



# **APPENDIX H**

## **Detailed Capital Improvement Recommendations**

**Table H-1: Water System - Hydraulic Capacity Deficiency Related Improvement Projects**

Project No.	Water Pressure Zone	Description	Model Junction IDs	Model Pipe IDs	System Benefit	Notes	Street Type	Project Type	Pipe Size	Quantity	Phase	Severity	Construction Costs	
												(3-1)	Unit Cost	Total Cost
<b>Hydraulic Capacity Projects</b>														
WH1	South	Upsize 12" to 16" along Dentro de Lomas/Paseo Grande Rd	59, 30	1458, 1759	Increase system pressures, increase emergency (or permanent) pump performance	Downstream of Dentro De Lomas Emergency Pump Station	Arterial	Replacement	16-inch	2100 ft	1	2	\$335	\$704,000
WH2	Canonita	Upsize 6" to 10" along Wilt Road	1933, 1870, 1808	15110, 1204, 8724, 1474, 1170, 1219, 1218, 1478, 1169	Increase system pressures, improve function of Wilt & Citrus PRV into Pala Mesa Tank	Only first ~2,200 feet fails criteria	Rural	Replacement	10-inch	5200 ft	3	2	\$195	\$1,010,000
WH3	Morro	Remove Bottleneck, Upsize 8-inch to 12-inch on Mission Road & North River Road	8632, 71	187, 188	Reduce headlosses through bottleneck, increase flow capacity during Morro filling		State Road	Replacement	12-inch	3500 ft	3	2	\$310	\$1,090,000
														\$2,804,000

**Table H-2: Water System - Pressure Regulation Related Improvement Projects**

Project No.	Water Pressure Zone	Description	Model Junction IDs	Model Pipe IDs	System Benefit	Notes	Street Type	Project Type	Size	Quantity	Phase	Severity	Construction Costs	
												(3-1)	Unit Cost	Total Cost
<b>Pressure Regulation Projects</b>														
WP1	Pala Mesa	Install PRSs at Intersections of Knottwood Way and Staghorn Lane / Gird Road	828, 1551	201, 200, 1844, 139	Reduce local pressure, reduce risk of pipe and lateral breaks	Install two PRVs on Knottwood Way, close valves GV145 and PV231. 90 psi+ reduction possible	Rural	New	6	1	1	3	\$75,000	\$75,000
							Rural	New	4	1	1	3	\$35,000	\$35,000
WP2	Northside	Install PRSs at Brooke Hollow Rd and Ranger Road	2159, 2033	2147, 2236	Reduce local pressure to large geographical service area, reduce risk of pipe / lateral breaks	95 psi+ reduction possible	Rural	New	8	1	1	3	\$100,000	\$100,000
							Rural	New	6	1	1	3	\$75,000	\$75,000
WP3	Gomez	Install PRS at Alex Road and gate valve at Jeremy Way	2210, 8660	8804, 598	Reduce extremely high (400+) local pressures, reduce risk of pipe and lateral breaks	intersection with Jeremy Way. 200 psi+ reduction possible	Rural	New	6	2	1	3	\$75,000	\$150,000
WP4	North	Install PRS to serve Rice Canyon Road South of Pala Mesa Heights Drive	8692	8872	Reduce extremely high (300+) local pressures, reduce risk of pipe and later breaks	Install PRV after PV23. 175 psi+ reduction possible	Rural	New	6	1	1	3	\$75,000	\$75,000
WP5	South	Install PRS to serve South Fork Area along Vista Valley Drive	14, 1113, 1059	7, 8, 69	Reduce local pressure, reduce risk of pipe and lateral breaks	Install PRVs at Vista Valley Drive intersections with Gopher Canyon Road and Laurel Valley Drive. Close PV35. 100 psi+ reduction possible	Arterial	New	8	2	2	2	\$100,000	\$200,000
WP6	Morro	Install PRS on Baja Mission Road	541, 593	272, 268	Reduce local pressure, reduce risk of pipe and lateral breaks	Install PRV at intersection of Baja Mission Rd and La Canada Road. Close GV 28. 100 psi+ reduction possible	Rural	New	6	1	2	2	\$75,000	\$75,000
WP7	Morro	Install PRS on Limber Pine Road	602, 599	1389, 2515	Reduce local pressure, reduce risk of pipe and lateral breaks	Install PRV on Limber Pine Road Flowerwood Lane and close valve PV127. 90 psi+ reduction possible	Rural	New	6	2	2	2	\$75,000	\$150,000
WP8	Morro	Install PRS Club Vista East on Lake Vista Drive	201	353	Reduce local pressure, reduce risk of pipe and lateral breaks	intersection with Club Vista Lane. 90 psi+ reduction possible	Rural	New	6	1	2	2	\$75,000	\$75,000
WP9	Pala Mesa	Install PRSs at Diego Estates Drive and Sarah Ann Drive	1543, 1532, 1509	1328, 385, 1317	Reduce local pressure, reduce risk of pipe and lateral breaks	Install PRVs at Gird Road intersections with Diego Estates Drive and Sarah Ann Drive. Close PV65. 130 psi+ reduction possible		New	6	2	2	2	\$75,000	\$150,000
WP10	South	Install PRS at Via Maria Elena	1228	316	Reduce local pressure, reduce risk of pipe and lateral breaks	Install PRV after GV23. 60 psi+ reduction possible	Rural	New	6	1	2	2	\$75,000	\$75,000
WP11	Morro	Install PRS at Intersection of Mission Road and East Vista Way	1020	10208	Reduce local pressure, reduce risk of pipe and lateral breaks	Install PRV after PV51. 140 psi+ reduction possible. Serves very small area	Rural	New	6	1	2	2	\$75,000	\$75,000
WP12	South	Install PRS to serve Champagne Boulevard	1106	38	Reduce local pressure, reduce risk of pipe and lateral breaks	Install PRV after PV20. 100 psi+ reduction possible. Serves very small area	Undeveloped	New	6	1	2	2	\$75,000	\$75,000
							Rural	New	6	1	2	2	\$75,000	\$75,000
WP13	Morro	Connect and Install PRS to serve Orange Hill, Estate Drive and Rio Vista Drive	609, 596, 564	2489, 496, 515	Reduce local pressure, provide redundancy and reduce risk of pipe and lateral breaks	Install PRV after PV145. Close valve GV16 and PV42. Install 1,300 ft of 8-inch pipe to connect dead ends. 100 psi+ reduction possible	Rural	New	8-inch	1300 ft	2	2	\$145	\$189,000
WP14	Morro	Install PRS on Thoroughbred Lane	289	1688	Reduce local pressure (~300), reduce risk of pipe and lateral breaks	Install PRV after PV4. 180 psi+ reduction possible. Serves very small area	Local	New	6	1	2	2	\$75,000	\$75,000
WP15	Morro	Install PRS to serve River Village	1492	10248	Reduce local pressure (250+) reduce risk of pipe and lateral breaks	Install PRV after GV19. 150 psi+ reduction possible. Serves very small area	Local	New	6	1	2	2	\$75,000	\$75,000
WP16	Morro	Install PRS to serve Ascot Park Area	320, 344	401, 1603	Reduce local pressure (220+) reduce risk of pipe and lateral breaks	Install PRV after PV17 and PV70. 100 psi+ reduction possible. Serves very small area. 6" pipe, cannot reduce pressure too far, FF	Local	New	6	2	2	2	\$75,000	\$150,000
WP17	Rainbow Heights	Install PRS at Rainbrook	2183		Reduce local pressure, reduce risk of pipe and lateral breaks		Local	New	6	1	2	2	\$75,000	\$75,000
														\$2,024,000

**Table H-3: Water System - Operations, Redundancy and Reliability Related Improvement Projects**

Project No.	Water Pressure Zone	Description	Model Junction IDs	Model Pipe IDs	System Benefit	Notes	Street Type	Project Type	Size	Quantity	Phase	Severity	Construction Costs	
												(3-1)	Unit Cost	Total Cost
<b>Operations, Redundancy and Reliability Projects</b>														
WR1	Morro	Line NN Transmission Upgrades		1650, 1656, 1785, 278, 279, 488, 668, 774	Provide transmission flow path to allow better utilization of Dentro de Lomas PRV through new Line NN during Morro Filling		Rural	Replacement	16-inch	9000 ft	1	2	\$315	\$2,800,000
WR2	Vallecitos	Pump Station #3 (Vallecitos) Replacement			Improved efficiency and reliability to pressure zone	Increase discharge size from 6-inch. Provide at least 2 pumps for redundancy	--	Replacement	75 HP	600 gpm	1	3	--	\$1,030,000
WR3	U-1	U-1 Transmission Pipeline Replacement to Ranchbrook Road		2048, 2372	Replace aging pipeline, fewer service outages and resources spent on repairs	Replace aging pipeline that is the sole transmission source into zone	Rural	Replacement	12-inch	3200 ft	1	2	\$235	\$752,000
WR4	Northside	Northside Zone Supply Redundancy. Upsize Rainbow Hills Road Pipeline to 12-inch and Install New PRS	2285, 2332	2280, 2279, 2366	Provides an emergency supply connection to service large, critical zone	Replace 6-inch pipe on Rainbow Hills Road with 12-inch. Could provide emergency service during a pump station outage. Only ~70' difference PL along Old Highway 395 to Pala Road. Similar zone connection through the Vessels development also possible	Rural	Replacement	12-inch	2200 ft	1	3	\$235	\$517,000
WR5	South/Pala Mesa	Hutton Tank to Pala Mesa Zone Emergency Connection	HUTTON_TANK, 2166	10606, 10608	Provide redundant supply and increased looping for emergency support		State Road	New	16-inch	9,900	2	2	\$400	\$4,000,000
WR6	South	Moosa Permanent Emergency Pump Station	10039		Permanent Station to provide emergency supply to South Zone	Assumed at existing location. Additional study necessary to confirm pump flow/size	New Site	New	200 HP	2000 gpm	2	2	--	\$2,500,000
WR12	Northside	Northside Emergency Pump Station Connection and Pipeline at Reche Road	100174, 2033, 2035	10220, 10230, 15346, 1006	Provide emergency supply to Northside zone in case of transmission failure	Upsize ex pipeline rather than providing a new parallel. Pump station similar to other emergency PSs proposed.	Rural	New	16-inch	3,700	2	2	\$285	\$1,050,000
WR8	Pala Mesa	76 & Gird Permanent Emergency Pump Station			Improved zone reliability during outage or transmission main break scenarios	At same site as 76 & Gird PRV Station	--	New	100 HP	2000 gpm	2	2	--	\$1,600,000
WR9	South	Line P Permanent Emergency Pump Station	10035		Permanent Station to provide emergency supply to South Zone	Assumed at existing location. Additional study necessary to confirm pump flow/size	New Site	New	100 HP	2000 gpm	2	2	--	\$1,600,000
WR10	South	Camino Del Rey Emergency Pump Station	1300		Permanent Station to provide emergency supply to South Zone	Assumed at existing location. Additional study necessary to confirm pump flow/size	New Site	New	100 HP	2000 gpm	2	2	--	\$1,600,000
WR11	South	Dentro De Lomas Permanent Emergency Pump Station	10019		Permanent Station to provide emergency supply to South Zone	Assumed at existing location. Additional study necessary to confirm pump flow/size	New Site	New	100 HP	2000 gpm	2	2	--	\$1,600,000
WR7	North	North Feeder and Rainbow Hills Water Line Replacements		2276, 2275, 15192, 475	Fewer service outages and resources spent on repairs	Replace corroded pipelines which have suffered several breaks	State Road	Replacement	30-inch 27-inch	3788 ft	2	2	\$515	\$2,000,000
WR13	North	Rice Canyon Tank Transmission PL to I-15/SR76 Corridor	RICECYN_TNK		Improve cycling of Rice Canyon tank and serve new development	Project will likely be developer funded	Undeveloped	New	12-inch	3000 ft	2	2	\$150	\$450,000
WR14	Rainbow Heights	Pump Station #1 (Rainbow Heights) Natural Gas Motor Replacements	5009, 5011, 5013, 5015 - Pumps		Improved efficiency and reliability to pressure zone	Cost provided by District, 196k, exclusive of SDG&E requirements and contingencies.	--	Replacement	250 HP	2	1	2	\$150,000	\$300,000
WR15	South	Loop Pipelines in Via Ararat Drive to West Lilac Road	1358, 8702	8884	Provide redundant supply and increased looping	Reliability Connection to provide additional looping for increased system pressures.	Rural	New	8-inch	615 ft	2	2	\$145	\$89,000
WR16	South	Loop Pipelines in Magee Lane to Disney Lane	8628, 1140	8746	Loop lines for redundancy and improved fire flow		Undeveloped	New	8-inch	300 ft	2	2	\$100	\$30,000
WR17	South	South Zone Water Storage Tank			Provide operational storage for increased demands and additional storage during Morro Filling and	Near Turner (South) Tank, support Turner during outages and Morro Filling	--	New	4.0 MG	1	3	2	\$1.6 per gal	\$6,200,000
WR18	Morro	Improve Flow Path to Morro Reservoir, Install Parallel 10-inch pipeline on Kari Lane	8632, 42		Provide additional flow path and reduced resistance during Morro filling	Parallel existing pipeline on Kari Lane	Rural	New	10-inch	2800 ft	3	1	\$180	\$504,000
WR19	Pala Mesa	Lake Rancho Viejo Permanent Connection	1558, 2164		Provide redundant supply to reduced zone	Not shown on Figure 7-1A	Rural	New	8-inch	150 ft	3	2	\$145	\$22,000
WR20	South	Integrity Court, connect dead end lines	1108, 1102		Provide redundant supply and increased looping		Rural	New	8	1000 ft	3	1	\$145	\$145,000
WR21	Districtwide	Water System Condition Assessment Program			Provide the District with an accounting of the characteristics of its water system	Integral part of the implementation of an Asset Management Program	--	--	--	--	1	3	--	\$1,500,000
WR22	Districtwide	Pressure Reducing Station Replacement Program			Replace valves that are aging, under designed and lacking redundancy	Old and small valves and valves with no PR station should be replaced, assumed 20	--	--	--	20	1	3	\$40,000	\$800,000
WR23	Districtwide	Isolation Valve Installation Program			Reduce shutdowns of service to any area serving 50+ persons	Allow District to serve during isolated emergencies, assume 50 installations	--	--	--	50	1	3	\$15,000	\$750,000
WR24	Districtwide	Water System Billing Meter - Systemwide AMI Conversion			Replace existing meters with AMI technology	Instantaneous sales history access. Identify and control leaks and other water losses. Cost estimate provided by District staff	--	--	--	--	1	3	--	\$3,000,000
WR25	Districtwide	Water System Monitoring Program			Install measuring devices to track flow balance into system and through zones	Identify and control leaks and other water losses, assume 25 installations	--	--	--	25	1	3	\$35,000	\$875,000
WR26	Districtwide	New District Headquarters			Construct new District Headquarters to appropriately house staff	Replace aging buildings and provide room for new staff as development occurs	--	--	--	--	2	2	--	\$3,000,000
WR27	Districtwide	Install Permanent Emergency Generators at Pump Stations			Provide system reliability in cases of extended power outage	Include update of all stations to include transfer switches and soft start motors	--	--	--	7	3	2	\$125,000	\$875,000
													\$35,987,000	

**Table H-4: Water System - Fire Flow Capacity Related Improvement Projects**

Project No.	Water Pressure Zone	Description	Model Junction IDs	Model Pipe IDs	System Benefit	Notes	Street Type	Project Type	Size	Quantity	Phase	Severity	Construction Costs	
												(3-1)	Unit Cost	Total Cost
<b>Fire Flow Projects</b>														
FF1	Pala Mesa	Upsize 6-inch to 8-inch in Via San Alberto	1427	1398	Increase available fire flow	Available flow less than 500 gpm	Rural	Replacement	8-inch	1000 ft	1	2	\$155	\$155,000
FF2	Morro Tank	Upsize 4-inch and 6-inch to 8-inch and 10-inch along Sleeping Indian, Conejo and Caroline Roads	484	1405; 684, 1402, 1403, 1404, 692	Increase available fire flow	Available fire flow is less than 500 gpm	Rural	Replacement	10-inch	1300 ft	1	3	\$195	\$254,000
							Rural	Replacement	8-inch	2000 ft	1	3	\$155	\$310,000
FF3	North	Upsize 6-inch to 8-inch on Chica Road	2535	8732, 8742	Increase available fire flow	Available flow less than 600 gpm	Rural	Replacement	8-inch	1300 ft	1	3	\$155	\$202,000
FF4	Canonita	Upsize 4-inch to 8-inch on Lupine Lane		1171	Increase available fire flow	Available flow less than 700 gpm	Rural	Replacement	8-inch	700 ft	2	2	\$155	\$109,000
FF5	South	Upsize 4-inch and 6-inch to 8-inch at Mageee Lane	1132, 1133, 1140	1464, 1465, 1466, 1471	Increase available fire flow	Available flow less than 700 gpm	Rural	Replacement	8-inch	1500 ft	2	2	\$155	\$233,000
FF6	Northside	Upsize 4-inch on Via Chaparral	1278, 1994	10228	Increase available fire flow	Available flow less than 700 gpm	Rural	Replacement	8-inch	850 ft	2	2	\$155	\$132,000
														\$1,395,000

**Table H-5: Water System - Water Supply Related Improvement Projects**

Project No.	Water Pressure Zone	Description	Model Junction IDs	Model Pipe IDs	System Benefit	Notes	Street Type	Size	Quantity	Phase	Severity	Construction Costs		
											(3-1)	Unit Cost	Total Cost	
<b>Water Supply Projects</b>														
WS1	South	Weese WTP Permanent Emergency Interconnect and Pump Station	Pump 5051		Provide permanent connection to emergency supply source to serve South zone during 2nd Aqueduct outage			50 HP	1000 gpm	1	2	--	\$1,200,000	
WS2	Northside	Northside Permanent FPUD Emergency Interconnection		See Figure 4-5 for connection location	Provide emergency supply to Northside zone in case of transmission failure & additional supply during 2nd Aqueduct outage			--	--	1	3	--	\$150,000	
WS3	Morro Tank	Morro Tank Zone Permanent FPUD Emergency Interconnection			Provide emergency supply to Morro Tank zone in case of fire as portions of the zone do not meet fire flow criteria without increased HGL			--	--	2	3	--	\$150,000	
													\$1,500,000	

Table H-6: Water System - Existing System Improvement Projects

Project No.	Water Pressure Zone	Description	Model Junction IDs	Model Pipe IDs	System Benefit	Notes	Street Type	Project Type	Pipe Size	Quantity	Phase	Construction Costs	
												Unit Cost	Total Cost
<b>Water System Existing Improvement Projects</b>													
WE1	Canonita	Gird to Monserate Hill Water Line		1382	Loop dead end system and shift demand off of the Canonita Zone		Rural	Replacement	12-inch	2150 ft	1	--	\$950,000
WE2	South	Wrightwood to Cottontail PRS		287, 1562, 289	Replaced broken pipe. Install PRS to re-constitute previously looped system	Pipeline is complete, need to install PRS to allow connection to operate		New	8-inch	1	1	--	\$100,000
WE3 200950	South	Lake Vista Estates Loop and PRS	172, 153		Improve water quality by eliminating dead ends and improve fire flow	Short segment of pipeline and PRS to connect Morro and South Zones	Rural	New	--	--	1	--	\$144,000
WE4 201573	South	Tarek Terrace Water Line		2, 25	Replace old pipe to have fewer service outages and resources spent on repairs		Rural	Replacement	8-inch	500 ft	1	--	\$143,000
WE5 201359	South	Rancho Amigos Pressure Station Replacement		See CIP Project Sheets	Improve maintenance access	Improve safety and lessen staff required for maintenance	Rural	Replacement	8-inch	--	1	\$75,000	\$75,000
													\$462,000

**Table H-7: Sewer System Improvement Projects**

Project No.	Description	Model Junction IDs	Model Pipe IDs	System Benefit	Notes	Street Type	Size	Quantity	Phase	Severity	Construction Costs	
										(3-1)	Unit Cost	Total Cost
<b>Sewer Projects Recommended Under All Alternatives</b>												
S1	Plant B List Station (LS3), Forcemain and Horse Creek Sewer Abandonment			Abandon old, low, high infiltration sewer and aging LS with deficient wet well capacity	Replaced by Pankley LS and FM & Horse Creek Ridge sewer. 850 ft of FM and approx 13,650 ft of gravity sewer abandoned	--	--	--	1	3	--	\$350,000
S2	Lake Garden Sewer Rehabilitation		69, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80	Reduce inflow and infiltration, thereby reducing maintenance and treatment costs	3,475 of pipe and 12 manholes to be rehabilitated	Rural	8-inch	3475 ft	1	3	\$80	\$280,000
						Rural	--	12	1	3	\$5,250	\$63,000
S3	Rancho Viejo LS (LS5) Wet Well Expansion	801, 4005		Provide 6 hours PWWF storage at Rancho Viejo LS to protect against sewer spills	New wet well should be at least 1400 gal	Existing Site	--	1400 gal	1	3	--	\$150,000
S4	Almendra Court Sewer Rehabilitation, I-15 Crossing, Structural Pipe Lining	308, 926	290, 291, 292, 295	Rehabilitate freeway sewer crossing which is corroding	Provide system reliability	--	8-inch	938 ft	1	3	\$80	\$80,000
S5	Fallbrook Oaks LS (LS6) Rehabilitation and Forcemain Replacement	25, 4006	697	Rehabilitate existing LS and FM and extend useful life	Replace 6" forcemain with 8"	--	--	--	1	3	--	\$200,000
						Local	8-inch	252 ft	1	3	\$155	\$39,000
S6	Replace Rancho Monserate LS Emergency Generator	803, 4004		Prevent sewage spill in the case of a power outage		Existing Site	--	1	1	3	--	\$125,000
S7	Sewer System Condition Assessment Program			Provide the District with an accounting of the characteristics of its sewer system	Integral part of the implementation of an Asset Management Program	--	--	--	1	3	--	\$400,000
S8	Sewer System Permanent Flow Monitoring			Allow the District to monitor and predict system flows and performance	Greater understanding of sewer generation and control of system	--	--	5	1	3	\$25,000	\$130,000
<b>Sewer Projects - Baseline, District Office Plant Location</b>												
S9	Construct 0.9 MGD Water Reclamation Plant (WRP) at District Office Location			Provide a reliable local water source and water supply offset. Provide sewer outfall within District to avoid exceeding interceptor capacity	Cost per TM #1	--	0.9 MGD	--	1	3	--	\$37,000,000
S10 201040	Lift Station 1 Replacement			Replace critical station reaching useful life and wet well with deficient capacity	Cost per TM #1	Existing Site	--	700	2	3	--	\$3,300,000
S11	WRP Conveyance (Pump Station and Pipeline) and Failsafe Storage (Beck Reservoir Rehab and Raw Water Connection)			Provide conveyance to storage and storage for treated wastewater	Cost per TM #1	--	0.9 MGD	--	1	--	--	\$3,200,000
S12	Sewer System Rehabilitation Program			Rehabilitate and repair existing sewer trunk infrastructure	Keep aging pipes and manholes with no capacity deficiencies in good condition	State Route	12-inch 15 inch	--	1	3	--	\$4,500,000
<b>Sewer Projects - No Project Alternative</b>												
S9A 201040	Lift Station 1 Replacement and Upgrade			Replace and expand critical station reaching useful life	Cost per TM #1	Existing Site	--	1800 gpm	1	--	--	\$8,200,000
S11A	San Luis Rey Interceptor Replacement from LS 1 to LS 2			Provide adequate conveyance capacity	Cost per TM #1	State Route	18-inch	7500 ft	1	3	--	\$3,000,000
S10A 201260	San Luis Rey Interceptor Replacement from Mission Road to LS 1			Provide adequate conveyance capacity	Cost per District Budget, Highway 76 Realignment - CalTrans UPSIZE	State Route	18-inch	7100 ft	1	3	--	\$3,200,000
S12A 201266	Sewer Outfall Line RMWD Replacement			Provide adequate conveyance capacity	Previously recommended as a 30-inch pipe. Recommended to be reduced to 24-inches. Unit cost for previous project retained	State Route	24-inch	16000 ft	2	3	\$27/in-ft	\$10,400,000
S13A	Sewer Capacity Purchase			Provide conveyance and treatment capacity to District customers	recommendation of maximum ADF of 1.25 MGD and total forecasted flow of 1.39 MGD	--	--	0.14 MGD	2	3	\$20 per gpd	\$2,800,000



**Table H-7: Sewer System Improvement Projects**

Project No.	Description	Model Junction IDs	Model Pipe IDs	System Benefit	Notes	Street Type	Size	Quantity	Phase	Severity	Construction Costs	
										(3-1)	Unit Cost	Total Cost
<b>Sewer Projects - LS 2 Plant Location (Not shown on Figure 7-2)</b>												
S9B	Construct 1.6 MGD Water Reclamation Plant (WRP) at LS 2 Location			Provide reliable local water source & water supply offset. Provide sewer outfall within District to avoid exceeding outfall capacity	Cost per TM #1	--	0.9 MGD	--	1	3	--	\$66,000,000
S10B	and Failsafe Storage (Beck Reservoir Rehab and Raw Water Connection)			Provide conveyance to storage and storage for treated wastewater	Cost per TM #1	--	0.9 MGD	--	1	--	--	\$13,900,000
S11B 201040	Lift Station 1 Replacement and Upgrade			Replace and expand critical station reaching useful life	Cost per TM #1	Existing Site	--	1800 gpm	1	--	--	\$8,200,000
S13B	San Luis Rey Interceptor Replacement from LS 1 to LS 2			Provide adequate conveyance capacity	Cost per TM #1	State Route	18-inch	7500 ft	1	3	--	\$3,000,000
S12B 201260	San Luis Rey Interceptor Replacement from Mission Road to LS 1			Provide adequate conveyance capacity	Cost per District Budget, Highway 76 Realignment - CalTrans UPSIZE	State Route	18-inch	7100 ft	1	3	--	\$3,200,000
S14B	Sewer System Rehabilitation Program			Rehabilitate and repair existing sewer trunk infrastructure	Keep aging pipes and manholes with no capacity deficiencies in good condition	State Route	15-inch	--	1	3	--	\$2,400,000
<b>Sewer Projects - Sewer Project Changes to Serve Out of District Developments (Not shown on Figure 7-2)</b>												
S9C	San Luis Rey Interceptor Replacement from LS 1 to LS 2			Provide adequate conveyance capacity	Additional cost per VCMWD Meadowood Memo	State Route	21-inch	7500 ft	1	3	--	\$280,000
S10C 201260	San Luis Rey Interceptor Replacement from Mission Road to LS 1			Provide adequate conveyance capacity	Additional cost per VCMWD Meadowood Memo	State Route	21-inch	7100 ft	1	3	--	\$260,000
S11C	Lift Station 1 Replacement			Provide adequate conveyance capacity	Additional cost per VCMWD Meadowood Memo	Existing Site	--	--	1	3	--	\$177,000
											Baseline - District Office Plant Location	\$48,000,000
											No Project Alternative	\$16,400,000
											LS 2 Plant Location	\$97,417,000

**Table H-8: Recycled Water System Improvement Projects**

Project No.	Description	Model Junction IDs	Model Pipe IDs	System Benefit	Notes	Street Type	Size	Quantity	Phase	Severity	Construction Costs	
										(3-1)	Unit Cost	Total Cost
<b>Recycled Water Projects - Baseline</b>												
RW1	Recycled Water Pump Stations			Convey flows to storage in various pressure zones	Cost per TM #1		--	0.9 MGD	1	--	--	\$4,600,000
RW2	Recycled Water Storage			Provide operational storage to recycled water customers	Cost per TM #1		--	0.9 MGD	1	--	--	\$3,600,000
RW3	Recycled Water Transmission and Distribution System Pipeline			Provide transmission and distribution capacity to recycled water customers	Cost per TM #1		--	0.9 MGD	1	--	--	\$11,000,000
RW4	Recycled Water System Customer Retrofit Assistance			Assist customers in connecting to the recycled water system	Cost per TM #1		--	0.9 MGD	1	--	--	\$1,000,000
												\$20,200,000