clearly less than ET, especially since the implementation of ESA-driven pumping constraints in the Delta. Current long-term (5-year to 20-year) weighted average supply has been 7%-40% for federal contractors south

of the Delta. Most importantly, the District's volumetric rates all exceed $75 per acre-foot, providing a costly but very effective incentive to conserve.

5. Conveyance Infrastructure

a) Line or pipe ditches and canals

SLWD's current distribution system consists of 52 miles of pipelines, 14.3 miles of lined canals, and 3.2 miles of unlined canals. Consequently, over 95% of the District's water delivery system is either pipeline or lined canal.

In 2009, SLWD applied for and received a CALFED Water Use Efficiency Grant to install HDPE lining in 3.2 miles of unlined canal. The District ultimately decided not to accept the grant because this section of canal is prone to periodic over-topping during major storm events. It was determined to be impractical to clean HDPE lined canals. However, recently new technology and features such as cleanout vaults could be available and allow the last 3.2 miles of canal to be lined and cleaned. Hence, the District may investigate lining the canal in the future.

Canal/Lateral (Reach)	*Type of Improvement*	*Number of Miles in Reach*	*Estimated Seepage (AF/Y)*	*Accomplished/ Planned Date*
None				

b) Construct/line regulatory reservoirs

The District currently has six regulating reservoirs for its pump station distribution system. The regulating reservoirs for pump stations #6, #8 and #10 serve as lift reservoirs for pump stations #7, #9, and #11, respectively. The reservoirs for pump stations #7, #9 and #11 serve as terminal reservoirs for each pump station. All pump station reservoirs provide a source of hydrostatic head for their respective service connections. While there is a need for increased water storage within the District, there is no identified need for regulatory reservoirs at this time.

Reservoir Name	*Location*	*Describe improved operational flexibility and AF savings*
No additional regulation reservoirs are needed or planned		

6. Increase flexibility in water ordering by, and delivery to, water users

Currently all water orders are made by phone, but the District plans to move to a fully online ordering system in the next five years. This will increase flexibility for the farmer and the District.

Copies of a sample water bill, annual water application, and water transfer form are included in **Appendix F.**

SLWD requires 24-hour notice by phone for any change in a water delivery (i.e., order, adjustment, or cancellation). The 24-hour requirement is a result of SLWD's need to provide 24-hour notice of water deliveries to the DWR and the SLDMWA. SLWD often accepts water delivery

changes from water users on less than 24-hour notice as long as the changes will not adversely impact operations of the DMC or SLC.

The District's operations are essentially on demand and water orders are not delayed due to capacity constraints in their infrastructure, even during peak demands. The District is as flexible as feasible with their current system. The District's 24-hour notice policy was established more as a guarantee that if a grower places their order 24 hours in advance they will get the water delivered. In comparison, some agencies operate on a rotation due to limited conveyance capacity, or are unwilling or unable to accommodate orders placed within 24 hours. SLWD provides the most flexible and rapid deliveries possible with their system.

7. Construct and operate District spill and tailwater recovery systems

Terminal reservoirs are located at the end of the Relift and Third Lift Canals, and each has pump-back facilities to return any operational spills to the canal. Due to the installation of flow control gates on the Relift Canal, virtually no water spills into the reservoir located at the end of this canal. This reservoir is only used for emergency spill situations. Improvements have also been made to the Third Lift Canal. As a result, virtually no water spills into the reservoir located at the end of this canal. If spills occur, the water is pumped back into the canal for delivery.

No operational spills occur from the pipeline distribution systems within SLWD.

Distribution System Lateral	*Annual Spill (AF/Y)*	*Quantity Recovered and reused (AF/Y)*
SLWD has 8 spill recovery reservoirs. These are rarely used due to automation improvements made to the irrigation system. Any water spilled is returned to the irrigation system.	0	
Total	0	

In theory, irrigation water could flow into Little Panoche Creek or Los Banos Creek. However, SLWD's Rule No. 18 (**Appendix D)** prohibits the discharge of tail water into district facilities. All tail water must be kept on-farm. (Note: Rule 18 was modified in 2005 to specifically prohibit any discharge of water to other lands or natural stream channels.)

Acres where tail water does drain into distribution system: None

Annual tail water collected (AF/Y): None

Acres where tail water is currently lost: None

Estimated potential additional tail water recovery (AF/Y): None
(Measure within 3 years.)

Drainage System Lateral	*Annual Drainage Outflow (AF/Y)*	*Quantity Recovered and reused (AF/Y)*
Total	700 (est.)	1,500 (est.)

8. Plan to measure outflow.

No water is known to flow out of the district except for an estimated 700 AF of drain water monitored and measured at three locations by Charleston Drainage District. A 30% design has been completed for a project to capture and reuse drain water.

Rule 18 of the District Rules and Regulations prohibits the discharge of such water from landowner's parcels. The California Regional Water Quality Control Board Irrigated Lands Monitoring Program monitors water quality of storm water run-off at four locations. Storm water flow is intermittent, occurring only during major local storm events.

Total # of outflow (surface) locations/points 0

Total # of outflow (subsurface) locations/points 3

Total # of measured outflow points 3

*Percentage of total outflow (volume) measured during report yea*r 100%

Identify locations, prioritize, determine best measurement method/cost, submit funding proposal

Location & Priority	*Estimated cost (in $1,000s)*				
	Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*
None	0	0	0	0	0

9. Optimize conjunctive use of surface and groundwater

SLWD is participating in groundwater recharge or banking projects. Groundwater resources and banking opportunities are extremely limited within the District's boundaries. The District participates in a regional groundwater bank to place some surplus water to recover in drier years.

Los Banos Creek Diversion Project. The District is collaborating with several other Districts to enhance groundwater recharge in the Los Banos Creek drainage area. A 30% Design has been completed with further planning and environmental work under way.

DMC Pump Back Program. SLWD has participated with the SLDMWA and other neighboring districts in the approval and implementation of annual programs to allow individual landowners to pump groundwater into the DMC for credit.

Myers Groundwater Bank. Meyers Family Farms has developed private groundwater banking facilities located outside SLWD. A primary purpose of the facilities is to provide a more secure water supply for the individual's orchards located within SLWD. The District assists by facilitating the water exchange with USBR so banked water can be returned to the District. The District currently has 5,000 acre-feet stored in this bank.

10. Automate distribution and/or drainage system structures

The entire SLWD irrigation system is automated. The system includes downstream level control and a SCADA system to assist with operations. No additional improvements are planned or needed at this time.

11. Facilitate or promote water customer pump testing and evaluation

Benefits from pump efficiency testing include identifying older, inefficient wells that need repair or replacing and identifying the most efficient wells to use first during groundwater pumping. This can ultimately lead to energy and cost savings. However, only 2-3% of farmers in the District have groundwater wells due to poor groundwater quality.

In the past pump efficiency testing was performed by the SLDMWA, but this program is no longer active. However, the SLWD website now points to a PG&E technical and financial assistance program for pump testing and other pumping efficiency studies and improvements. The program is administered through CSU Fresno. The program offers incentives for testing each deep wells (> 50 horsepower). This would cover part of the cost for a pump test.

12. Mapping

The District has geographic information system (GIS) maps of their distribution system and drainage system and intends to update maps as changes are made. Soils data is available from NRCS soils maps. The District does not own any wells and, but does keep track of existing wells as part of the Sustainable Groundwater Management Act. The District also has no natural or cultural resources. **Appendix B** includes copies of location and facility maps. Future work will be limited to updating maps with new information.

GIS maps	*Estimated cost (in $1,000s)*				
	2020	**2021**	**2022**	**2023**	**2024**
Layer 1 – Distribution system	0.2	2.5	0.5	0.5	2.5
Layer 2 – Drainage system					
Suggested layers:					
Layer 3 – Groundwater information	0.5	0.5	0.5	0.5	0.5
Layer 4 – Soils map					
Layer 5 – Natural & cultural resources					
Layer 6 – Problem areas					

C. Provide a 3-Year Budget for Implementing BMPs

1. Amount actually spent during current year.

SLWD does not track costs specifically related to water management for the BMPs. The costs below are estimates.

1. Projected budget summary for the Current year

Current Year BMP #	*BMP Name*	*Budgeted Expenditure (not including staff time)*	*Staff Hours*
A1	Measurement	$40,000	100
A2	Conservation staff	$0	40
A3	On-farm evaluation/water delivery info irrigation Scheduling Water quality Agricultural Education Program	$1,000 $500 $3,500 $0	25 20 10 20
A4	Quantity pricing	$0	20
A5	Contractor's pumps	$295,000	80
B1	Alternative land use	$0	20
B2	Urban recycled water use	$0	40
B3	Financing of on-farm improvements	$0	50
B4	Incentive pricing	$0	40
B5	Line or pipe canals/install reservoirs	$150,000	80
B6	Increase delivery flexibility	$0	20
B7	District spill/tailwater recovery systems	$0	10
B8	Measure outflow	$0	0
B9	Optimize conjunctive use	$438,750	80
B10	Automate canal structures	$0	20
B11	Customer pump testing	$0	25
B12	Mapping	$1,500	40
	Total	**$930,250**	**740**

Hours and costs are estimated

2. Projected budget summary for the 2nd year

Year 2 BMP #	BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
A1	Measurement	$30,000	80
A2	Conservation staff	$0	40
A3	On-farm evaluation/water delivery info irrigation Scheduling Water quality	$1,000 $500 $2,500	25 20 10

Year 2 BMP #	BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
	Agricultural Education Program	$2,500	20
A4	Quantity pricing	$0	20
A5	Contractor's pumps	$150,000	80
B1	Alternative land use	$0	20
B2	Urban recycled water use	$0	40
B3	Financing of on-farm improvements	$0	50
B4	Incentive pricing	$0	40
B5	Line or pipe canals/install reservoirs	$0	60
B6	Increase delivery flexibility	$0	20
B7	District spill/tailwater recovery systems	$0	10
B8	Measure outflow	$0	0
B9	Optimize conjunctive use	$1,500,000	80
B10	Automate canal structures	$0	20
B11	Customer pump testing	$500	25
B12	Mapping	$2,500	20
	Total	**$1,689,500**	**680**

Hours and costs are estimated

3. Projected budget summary for the 3rd year

Year 3 BMP #	BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
A1	Measurement	$30,000	80
A2	Conservation staff	$0	40
A3	On-farm evaluation/water delivery info irrigation Scheduling Water quality Agricultural Education Program	$1,000 $500 $2,500 $2,500	25 20 10 20
A4	Quantity pricing	$0	20
A5	Contractor's pumps	$150,000	80
B1	Alternative land use	$0	20
B2	Urban recycled water use	$0	40
B3	Financing of on-farm improvements	$0	50
B4	Incentive pricing	$0	40
B5	Line or pipe canals/install reservoirs	$1,500,000	80
B6	Increase delivery flexibility	$1,500,000	80
B7	District spill/tailwater recovery systems	$1,500,000	80
B8	Measure outflow	$0	0

Year 3 BMP #	BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
B9	Optimize conjunctive use	$0	0
B10	Automate canal structures	$0	20
B11	Customer pump testing	$500	25
B12	Mapping	$500	20
	Total	**$4,687,500**	**560**

Hours and costs are estimated

4. Projected budget summary for the 4th year

Year 4 BMP #	*BMP Name*	*Budgeted Expenditure (not including staff time)*	*Staff Hours*
A1	Measurement	$40,000	100
A2	Conservation staff	$0	40
A3	On-farm evaluation/water delivery info irrigation Scheduling Water quality Agricultural Education Program	$1,000 $500 $3,500 $0	25 20 10 20
A4	Quantity pricing	$0	20
A5	Contractor's pumps	$295,000	80
B1	Alternative land use	$0	20
B2	Urban recycled water use	$0	40
B3	Financing of on-farm improvements	$0	50
B4	Incentive pricing	$0	40
B5	Line or pipe canals/install reservoirs	$150,000	80
B6	Increase delivery flexibility	$0	20
B7	District spill/tailwater recovery systems	$0	10
B8	Measure outflow	$0	0
B9	Optimize conjunctive use	$438,750	80
B10	Automate canal structures	$0	20
B11	Customer pump testing	$0	25
B12	Mapping	$1,500	40
	Total	**$930,250**	**740**

Hours and costs are estimated

5. Projected budget summary for the 5th year

Year 5 BMP #	*BMP Name*	*Budgeted Expenditure (not including staff time)*	*Staff Hours*
A1	Measurement	$40,000	100

Year 5 BMP #	*BMP Name*	*Budgeted Expenditure (not including staff time)*	*Staff Hours*
A2	Conservation staff	$0	40
A3	On-farm evaluation/water delivery info irrigation Scheduling Water quality Agricultural Education Program	$1,000 $500 $3,500 $0	25 20 10 20
A4	Quantity pricing	$0	20
A5	Contractor's pumps	$295,000	80
B1	Alternative land use	$0	20
B2	Urban recycled water use	$0	40
B3	Financing of on-farm improvements	$0	50
B4	Incentive pricing	$0	40
B5	Line or pipe canals/install reservoirs	$150,000	80
B6	Increase delivery flexibility	$0	20
B7	District spill/tailwater recovery systems	$0	10
B8	Measure outflow	$0	0
B9	Optimize conjunctive use	$438,750	80
B10	Automate canal structures	$0	20
B11	Customer pump testing	$0	25
B12	Mapping	$1,500	40
	Total	**$930,250**	**740**

Hours and costs are estimated

Section IV: Best Management Practices for Urban Contractors

Following are the best management practices for the District's urban supply. The District provides both retail water to San Luis Hills and wholesale water to Santa Nella County Water District. Some of the BMPs below are not implemented or are implemented on a small scale due to the limited size or the urban water deliveries. This retail water system includes only 59 residential units, an RV Park and several commercial connections. The system used only 0.3% of the total water delivered in SLWD in 2020. As a result, implementing some BMPs are not economical or practical.

A. BMP COMPLIANCE METHODOLOGY

The San Luis Water District supplies urban water to the communities of San Luis Hills and Santa Nella. The District complies with the Urban Contractor BMPs through the GPCD (gallons/capita/day) method using foundational practices with a calculation of GPCD. The district has water conservation ordinances in place that allow for water to be better managed and conserved during dry years. The information below describes how that task is completed. In 2020, the residential household use was only 420 gallons per day. Population data for San Luis Hills is not available, however, assuming 3.5 people per household, the per capita use would only be 120 gallons/day, largely a result of conservation pricing described below.

B. FOUNDATIONAL BMPS

1. Operations Programs

1.1 Operations Practices

A.1) Conservation Coordinator

Name: Steven Stadler, P.E. Title: District Engineer
Address: PO Box 2135, Los Banos, CA 93635

Telephone: (209) 826-4043 E-mail: sstadler@slwd.net

Steven Stadler, P.E., the District Engineer, is the designated Conservation Coordinator. He is currently responsible for coordinating all District activities and goals discussed in the Water Management Plan. Specifically, the Conservation Coordinator assisted with planning new facilities, attending regular Board meetings, and implementing Best Management Practices for Urban Contractors. All these tasks further the goals and objectives in the USBR Best Management Practices Guidelines. Steven Stadler is currently designated to continue the role as the Conservation Coordinator. His responsibilities will include management and on-going evaluation of Urban BMPs, identifying new water conservation and water management programs, maintaining records on Urban BMPs including water supply statistics and expenditures, and preparing annual and five-year updates to the Water Management Plan. This is a part time position; the District Engineer has several other duties including implementing the agricultural BMPs in the District.

A.2) Water Waste Prevention

The purpose of water waste prevention is to ensure that the District's M&I water supply is put to beneficial use, that waste and unreasonable use of water is prevented, and to establish an

incremental water conservation plan in the case of severe drought/water shortage. Listed below are certain wasteful practices that have been prohibited in the District Rules and Regulations (Article II, Section 4):

Water Waste Prohibited: The following uses of water are prohibited at all times:

i Run Off - Use of water in a manner or to an extent that results in water running to waste down a sidewalk, gutter, storm drain, ditch, or across adjacent property
ii Plumbing Leaks - the escape of water through leaks, breaks, or other malfunction in the water users plumbing, distribution, or irrigation systems
iii Use of Open Hose - Use of a hose for any wash down not equipped with an automatic shut off nozzle.
iv Untended Hose - Irrigation of trees and shrubs with an untended hose
v Fire Hydrant - the use of any fire hydrant for purposes other than fire suppression without the express approval of the District

The limited quantity of extremely expensive water available to SLWD water users has virtually eliminated wasteful use and the need to exercise this authority.

A.3) Wholesale Agency Assistance Programs

The District provides wholesale water to the Santa Nella County Water District (Santa Nella). The water supplied only meets a portion of Santa Nella's water demands, so they also pump groundwater. SLWD does not provide wholesale assistance programs since Santa Nella already has a mature water conservation program.

1.2 Water Loss Control

Urban water losses are minimized and corrected in a timely manner using a fully metered system. Two sets of meters are used and regularly checked and maintained by the District. A meter is placed at the head of the system to calculate total urban flow and meters are placed at each delivery point to totalize water used. Any discrepancies between the sum of all delivery meters and the head meter indicate water losses and leaks are fixed.

1.3 Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections

All urban delivery points serviced by the district have two meters for domestic and landscape purposes. Each meter is priced with different commodity rates to encourage water conservation.

1.4 Retail Conservation Pricing

The District provides conservation pricing by charging for water volumetrically; hence water users have incentive to conserve water. San Luis Hills also has a dual pipe system with different pipes for treated indoor and raw outdoor water. These two water sources are priced differently, providing incentive for residents to conserve higher priced treated water.

Most importantly, the water rates are high compared to other urban systems, which is a result of water scarcity in the area, and high costs associated with operating a very small water treatment plant. In 2020, outdoor water costs were $195/AF and indoor water costs were $12,078/AF. These high costs provide a strong incentive to conserve water.

2. Information Programs

2.1 Public Information Programs – New residents are given a copy of the District Rules and Regulations (**Appendix D**) when they first move to ensure they are aware of the water conservation ordinance. The public is informed of drought conservation measure through letters sent by the District. A copy of an example letter declaring a drought can be found in **Attachment 2**.

2.2 School Education Programs - There are no schools within the District service area.

C. PROGRAMMATIC BMPS

3. Residential

The District does not offer residential assistance programs, landscape water surveys, high efficiency washing machine rebates, or high efficiency toilet rebates. Due to the size of the water system (59 residential connections) these types of programs are not efficient or cost effective. In addition, they are not considered necessary due to the impact of conservation pricing and metering.

The District does not have jurisdiction over development and plumbing specifications, such as WaterSense requirements for new developments. In addition, due to water scarcity, new development in San Luis Hills is not permitted to connect to the District's water system

Below are some sections of the District's Water Conservation Ordinance from the District Rules and Regulations that are pertinent to residential water use:

Penalties for Violation: Penalties for violation of any water conservation rule as provided in this Article 4 are as follows:

i. First violation - warning
ii. Second violation - $25 fine
iii. Third violation - $50 fine
iv. Fourth and all subsequent violations - $100 each

All fines are payable with the next water bill.

Water Shortage Stages:

Stage I Conservation Measures: Implemented when the District's CVP water supply allocation is 50% or below, and/or upon declaration of a Stage I shortage by the Board of Directors.

i. Washing exterior surfaces - the washing of sidewalks, fences, walls, driveways, buildings, tennis courts etc. is prohibited except where public health or safety would otherwise be compromised.
ii. Washing vehicles - the washing of cars, trucks, trailers, boats, machinery etc. is prohibited except with a bucket and hose with automatic shut off nozzle or at commercial wash facilities.
iii. Water use shall be reduced by 25%

Stage II Conservation Measures: Implemented when the District's CVP water supply allocation is 25% or below, and/or upon declaration of a Stage II shortage by the Board of Directors.

iv. Washing vehicles - the washing of cars, trucks, trailers, boats, machinery etc. is

prohibited except at commercial wash facilities.

v. Residential lawn watering is prohibited.
vi. Refilling swimming pools is prohibited except by water sources approved by the General Manager.
vii. Irrigation of trees and shrubs is prohibited except by handheld hose equipped with an automatic shut off valve.
viii. Irrigation of golf course fairways is prohibited.
ix. Water use shall be reduced by 40%.

4. Commercial, Industrial, and Institutional (CII)

Specific BMPs are not provided for CII customers. However, the water conservation measures from the Rules and Regulations related to water waste, drought declaration and fines and penalties (all described above) also apply to CII customers.

5. Landscape

The District's Rules and Regulation state the following:

Alternate Watering Days: Addresses ending in an even number may water landscaping only on Tuesdays, Thursdays, and Saturdays. Addresses ending in an odd number may water landscaping only on Wednesdays, Fridays, and Sundays

D. Provide a 5-Year Budget for Expenditures and Staff Effort for BMPs

SLWD does not track costs specifically related to water management for the BMPs. The costs below are estimates.

1. **Projected budget summary for current year**

Current Year BMP #	BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
1	Utility Operations		
1.1	Operation Practices	$150,000	80
1.2	Water Loss Control	$15,000	240
1.3	Metering	$30,000	240
1.4	Retail Conservation Pricing	$2,500	96
2	Educational Programs		
2.1	Public Information Programs	$2,500	24
2.2	School Educational Programs	$0	0
3	Residential	$0	8
4	CII	$0	8
5	Landscape	$0	8
	Total	**$200,000**	**704**

2. **Projected budget summary for 2nd year**

Year 2 BMP #	BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
1	Utility Operations		
1.1	Operation Practices	$150,000	80
1.2	Water Loss Control	$15,000	240
1.3	Metering	$30,000	240
1.4	Retail Conservation Pricing	$2,500	96
2	Educational Programs		
2.1	Public Information Programs	$2,500	24
2.2	School Educational Programs	$0	0
3	Residential	$0	8
4	CII	$0	8
5	Landscape	$0	8
	Total	**$200,000**	**704**

3. **Projected budget summary for 3rd year**

Year 3 BMP #	BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
1	Utility Operations		
1.1	Operation Practices	$150,000	80
1.2	Water Loss Control	$15,000	240
1.3	Metering	$30,000	240
1.4	Retail Conservation Pricing	$2,500	96
2	Educational Programs		
2.1	Public Information Programs	$2,500	24
2.2	School Educational Programs	$0	0
3	Residential	$0	8
4	CII	$0	8
5	Landscape	$0	8
	Total	**$200,000**	**704**

4. **Projected budget summary for 4th year**

Year 4 BMP #	BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
1	Utility Operations		
1.1	Operation Practices	$150,000	80
1.2	Water Loss Control	$15,000	240

Year 4 BMP #	BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
1.3	Metering	$30,000	240
1.4	Retail Conservation Pricing	$2,500	96
2	Educational Programs		
2.1	Public Information Programs	$2,500	24
2.2	School Educational Programs	$0	0
3	Residential	$0	8
4	CII	$0	8
5	Landscape	$0	8
	Total	**$200,000**	**704**

5. **Projected budget summary for 5th year**

Year 5 BMP #	BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
1	Utility Operations		
1.1	Operation Practices	$150,000	80
1.2	Water Loss Control	$15,000	240
1.3	Metering	$30,000	240
1.4	Retail Conservation Pricing	$2,500	96
2	Educational Programs		
2.1	Public Information Programs	$2,500	24
2.2	School Educational Programs	$0	0
3	Residential	$0	8
4	CII	$0	8
5	Landscape	$0	8
	Total	**$200,000**	**704**

Section V: District Water Inventory Tables

The District Water Inventory Tables are included in **Appendix G**.