APPENDIX A

DWR STANDARDIZED TABLES

Submittal Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied 2020 *
Add additional rows as needed			
CA1910245	City of Santa Fe Springs	6,788	5,823
	TOTAL	6,788	5,823
**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*			
NOTES: The "Volume of Water Supplied 2020" includes recycled water supplies of 846 AF. Source for "Number of Municipal Connections 2020": https://sdwis.waterboards.ca.gov/PDWW/			

Submittal Table 2-2: Plan Identification			
Select Only One	**Type of Plan**		**Name of RUWMP or Regional Alliance** *if applicable* (select from drop down list)
☑	**Individual UWMP**		
	☐	Water Supplier is also a member of a RUWMP	
	☑	Water Supplier is also a member of a Regional Alliance	Gateway Regional Alliance
☐	**Regional Urban Water Management Plan (RUWMP)**		
NOTES:			

Submittal Table 2-3: Supplier Identification	
Type of Supplier (select one or both)	
☐	Supplier is a wholesaler
☑	Supplier is a retailer
Fiscal or Calendar Year (select one)	
☐	UWMP Tables are in calendar years
☑	UWMP Tables are in fiscal years
If using fiscal years provide month and date that the fiscal year begins (mm/dd)	
07/01	
Units of measure used in UWMP * (select from drop down)	
Unit	AF
**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*	
NOTES:	

Submittal Table 2-4 Retail: Water Supplier Information Exchange
The retail Supplier has informed the following wholesale supplier(s) of projected water use in accordance with Water Code Section 10631.
Wholesale Water Supplier Name
Add additional rows as needed
Central Basin Municipal Water District
NOTES:

Submittal Table 3-1 Retail: Population - Current and Projected						
Population Served	2020	2025	2030	2035	2040	2045*(opt)*
	14,830	15,223	15,627	16,041	16,466	16,902
NOTES: The DWR Population Tool was used to estimate the 2020 population (See Section 5.4.1). Growth rates obtained from SCAG data were applied to the 2020 population and projected through 2045 (See Section 3.4.1).						

Submittal Table 4-1 Retail: Demands for Potable and Non-Potable[1] Water - Actual			
Use Type	2020 Actual		
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool	Additional Description (as needed)	Level of Treatment When Delivered Drop down list	Volume[2]
Add additional rows as needed			
Single Family	Includes Multi-Family	Drinking Water	1,629
Commercial		Drinking Water	3,323
Losses		Drinking Water	25
		TOTAL	4,977

[1] *Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4.*

[2] *Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES: Recycled water demands are included on Table 4-3 and Table 6-4.

Submittal Table 4-2 Retail: Use for Potable and Non-Potable[1] Water - Projected						
Use Type	Additional Description (as needed)	Projected Water Use[2] *Report To the Extent that Records are Available*				
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool		2025	2030	2035	2040	2045 (opt)
Add additional rows as needed						
Single Family	Includes Multi-Family	1,782	1,830	1,878	1,928	1,979
Commercial		3,456	3,548	3,642	3,739	3,837
Losses		208	214	220	225	231
	TOTAL	5,446	5,592	5,740	5,892	6,047

[1] *Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4.*
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.

[2]

NOTES:

Submittal Table 4-3 Retail: Total Water Use (Potable and Non-Potable)						
	2020	2025	2030	2035	2040	2045 (opt)
Potable Water, Raw, Other Non-potable *From Tables 4-1R and 4-2 R*	4,977	5,446	5,592	5,740	5,892	6,047
Recycled Water Demand[1] *From Table 6-4*	846	900	900	900	900	900
Optional Deduction of Recycled Water Put Into Long-Term Storage[2]						
TOTAL WATER USE	5,823	6,346	6,492	6,640	6,792	6,947

[1] Recycled water demand fields will be blank until Table 6-4 is complete

*[2] Long term storage means water placed into groundwater or surface storage that is not removed from storage in the same year. Supplier **may** deduct recycled water placed in long-term storage from their reported demand. This value is manually entered into Table 4-3.*

NOTES:

Submittal Table 4-4 Retail: Last Five Years of Water Loss Audit Reporting

Reporting Period Start Date (mm/yyyy)	Volume of Water Loss [1,2]
07/2015	208
07/2016	309
07/2017	269
07/2018	180
07/2019	25

[1] *Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.* [2] ***Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES: The "Volume of Water Loss" quantities for FY 2016-17 through FY 2018-19 were obtained from the annual AWWA Water Loss Audits (and based on the combination of apparent losses and real losses). Because the AWWA water loss audits were reported on a calendar year basis, half of the water loss during each calendar year was applied to the water losses for the corresponding fiscal year (to estimate the water losses for the entire fiscal year), pursuant to direction from DWR staff. The AWWA Water Loss Audit for calendar year 2020 will be prepared by October 2021. The "Volume of Water Loss" quantities for FY 2015-16 and for FY 2019-20 were estimated based on metered water production less metered water deliveries to customers.

Submittal Table 4-5 Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) *Drop down list (y/n)*	Yes
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, or otherwise are utilized in demand projections are found.	Section 4.2.6 and Chapter 8
Are Lower Income Residential Demands Included In Projections? *Drop down list (y/n)*	Yes
NOTES:	

Submittal Table 5-1 Baselines and Targets Summary From SB X7-7 Verification Form

Retail Supplier or Regional Alliance Only

Baseline Period	Start Year *	End Year *	Average Baseline GPCD*	Confirmed 2020 Target*
10-15 year	*1999*	*2008*	*313*	*250*
5 Year	*2003*	*2007*	*329*	

**All cells in this table should be populated manually from the supplier's SBX7-7 Verification Form and reported in Gallons per Capita per Day (GPCD)*

NOTES:

Submittal Table 5-2: 2020 Compliance
From SB X7-7 2020 Compliance Form
Retail Supplier or Regional Alliance Only

2020 GPCD			2020 Confirmed Target GPCD*	Did Supplier Achieve Targeted Reduction for 2020? Y/N
Actual 2020 GPCD*	2020 TOTAL Adjustments*	Adjusted 2020 GPCD* *(Adjusted if applicable)*		
223	*0*	*223*	*250*	*Y*

**All cells in this table should be populated manually from the supplier's SBX7-7 2020 Compliance Form and reported in Gallons per Capita per Day (GPCD)*

NOTES:

Submittal Table 6-1 Retail: Groundwater Volume Pumped						
☐	Supplier does not pump groundwater. The supplier will not complete the table below.					
☐	All or part of the groundwater described below is desalinated.					
Groundwater Type ***Drop Down List*** *May use each category multiple times*	Location or Basin Name	2016*	2017*	2018*	2019*	2020*
Add additional rows as needed						
Alluvial Basin	Central Basin	0	0	0	0	0
	TOTAL	0	0	0	0	0
**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*						
NOTES: The City currently does not produce from the Central Basin due to water quality issues. The City purchases treated Central Basin groundwater from the CBWQPP.						

Submittal Table 6-2 Retail: Wastewater Collected Within Service Area in 2020

☐	There is no wastewater collection system. The supplier will not complete the table below.
	Percentage of 2020 service area covered by wastewater collection system *(optional)*
	Percentage of 2020 service area population covered by wastewater collection system *(optional)*

Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? *Drop Down List*	Volume of Wastewater Collected from UWMP Service Area 2020 *	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area? *Drop Down List*	Is WWTP Operation Contracted to a Third Party? *(optional)* *Drop Down List*
City of Santa Fe Springs	Estimated	1,000	Sanitation Districts of Los Angeles County	Los Coyotes Water Reclamation and Long Beach Water Reclamation Plant	No	No
Total Wastewater Collected from Service Area in 2020:		1,000				

**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3* **.**

NOTES:

Submittal Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2020

☑ **No wastewater is treated or disposed of within the UWMP service area.** The supplier will not complete the table below.

Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)* [2]	Method of Disposal *Drop down list*	Does This Plant Treat Wastewater Generated Outside the Service Area? *Drop down list*	Treatment Level *Drop down list*	2020 volumes [1]				
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area	Instream Flow Permit Requirement
						Total	0	0	0	0	0

[1] **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.

[2] If the **Wastewater Discharge ID Number** is not available to the UWMP preparer, access the SWRCB CIWQS regulated facility website at https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CiwqsReportServlet?inCommand=reset&reportName=RegulatedFacility

NOTES:

Submittal Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area

☐ Recycled water is not used and is not planned for use within the service area of the supplier.
The supplier will not complete the table below.

Name of Supplier Producing (Treating) the Recycled Water:	Los Angeles County Sanitation District
Name of Supplier Operating the Recycled Water Distribution System:	Central Basin Municipal Water District
Supplemental Water Added in 2020 (volume) *Include units*	0
Source of 2020 Supplemental Water	N/A

Beneficial Use Type *Insert additional rows if needed.*	**Potential** Beneficial Uses of Recycled Water (Describe)	Amount of **Potential** Uses of Recycled Water (Quantity) *Include volume units*[1]	General Description of 2020 Uses	Level of Treatment *Drop down list*	2020[1]	2025[1]	2030[1]	2035[1]	2040[1]	2045[1] (opt)
Agricultural irrigation										
Landscape irrigation (exc golf courses)	Schools, Parks, City Landscape	540	Schools, Parks, City Landscape	Tertiary	507	540	540	540	540	540
Golf course irrigation										
Commercial use										
Industrial use	Cooling, Concrete Mixing, Manufacturing	360	Cooling, Concrete Mixing, Manufacturing	Tertiary	339	360	360	360	360	360
Geothermal and other energy production										
Seawater intrusion barrier										
Recreational impoundment										
Wetlands or wildlife habitat										
Groundwater recharge (IPR)										
Reservoir water augmentation (IPR)										
Direct potable reuse										
Other (Description Required)										
				Total:	846	900	900	900	900	900
				2020 Internal Reuse						

[1] ***Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES: Projected breakdown of recycled water for direct beneficial use is based on historical data and historical breakdown (60% landscape irrigation, and 40% industrial use).

Submittal Table 6-5 Retail: 2015 UWMP Recycled Water Use Projection Compared to 2020 Actual

☐	Recycled water was not used in 2015 nor projected for use in 2020. The supplier will not complete the table below. If recycled water was not used in 2020, and was not predicted to be in 2015, then check the box and do not complete the table.

Beneficial Use Type	2015 Projection for 2020 [1]	2020 Actual Use [1]
Insert additional rows as needed.		
Agricultural irrigation		
Landscape irrigation (exc golf courses)	548	507
Golf course irrigation		
Commercial use		
Industrial use	366	339
Geothermal and other energy production		
Seawater intrusion barrier		
Recreational impoundment		
Wetlands or wildlife habitat		
Groundwater recharge (IPR)		
Reservoir water augmentation (IPR)		
Direct potable reuse		
Other (Description Required)		
Total	914	846

[1] **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.

NOTE:

Submittal Table 6-6 Retail: Methods to Expand Future Recycled Water Use			
☐	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
Section 6.2.5	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use *
Add additional rows as needed			
Retrofits	Retrofit landscape irrigation systems	Ongoing	50
		Total	50
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*			
NOTES:			

Submittal Table 6-7 Retail: Expected Future Water Supply Projects or Programs						
☐	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
☐	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
Section 6.2.8	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other suppliers?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type *Drop Down List*	Expected Increase in Water Supply to Supplier* *This may be a range*
	Drop Down List (y/n)	*If Yes, Supplier Name*				
Add additional rows as needed						
Well No. 2	No		Assessment of Water Well No. 2	2021	All Year Types	2,000 AFY
Expand Interconnection	Yes	City of Whittier	Increase the size and capacity of its interconnection with the City of Whittier	2021	All Year Types	5,000 AFY
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*						
NOTES:						

Submittal Table 6-8 Retail: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2020		
Drop down list May use each category multiple times.These are the only water supply categories that will be recognized by the WUEdata online submittal tool		Actual Volume*	Water Quality Drop Down List	Total Right or Safe Yield* (optional)
Add additional rows as needed				
Purchased or Imported Water	Central Basin Municipal Water District	2,564	Drinking Water	
Purchased or Imported Water	Water Quality Protection Plan	2,413	Drinking Water	
Recycled Water		846	Recycled Water	
	Total	5,823		0
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*				
NOTES:				

Submittal Table 6-9 Retail: Water Supplies — Projected

Water Supply	Additional Detail on Water Supply	Projected Water Supply * Report To the Extent Practicable									
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool		**2025**		**2030**		**2035**		**2040**		**2045** (opt)	
		Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)
Add additional rows as needed											
Purchased or Imported Water	Central Basin Municipal Water District	3,096		3,242		3,390		3,542		3,697	
Purchased or Imported Water	Water Quality Protection Plan	2,350		2,350		2,350		2,350		2,350	
Recycled Water		900		900		900		900		900	
Total		6,346	0	6,492	0	6,640	0	6,792	0	6,947	0

***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES

Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)

Year Type	Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020	Available Supplies if Year Type Repeats	
		☐	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____
		☑	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available *	% of Average Supply
Average Year	2017	5,993	100%
Single-Dry Year	2018	6,298	105.1%
Consecutive Dry Years 1st Year	2012	6,740	112.5%
Consecutive Dry Years 2nd Year	2013	7,154	119.4%
Consecutive Dry Years 3rd Year	2014	7,399	123.5%
Consecutive Dry Years 4th Year	2015	6,728	112.3%
Consecutive Dry Years 5th Year	2016	6,152	102.6%

Supplier may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.

***Units of measure (AF, CCF, MG**) must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES:

Submittal Table 7-2 Retail: Normal Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045 *(Opt)*
Supply totals (*autofill from Table 6-9)*	6,346	6,492	6,640	6,792	6,947
Demand totals *(autofill from Table 4-3)*	6,346	6,492	6,640	6,792	6,947
Difference	0	0	0	0	0
NOTES:					

Submittal Table 7-3 Retail: Single Dry Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045 (Opt)
Supply totals*	6,671	6,822	6,978	7,138	7,302
Demand totals*	6,671	6,822	6,978	7,138	7,302
Difference	0	0	0	0	0
Units of measure (AF, CCF, MG) *must remain consistent throughout the UWMP as reported in Table 2-3.*					
NOTES:					

Submittal Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison						
		2025*	2030*	2035*	2040*	2045* (Opt)
First year	Supply totals	7,138	7,300	7,467	7,638	7,814
	Demand totals	7,138	7,300	7,467	7,638	7,814
	Difference	0	0	0	0	0
Second year	Supply totals	7,577	7,750	7,927	8,108	8,295
	Demand totals	7,577	7,750	7,927	8,108	8,295
	Difference	0	0	0	0	0
Third year	Supply totals	7,837	8,015	8,198	8,386	8,579
	Demand totals	7,837	8,015	8,198	8,386	8,579
	Difference	0	0	0	0	0
Fourth year	Supply totals	7,126	7,288	7,455	7,626	7,801
	Demand totals	7,126	7,288	7,455	7,626	7,801
	Difference	0	0	0	0	0
Fifth year	Supply totals	6,515	6,664	6,816	6,972	7,132
	Demand totals	6,515	6,664	6,816	6,972	7,132
	Difference	0	0	0	0	0
Sixth year *(optional)*	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*						
NOTES:						

Submittal Table 7-5: Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)	
2021	**Total**
Total Water Use	6,667
Total Supplies	6,740
Surplus/Shortfall w/o WSCP Action	73
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	73
Resulting % Use Reduction from WSCP action	0%

2022	Total
Total Water Use	7,202
Total Supplies	7,154
Surplus/Shortfall w/o WSCP Action	(48)
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	48
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	1%

2023	Total
Total Water Use	7,578
Total Supplies	7,399
Surplus/Shortfall w/o WSCP Action	(179)
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	179
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	2%

2024	Total
Total Water Use	7,009
Total Supplies	6,728
Surplus/Shortfall w/o WSCP Action	(281)
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	281
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	4%

2025	Total
Total Water Use	6,515
Total Supplies	6,152
Surplus/Shortfall w/o WSCP Action	(363)
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	363
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	6%

Submittal Table 8-1
Water Shortage Contingency Plan Levels

Shortage Level	Percent Shortage Range	Shortage Response Actions (*Narrative description*)
1	Up to 10%	During a Shortage Level 1, the City will implement the following prohibitions: (1)Restrict or prohibit runoff from landscape irrigation (2)Limit landscape irrigation to specific times (3)Limit landscape irrigation to specific days (4)Lodging establishment must offer opt out of linen service (5)Restaurants may only serve water upon request (6)Restrict water use for decorative water feature, such as fountains (7)Require automatic shut of hoses (8)Prohibit use of potable water for washing hard surface
2	Up to 20%	No customer of water shall use water contrary to the provisions in Shortage Level 1. During Shortage Level 2, no cutomer or user of water shall use or permit the use of water from the City in an amount in excess of eighty percent (80%).
3	Up to 30%	No customer of water shall use water contrary to the provisions in Shortage Level 1. During Shortage Level 2, no cutomer or user of water shall use or permit the use of water from the City in an amount in excess of seventy percent (70%).
4	Up to 40%	No customer of water shall use water contrary to the provisions in Shortage Level 1. During Shortage Level 2, no cutomer or user of water shall use or permit the use of water from the City in an amount in excess of sixty (60%).
5	Up to 50%	No customer of water shall use water contrary to the provisions in Shortage Level 1. During Shortage Level 2, no cutomer or user of water shall use or permit the use of water from the City in an amount in excess of fifty (50%).
6	>50%	No customer of water shall use water contrary to the provisions in Shortage Level 1. During Shortage Level 2, no cutomer or user of water shall use or permit the use of water from the City in an amount more than fifty percent.

NOTES:

Submittal Table 8-2: Demand Reduction Actions

Shortage Level	Demand Reduction Actions ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.*	How much is this going to reduce the shortage gap? *Include units used (volume type or percentage)*	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement? ***For Retail Suppliers Only*** *Drop Down List*
Add additional rows as needed				
1	Landscape - Restrict or prohibit runoff from landscape irrigation	Collective reduction from all Shortage Level 1 actions is up to 428 AFY		Yes
1	Landscape - Limit landscape irrigation to specific times	Collective reduction from all Shortage Level 1 actions is up to 428 AFY		Yes
1	Landscape - Limit landscape irrigation to specific days	Collective reduction from all Shortage Level 1 actions is up to 428 AFY		Yes
1	CII - Lodging establishment must offer opt out of linen service	Collective reduction from all Shortage Level 1 actions is up to 428 AFY		Yes
1	CII - Restaurants may only serve water upon request	Collective reduction from all Shortage Level 1 actions is up to 428 AFY		Yes
1	Water Features - Restrict water use for decorative water features, such as fountains	Collective reduction from all Shortage Level 1 actions is up to 428 AFY		Yes
1	Other - Require automatic shut of hoses	Collective reduction from all Shortage Level 1 actions is up to 428 AFY		Yes
1	Other - Prohibit use of potable water for washing hard surfaces	Collective reduction from all Shortage Level 1 actions is up to 428 AFY		Yes
2	Other	Collective reduction from Shortage Level 1 plus all Shortage Level 2 actions is up to 856 AFY	All actions under Shortage Level 1	Yes
3	Other	Collective reduction from Shortage Level 2 plus all Shortage Level 3 actions is up to 1,284 AFy	All actions under Shortage Level 2	Yes
4	Other	Collective reduction from Shortage Level 3 plus all Shortage Level 4 actions is up to 1,712 AFY	All actions under Shortage Level 3	Yes
5	Other	Collective reduction from Shortage Level 4 plus all Shortage Level 5 actions is up to 2,140 AFY	All actions under Shortage Level 4	Yes
6	Other	Collective reduction from Shortage Level 5 plus all Shortage Level 6 actions is greater than 2,140 AFY	All actions under Shortage Level 5	Yes

NOTES:

Submittal Table 8-3: Supply Augmentation and Other Actions			
Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool*	How much is this going to reduce the shortage gap? *Include units used (volume type or percentage)*	Additional Explanation or Reference *(optional)*
Add additional rows as needed			
1	Transfers	Not applicable (see Notes)	
2	Transfers	Not applicable (see Notes)	
3	Transfers	Not applicable (see Notes)	
4	Transfers	Not applicable (see Notes)	
5	Transfers	Not applicable (see Notes)	
6	Transfers	Not applicable (see Notes)	

NOTES: As noted on Table 8-2, the City plans to implement demand reduction measures in the event water supplies from existing sources are not sufficient to meet anticipated demands.

Submittal Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
Downey	Yes	Yes
Norwalk	Yes	Yes
Santa Fe Springs	Yes	Yes
Whittier	Yes	Yes
County Name *Drop Down List*	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
Los Angeles County	Yes	Yes
NOTES:		

APPENDIX B

DEMONSTRATION OF REDUCED IMPORTED WATER RELIANCE

DEMONSTRATION OF CONSISTENCY WITH THE DELTA PLAN FOR PARTICIPANTS IN COVERED ACTIONS (FY 2014-15 THROUGH 2044-45) CITY OF SANTA FE SPRINGS

Introduction

Pursuant to the California Department of Water Resources (DWR), an urban water supplier that anticipates participating in or receiving water from a proposed project (or "covered action") such as a multi-year water transfer, conveyance facility, or new diversion that involves transferring water through, exporting water from, or using water in the Sacramento-San Joaquin Delta (Delta) should provide information in their 2015 and 2020 Urban Water Management Plans (UWMPs) for use in demonstrating consistency with Delta Plan Policy WR P1, "*Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance"*. In addition, pursuant to California Code of Regulations, Title 23, § 5003:

> *(c)(1) Water suppliers that have done all of the following are contributing to reduced reliance on the Delta and improved regional self-reliance and are therefore consistent with this policy:*
>
> > *(A) Completed a current Urban or Agricultural Water Management Plan (Plan) which has been reviewed by the California Department of Water Resources for compliance with the applicable requirements of Water Code Division 6, Parts 2.55, 2.6, and 2.8;*
> >
> > *(B) Identified, evaluated, and commenced implementation, consistent with the implementation schedule set forth in the Plan, of all programs and projects included in the Plan that are locally cost effective and technically feasible which reduce reliance on the Delta; and*
> >
> > *(C) Included in the Plan, commencing in 2015, the expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance. The expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance shall be reported in the Plan as the reduction in the amount of water used, or in the percentage of water used, from the Delta watershed. For the purposes of reporting, water efficiency is considered a new source of water supply, consistent with Water Code section 1011(a).*

The City is sub-agency of the Central Basin Municipal Water District, which in turn is a member agency of the Metropolitan Water District of Southern California (MWD). As noted in MWD's document entitled "*Infeasibility of Accounting Supplies from the Delta Watershed for Metropolitan's Member Agencies and their Customers*" (which is included in MWD's Regional 2020 UWMP and is provided as Attachment 1 below), "... Metropolitan's service area, as a whole, reduces reliance on the Delta through investments in non-Delta water supplies, local water supplies, and regional and local demand management measures. Metropolitan's member agencies coordinate reliance on the Delta through their membership in Metropolitan, a regional cooperative providing wholesale water service to its 26 member agencies. Accordingly, regional reliance on the Delta can only be measured regionally—not by individual Metropolitan member agencies and not by the customers of those member agencies...."

In addition, MWD's 2020 Regional UWMP indicates "...in accordance with UMWP requirements, Metropolitan's member agencies and their customers (many of them, retail agencies) also report demands and supplies for their service areas in their respective UWMPs. The data reported by those agencies are not additive to the regional totals shown in Metropolitan's UWMP; rather, their reporting represents subtotals of the regional total and should be considered as such for the purposes of determining reduced reliance on the Delta…While the demands that Metropolitan's member agencies and their customers report in their UWMPs are a good reflection of the demands in their respective service areas, they do not adequately represent each water supplier's contributions to reduced reliance on the Delta. In order to calculate and report their reliance on water supplies from the Delta watershed, water suppliers that receive water from the Delta through other regional or wholesale water suppliers would need to determine the amount of Delta water that they receive from the regional or wholesale supplier. Two specific pieces of information are needed to accomplish this: first is the quantity of demands on the regional or wholesale water supplier that accurately reflect a supplier's contributions to reduced reliance on the Delta, and second is the quantity of a supplier's demands on the regional or wholesale water supplier that are met by supplies from the Delta

watershed…For water suppliers that make investments in regional projects or programs it may be infeasible to quantify their demands on the regional or wholesale water supplier in a way that accurately reflects their individual contributions to reduced reliance on the Delta." Nonetheless, the City has taken proactive measures to help reduce regional reliance on imported water supplies and is discussed in the following sections.

Reduced Reliance Calculation Tables

Pursuant to DWR guidance, Tables C-1 through C-4 were prepared to show the potential reduction of reliance on imported supply for the City. The City has used these tables to demonstrate its reduced regional reliance on imported water supplies, but not specifically Delta Watershed supplies. For each of the tables, a "Baseline year" was selected. Water demands during subsequent years (from 2015 through 2045 in five-year increments) were compared to water demands during the Baseline year. Table C-1 considers the population and service area water demands, and a demand in gallons per capita per day (GPCD) water use rate was calculated for each of the years following the Baseline year. The calculated reduction in GPCD from the Baseline year was then translated to an estimated amount of water saved as a result of water conservation measures. Table C-2 references the estimated amount of water saved from Table C-1 and shows the City's water demand without water use efficiency in effect.

A method of showing reduced regional reliance on imported water supplies is to show increased regional self-reliance. Table C-3 lists water supply sources that contribute to regional self-reliance, including water use efficiency (from Table C-1 and C-2) and groundwater recharge activities. Regional self-reliance is expressed both in terms of acre feet (AF) and as a percentage.

The calculation of reduced regional reliance on imported water supplies is shown on Table C-4. Table C-4 also shows the percent change in imported water supplies relative to the City's total supply. A negative percent change of imported water supplies indicates the City has reduced regional reliance on imported water supplies.

Since the Baseline year, the City has decreased its reduced regional reliance on imported water supplies in 2015, 2020, and anticipates doing so through 2045.

The City has reduced its reliance on imported water supply in up to three separate categories, as follows:

- The demand in GPCD for the "Baseline year" was compared to the GPCDs in subsequent years (from 2015 through 2045, in five-year increments). The reduced GPCD multiplied by the population in these subsequent years is indicative of the potential reduced regional reliance on imported water supplies and is included in Table C-1.
- The recycled water use from 2015 through 2045, in five-year increments, also demonstrates reduced regional reliance on imported water supplies and included in Table C-1
- To the extent the Water Replenishment District of Southern California (WRD) has, or plans to, use recycled water to replenish the Central Basin, the City's proportional share (up to the total replenishment water obligation) will be included on Table C-1.

These categories of reduced imported water reliance are discussed below. The sum of the increased regional self-reliance and the sum of the reduced regional reliance imported water demand resulting from these categories is reflected on Table C-3 and Table C-4, respectively, and is reflective of the City's overall reduced reliance.

Reduced GPCD

Section 6.2.2 of the City's 2020 UWMP describes the management of the Central Basin. The City purchases groundwater produced from the Central Basin, which is adjudicated and managed by the WRD. The City purchases the groundwater pumped by the Central Basin Water Quality Protection Program (CBWQPP). In addition, the City can purchase

treated imported water from Central Basin Municipal Water District which is ultimately provided by the Metropolitan Water District of Southern California.

Chapter 9 of the UWMP describes the Demand Management Measures which the City has implemented to reduce the amount water used by its customers. In addition, Chapter 6 of the UWMP describes the groundwater basin management measures implemented by the Central Basin Watermaster. Collectively these actions translate to a reduction in the GPCD usage rate which is described further in Chapter 5 of the UWMP. These actions directly impact total water demands, and consequently, the quantity of imported water which may be required. Absent the proactive measures taken by the City, it is anticipated there may have been a greater demand on imported water.

Pursuant to DWR guidance, reduced reliance on imported water supplies can be demonstrated by first selecting a “Baseline” water demand, represented by total potable water demands during FY 2010-11. Table C-1 summarizes the “Baseline” water usage by the City in FY 2010-11 (assuming demand reduction efforts had not been implemented); actual water usage in 2015 and 2020; and projected water usage through 2045 in five-year increments. Furthermore, it is assumed that as of FY 2010-11 the City was already exceeding its water rights and was required to fund the purchase of untreated imported water. Table C-2 demonstrates that, but for the water conservation efforts implemented by the City, there may have been a greater reliance on untreated imported water supplies during the Baseline year as compared to subsequent years. The reduction is considered the reduced imported water reliance.

The City’s potable water demand of 6,280 AF during FY 2010-11, along with the corresponding service area population of approximately 14,826, were used to determine the Baseline GPCD. Subsequently, the actual demands for FY 2014-15 and FY 2019-20 were compared to the calculated population to obtain the recent GPCD which includes the water conservations measures which have been implemented (those demand management measures are described in Chapter 9 of the UWMP). The “Water Supplies Contributing to Regional Self-Reliance" are also provided in Table C-1. The differences

between the Baseline GPCD and the 2015 and 2020 GPCDs are effectively considered a demonstration of the reduced regional reliance on imported water supplies with the understanding that any potential increased demand by the City resulting from increased population could have been required, absent the City's new water supplies which contribute to self-reliance. A similar methodology is used for the projected potable water demands (2020 UWMP Table 4-3) and populations (2020 UWMP Table 3-1).

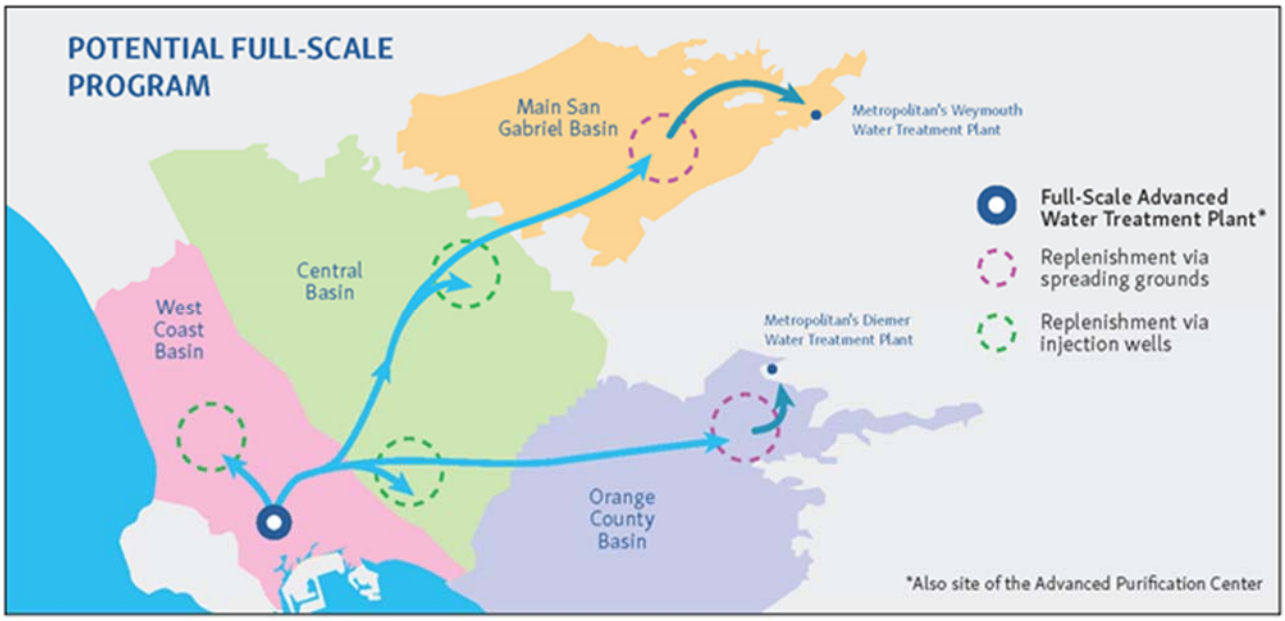
Recycled Water Use

The City has also constructed infrastructure to deliver recycled water to its customers instead of continuing to use its potable water supplies. The historical recycled water demands for FY 2014-15 and FY 2019-20, along with the projected recycled water demands (from Table 4-3) are incorporated in Table C-1. These quantities are in addition to the reduced demand resulting from decreased GPCD.

Recycled Water for Groundwater Replenishment

MWD is currently partnering with LACSD to investigate the viability of providing up to 150 million gallons per day (MGD) (approximately 168,000 AFY) of advanced treated wastewater from LACSD's Joint Water Pollution Control Plant located in Carson, California (Carson Plant)[1]. The "Regional Recycled Water Program" (RRWP) would deliver purified water from the Carson Plant in up to 60 miles of transmission pipelines to groundwater basins within MWD's service area, including the Central, West Coast, Main San Gabriel, and Orange County Basins. The purified water would be used for groundwater recharge, groundwater storage, and industrial facilities. In addition, purified water could potentially be treated further at two of MWD's existing water treatment plants for direct potable reuse. The locations of the proposed pipeline alignments are provided in the figure below.

Regional Recycled Water Program Location



Source: http://www.mwdh2o.com/DocSvcsPubs/rrwp/index.html

MWD began construction of a $17 million small-scale demonstration plant (0.5 MGD) in late 2017 which was completed in October 2019. The results of the demonstration plant will allow MWD and others to determine if expansion to a full-scale plant is beneficial. The full-scale plant would take approximately 11 years to construct once approved (with a cost of over $3 billion).

Pursuant to MWD's "*Regional Recycled Water Program Conceptual Planning Studies Report*", February 2019, the proposed RRWP would potentially deliver up to 9 MGD (about 10,000 AFY) of purified water for injection at the Montebello Forebay or for spreading at the Rio Hondo Spreading Grounds in Pico Rivera for Central Basin replenishment purposes. Water produced from the proposed RRWP would offset an equal amount of untreated imported water from the State Water Project and/or the Colorado River, which otherwise historically may have been used for groundwater replenishment (including in the Central Basin). As noted in Section 6.2.2 of the UWMP, all producers in Central Basin are levied a "Replenishment Assessment" to replenish Central Basin on each acre-foot of groundwater produced. Therefore, the benefit to each producer in this

Plan is based on the proportional share of its anticipated production to the total Central Basin production.

WRD has developed the “Water Independence Now” (WIN) Project, formerly referred to as the Groundwater Reliability Improvement Program (GRIP), which consists of about 10,500 AFY of highly treated recycled water blended with an additional 10,500 AFY of recycled water, for a total of 21,000 AFY. This recycled water is produced from LACSD’s San Jose Creek Water Reclamation Plant and is used to replenish the Central Basin. The WIN Project will offset an equal amount of SWP water. As noted in Section 6.2.2 of the UWMP, all producers in Central Basin are levied a “Replenishment Assessment” to replenish Central Basin on each acre-foot of groundwater produced. Therefore, the benefit to each producer in this Plan is based on the proportional share of its anticipated production to the total Central Basin production. The recharged water hypothetically assigned to the City is based on the City’s share (1.8567%) of the Central Basin's total Allowable Pumping Allocation (217,367 AFY) multiplied by the amount of recycled water replenished and is shown on Table C-3.

The decrease in GPCD, increase in recycled water use, and enhanced groundwater recharge programs compared to the Baseline year has resulted in an overall decrease in reliance on imported water supplies. As shown in Table C-4, the percentage of imported water supplies relative to the City’s total supply has decreased, and is projected to decrease, from the percentage in the Baseline year.

Metropolitan Water District of Southern California

In addition, as the wholesale provider, the Metropolitan Water District of Southern California has included a detailed discussion regarding measurable reduction in Delta reliance in Appendix 11 of its 2020 Regional Urban Water Management Plan. That discussion is included by reference and also included in Attachment 1 of this Plan.

Reduced Reliance Calculation - City of Santa Fe Springs

Table C-1: Optional Calculation of Water Use Efficiency -To be completed if Water Supplier does not specifically estimate Water Use Efficiency as a supply

Service Area Water Use Efficiency Demands (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Service Area Water Demands with Water Use Efficiency Accounted For	6,783	6,728	5,823	5,447	6,492	6,640	6,792	6,948
Non-Potable Water Demands	503	896	846	900	900	900	900	900
Potable Service Area Demands with Water Use Efficiency Accounted For	6,280	5,833	4,977	4,547	5,592	5,740	5,892	6,048

Total Service Area Population	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Service Area Population	14,826	14,644	14,830	15,223	15,627	16,041	16,466	16,902

Water Use Efficiency Since Baseline (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Per Capita Water Use (GPCD)	378	356	300	267	319	319	319	319
Change in Per Capita Water Use from Baseline (GPCD)		(23)	(79)	(112)	(59)	(59)	(59)	(59)
Estimated Water Use Efficiency Since Baseline		370	1,305	1,901	1,028	1,055	1,083	1,112

Table C-2: Calculation of Service Area Water Demands Without Water Use Efficiency

Total Service Area Water Demands (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Service Area Water Demands with Water Use Efficiency Accounted For	6,783	6,728	5,823	5,447	6,492	6,640	6,792	6,948
Reported Water Use Efficiency or Estimated Water Use Efficiency Since Baseline	-	370	1,305	1,901	1,028	1,055	1,083	1,112
Service Area Water Demands without Water Use Efficiency Accounted For	6,783	7,099	7,128	7,348	7,519	7,695	7,875	8,060

Table C-3: Calculation of Supplies Contributing to Regional Self-Reliance

Water Supplies Contributing to Regional Self-Reliance (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Water Use Efficiency	-	370	1,305	1,901	1,028	1,055	1,083	1,112
Water Recycling	503	896	846	900	900	900	900	900
Stormwater Capture and Use								
Advanced Water Technologies (WIN Project)[1]	-	-	344	344	344	344	344	344
Advanced Water Technologies (RRWP)[2]	-	-	-	-	-	186	186	186
Conjunctive Use Projects								
Local and Regional Water Supply and Storage Projects								
Other Programs and Projects the Contribute to Regional Self-Reliance								
Water Supplies Contributing to Regional Self-Reliance	503	1,266	2,494	3,145	2,272	2,484	2,512	2,541

Service Area Water Demands without Water Use Efficiency (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Service Area Water Demands without Water Use Efficiency Accounted For	6,783	7,099	7,128	7,348	7,519	7,695	7,875	8,060

Change in Regional Self Reliance (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Water Supplies Contributing to Regional Self-Reliance	503	1,266	2,494	3,145	2,272	2,484	2,512	2,541
Change in Water Supplies Contributing to Regional Self-Reliance		763	1,991	2,642	1,769	1,982	2,010	2,038

Percent Change in Regional Self Reliance (As Percent of Demand w/out WUE)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Percent of Water Supplies Contributing to Regional Self-Reliance	7.4%	17.8%	35.0%	42.8%	30.2%	32.3%	31.9%	31.5%
Change in Percent of Water Supplies Contributing to Regional Self-Reliance		10.4%	27.6%	35.4%	22.8%	24.9%	24.5%	24.1%

Table C-4: Calculation of Reliance on Water Supplies from the Delta Watershed

Water Supplies from the Delta Watershed (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
CVP/SWP Contract Supplies								
Delta/Delta Tributary Diversions								
Transfers and Exchanges								
Other Water Supplies from the Delta Watershed (Treated)[3]	488	344	-	-	-	-	-	-
Total Water Supplies from the Delta Watershed	488	344	-	-	-	-	-	-

Service Area Water Demands without Water Use Efficiency (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Service Area Water Demands without Water Use Efficiency Accounted For	6,783	7,099	7,128	7,348	7,519	7,695	7,875	8,060

Change in Supplies from the Delta Watershed (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Water Supplies from the Delta Watershed	488	344	-	-	-	-	-	-
Change in Water Supplies from the Delta Watershed		(144)	(488.0)	(488)	(488)	(488)	(488)	(488)

Percent Change in Supplies from the Delta Watershed (As a Percent of Demand w/out WUE)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Percent of Water Supplies from the Delta Watershed	7.2%	4.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Change in Percent of Water Supplies from the Delta Watershed		-2.4%	-7.2%	-7.2%	-7.2%	-7.2%	-7.2%	-7.2%

Baseline Year is FY 2010-11

[1] As part of the Water Independence Now Project, the Albert Robles Center was completed in 2019 and supplies about 21,000 AFY to Central Basin for replenishment purposes. The projected amount available to the City is based on the City's share of the total Allowable Pumping Allocation (1.8567%) and recent historical replenishment.

[2] The Regional Recycled Water Project (RRWP) is anticipated to result in 10,000 AFY for the Central Basin starting in 2035. The projected amount available to the City is based on the share of Central Basin's total Allowable Pumping Allocation (1.8567%).

[3] Represents imported water for replenishment purposes by the Water Replenishment District of Southern California in the Central Basin.

APPENDIX B
ATTACHMENT 1

- **Infeasibility of Accounting Supplies from the Delta Watershed for Metropolitan's Member Agencies and their Customers**

- **Appendix 11 Addendum to the Metropolitan Water District of Southern California's 2015 Urban Water Management Plan**

- **Appendix 11 "Quantifying Regional Self-Reliance and Reliance on Water Supplies from the Delta Watershed", Metropolitan Water District of Southern California's 2020 Urban Water Management Plan**

Infeasibility of Accounting Supplies from the Delta Watershed for Metropolitan's Member Agencies and their Customers

Metropolitan's service area, as a whole, reduces reliance on the Delta through investments in non-Delta water supplies, local water supplies, and regional and local demand management measures. Metropolitan's member agencies coordinate reliance on the Delta through their membership in Metropolitan, a regional cooperative providing wholesale water service to its 26 member agencies. Accordingly, regional reliance on the Delta can only be measured regionally—not by individual Metropolitan member agencies and not by the customers of those member agencies.

Metropolitan's member agencies, and those agencies' customers, indirectly reduce reliance on the Delta through their collective efforts as a cooperative. Metropolitan's member agencies do not control the amount of Delta water they receive from Metropolitan. Metropolitan manages a statewide integrated conveyance system consisting of its participation in the State Water Project (SWP), its Colorado River Aqueduct (CRA) including Colorado River water resources, programs and water exchanges, and its regional storage portfolio. Along with the SWP, CRA, storage programs, and Metropolitan's conveyance and distribution facilities, demand management programs increase the future reliability of water resources for the region. In addition, demand management programs provide system-wide benefits by decreasing the demand for imported water, which helps to decrease the burden on the district's infrastructure and reduce system costs, and free up conveyance capacity to the benefit of all member agencies.

Metropolitan's costs are funded almost entirely from its service area, with the exception of grants and other assistance from government programs. Most of Metropolitan's revenues are collected directly from its member agencies. Properties within Metropolitan's service area pay a property tax that currently provides approximately 8 percent of the fiscal year 2021 annual budgeted revenues. The rest of Metropolitan's costs are funded through rates and charges paid by Metropolitan's member agencies for the wholesale services it provides to them.[1] Thus, Metropolitan's member agencies fund nearly all operations Metropolitan undertakes to reduce reliance on the Delta, including Colorado River Programs, storage facilities, Local Resources Programs and Conservation Programs within Metropolitan's service area.

Because of the integrated nature of Metropolitan's systems and operations, and the collective nature of Metropolitan's regional efforts, it is infeasible to quantify each of Metropolitan member agencies' individual reliance on the Delta. It is infeasible to attempt to segregate an entity and a system that were designed to work as an integrated regional cooperative.

In addition to the member agencies funding Metropolitan's regional efforts, they also invest in their own local programs to reduce their reliance on any imported water. Moreover, the customers of those member agencies may also invest in their own local programs to reduce water demand. However, to the extent those efforts result in reduction of demands on Metropolitan, that reduction does not equate to a like reduction of reliance on the Delta. Demands on Metropolitan are not commensurate with demands on the Delta because most of Metropolitan member agencies receive blended resources from

[1] A standby charge is collected from properties within the service areas of 21 of Metropolitan's 26 member agencies, ranging from $5 to $14.20 per acre annually, or per parcel if smaller than an acre. Standby charges go towards those member agencies' obligations to Metropolitan for the Readiness-to-Serve Charge. The total amount collected annually is approximately $43.8 million, approximately 2 percent of Metropolitan's fiscal year 2021 annual budgeted revenues.

Metropolitan as determined by Metropolitan—not the individual member agency—and for most member agencies, the blend varies from month-to-month and year-to-year due to hydrology, operational constraints, use of storage and other factors.

Colorado River Programs

As a regional cooperative of member agencies, Metropolitan invests in programs to ensure the continued reliability and sustainability of Colorado River supplies. Metropolitan was established to obtain an allotment of Colorado River water, and its first mission was to construct and operate the CRA. The CRA consists of five pumping plants, 450 miles of high voltage power lines, one electric substation, four regulating reservoirs, and 242 miles of aqueducts, siphons, canals, conduits and pipelines terminating at Lake Mathews in Riverside County. Metropolitan owns, operates, and manages the CRA. Metropolitan is responsible for operating, maintaining, rehabilitating, and repairing the CRA, and is responsible for obtaining and scheduling energy resources adequate to power pumps at the CRA's five pumping stations.

Colorado River supplies include Metropolitan's basic Colorado River apportionment, along with supplies that result from existing and committed programs, including supplies from the Imperial Irrigation District (IID)-Metropolitan Conservation Program, the implementation of the Quantification Settlement Agreement (QSA) and related agreements, and the exchange agreement with San Diego County Water Authority (SDCWA). The QSA established the baseline water use for each of the agreement parties and facilitates the transfer of water from agricultural agencies to urban uses. Since the QSA, additional programs have been implemented to increase Metropolitan's CRA supplies. These include the PVID Land Management, Crop Rotation, and Water Supply Program, as well as the Lower Colorado River Water Supply Project. The 2007 Interim Guidelines provided for the coordinated operation of Lake Powell and Lake Mead, as well as the Intentionally Created Surplus (ICS) program that allows Metropolitan to store water in Lake Mead.

Storage Investments/Facilities

Surface and groundwater storage are critical elements of Southern California's water resources strategy and help Metropolitan reduce its reliance on the Delta. Because California experiences dramatic swings in weather and hydrology, storage is important to regulate those swings and mitigate possible supply shortages. Surface and groundwater storage provide a means of storing water during normal and wet years for later use during dry years, when imported supplies are limited. The Metropolitan system, for purposes of meeting demands during times of shortage, regulating system flows, and ensuring system reliability in the event of a system outage, provides over 1,000,000 acre-feet of system storage capacity. Diamond Valley Lake provides 810,000 acre-feet of that storage capacity, effectively doubling Southern California's previous surface water storage capacity. Other existing imported water storage available to the region consists of Metropolitan's raw water reservoirs, a share of the SWP's raw water reservoirs in and near the service area, and the portion of the groundwater basins used for conjunctive-use storage.

Since the early twentieth century, DWR and Metropolitan have constructed surface water reservoirs to meet emergency, drought/seasonal, and regulatory water needs for Southern California. These reservoirs include Pyramid Lake, Castaic Lake, Elderberry Forebay, Silverwood Lake, Lake Perris, Lake Skinner, Lake Mathews, Live Oak Reservoir, Garvey Reservoir, Palos Verdes Reservoir, Orange County Reservoir, and Metropolitan's Diamond Valley Lake (DVL). Some reservoirs such as Live Oak Reservoir, Garvey Reservoir, Palos Verdes Reservoir, and Orange County Reservoir, which have a total combined capacity of about 3,500 AF, are used solely for regulating purposes. The total gross storage capacity for

the larger remaining reservoirs is 1,757,600 AF. However, not all of the gross storage capacity is available to Metropolitan; dead storage and storage allocated to others reduce the amount of storage that is available to Metropolitan to 1,665,200 AF.

Conjunctive use of the aquifers offers another important source of dry year supplies. Unused storage in Southern California groundwater basins can be used to optimize imported water supplies, and the development of groundwater storage projects allows effective management and regulation of the region's major imported supplies from the Colorado River and SWP. Over the years, Metropolitan has implemented conjunctive use through various programs in the service area; the following table lists the groundwater conjunctive use programs that have been developed in the region.

Program	Metropolitan Agreement Partners	Program Term	Max Storage AF	Dry-Year Yield AF/Yr
Long Beach Conjunctive Use Storage Project (Central Basin)	Long Beach	June 2002-2027	13,000	4,300
Foothill Area Groundwater Storage Program (Monkhill/ Raymond Basin)	Foothill MWD	February 2003-2028	9,000	3,000
Orange County Groundwater Conjunctive Use Program	MWDOC OCWD	June 2003-2028	66,000+	22,000
Chino Basin Conjunctive Use Programs	IEUA TVMWD Watermaster	June 2003-2028	100,000	33,000
Live Oak Basin Conjunctive Use Project (Six Basins)	TVMWD City of La Verne	October 2002-2027	3,000	1,000
City of Compton Conjunctive Use Project (Central Basin)	Compton	February 2005-2030	2,289	763
Long Beach Conjunctive Use Program Expansion in Lakewood (Central Basin)	Long Beach	July 2005-2030	3,600	1,200
Upper Claremont Basin Groundwater Storage Program (Six Basins)	TVMWD	Sept. 2005- 2030	3,000	1,000
Elsinore Basin Conjunctive Use Storage Program	Western MWD Elsinore Valley MWD	May 2008- 2033	12,000	4,000
TOTAL			**211,889**	**70,263**

Metropolitan Demand Management Programs

Demand management costs are Metropolitan's expenditures for funding local water resource development programs and water conservation programs. These Demand Management Programs incentivize the development of local water supplies and the conservation of water to reduce the need to import water to deliver to Metropolitan's member agencies. These programs are implemented below the delivery points between Metropolitan's and its member agencies' distribution systems and, as such, do not add any water to Metropolitan's supplies. Rather, the effect of these downstream programs is to

produce a local supply of water for the local agencies and to reduce demands by member agencies for water imported through Metropolitan's system. The following discussions outline how Metropolitan funds local resources and conservation programs for the benefit of all of its member agencies and the entire Metropolitan service area. Notably, the history of demand management by Metropolitan's member agencies and the local agencies that purchase water from Metropolitan's members has spanned more than four decades. The significant history of the programs is another reason it would be difficult to attempt to assign a portion of such funding to any one individual member agency.

Local Resources Programs

In 1982, Metropolitan began providing financial incentives to its member agencies to develop new local supplies to assist in meeting the region's water needs. Because of Metropolitan's regional distribution system, these programs benefit all member agencies regardless of project location because they help to increase regional water supply reliability, reduce demands for imported water supplies, decrease the burden on Metropolitan's infrastructure, reduce system costs and free up conveyance capacity to the benefit of all the agencies that rely on water from Metropolitan.

For example, the Groundwater Replenishment System (GWRS) operated by the Orange County Water District is the world's largest water purification system for indirect potable reuse. It was funded, in part, by Metropolitan's member agencies through the Local Resources Program. Annually, the GWRS produces approximately 103,000 acre-feet of reliable, locally controlled, drought-proof supply of high-quality water to recharge the Orange County Groundwater Basin and protect it from seawater intrusion. The GWRS is a premier example of a regional project that significantly reduced the need to utilize imported water for groundwater replenishment in Metropolitan's service area, increasing regional and local supply reliability and reducing the region's reliance on imported supplies, including supplies from the State Water Project.

Metropolitan's local resource programs have evolved through the years to better assist Metropolitan's member agencies in increasing local supply production. The following is a description and history of the local supply incentive programs.

Local Projects Program

In 1982, Metropolitan initiated the Local Projects Program (LPP), which provided funding to member agencies to facilitate the development of recycled water projects. Under this approach, Metropolitan contributed a negotiated up-front funding amount to help finance project capital costs. Participating member agencies were obligated to reimburse Metropolitan over time. In 1986, the LPP was revised, changing the up-front funding approach to an incentive-based approach. Metropolitan contributed an amount equal to the avoided State Water Project pumping costs for each acre-foot of recycled water delivered to end-use consumers. This funding incentive was based on the premise that local projects resulted in the reduction of water imported from the Delta and the associated pumping cost. The incentive amount varied from year to year depending on the actual variable power cost paid for State Water Project imports. In 1990, Metropolitan's Board increased the LPP contribution to a fixed rate of $154 per acre-foot, which was calculated based on Metropolitan's avoided capital and operational costs to convey, treat, and distribute water, and included considerations of reliability and service area demands.

Groundwater Recovery Program

The drought of the early 1990s sparked the need to develop additional local water resources, aside from recycled water, to meet regional demand and increase regional water supply reliability. In 1991, Metropolitan conducted the Brackish Groundwater Reclamation Study which determined that large

amounts of degraded groundwater in the region were not being utilized. Subsequently, the Groundwater Recovery Program (GRP) was established to assist the recovery of otherwise unusable groundwater degraded by minerals and other contaminants, provide access to the storage assets of the degraded groundwater, and maintain the quality of groundwater resources by reducing the spread of degraded plumes.

Local Resources Program

In 1995, Metropolitan's Board adopted the Local Resources Program (LRP), which combined the LPP and GRP into one program. The Board allowed for existing LPP agreements with a fixed incentive rate to convert to the sliding scale up to $250 per acre-foot, similar to GRP incentive terms. Those agreements that were converted to LRP are known as "LRP Conversions."

Competitive Local Projects Program

In 1998, the Competitive Local Resources Program (Competitive Program) was established. The Competitive Program encouraged the development of recycled water and recovered groundwater through a process that emphasized cost-efficiency to Metropolitan, timing new production according to regional need while minimizing program administration cost. Under the Competitive Program, agencies requested an incentive rate up to $250 per acre-foot of production over 25 years under a Request for Proposals (RFP) for the development of up to 53,000 acre-feet per year of new water recycling and groundwater recovery projects. In 2003, a second RFP was issued for the development of an additional 65,000 acre-feet of new recycled water and recovered groundwater projects through the LRP.

Seawater Desalination Program

Metropolitan established the Seawater Desalination Program (SDP) in 2001 to provide financial incentives to member agencies for the development of seawater desalination projects. In 2014, seawater desalination projects became eligible for funding under the LRP, and the SDP was ended.

2007 Local Resources Program

In 2006, a task force comprised of member agency representatives was formed to identify and recommend program improvements to the LRP. As a result of the task force process, the 2007 LRP was established with a goal of 174,000 acre-feet per year of additional local water resource development. The new program allowed for an open application process and eliminated the previous competitive process. This program offered sliding scale incentives of up to $250 per acre-foot, calculated annually based on a member agency's actual local resource project costs exceeding Metropolitan's prevailing water rate.

2014 Local Resources Program

A series of workgroup meetings with member agencies was held to identify the reasons why there was a lack of new LRP applications coming into the program. The main constraint identified by the member agencies was that the $250 per acre-foot was not providing enough of an incentive for developing new projects due to higher construction costs to meet water quality requirements and to develop the infrastructure to reach end-use consumers located further from treatment plants. As a result, in 2014, the Board authorized an increase in the maximum incentive amount, provided alternative payment structures, included onsite retrofit costs and reimbursable services as part of the LRP, and added eligibility for seawater desalination projects. The current LRP incentive payment options are structured as follows:

- Option 1 – Sliding scale incentive up to $340/AF for a 25-year agreement term
- Option 2 – Sliding scale incentive up to $475/AF for a 15-year agreement term
- Option 3 – Fixed incentive up to $305/AF for a 25-year agreement term

On-site Retrofit Programs

In 2014, Metropolitan's Board also approved the On-site Retrofit Pilot Program which provided financial incentives to public or private entities toward the cost of small-scale improvements to their existing irrigation and industrial systems to allow connection to existing recycled water pipelines. The On-site Retrofit Pilot Program helped reduce recycled water retrofit costs to the end-use consumer which is a key constraint that limited recycled water LRP projects from reaching full production capacity. The program incentive was equal to the actual eligible costs of the on-site retrofit, or $975 per acre-foot of up-front cost, which equates to $195 per acre-foot for an estimated five years of water savings ($195/AF x 5 years) multiplied by the average annual water use in previous three years, whichever is less. The Pilot Program lasted two years and was successful in meeting its goal of accelerating the use of recycled water.

In 2016, Metropolitan's Board authorized the On-site Retrofit Program (ORP), with an additional budget of $10 million. This program encompassed lessons learned from the Pilot Program and feedback from member agencies to make the program more streamlined and improve its efficiency. As of fiscal year 2019/20, the ORP has successfully converted 440 sites, increasing the use of recycled water by 12,691 acre-feet per year.

Stormwater Pilot Programs

In 2019, Metropolitan's Board authorized both the Stormwater for Direct Use Pilot Program and a Stormwater for Recharge Pilot Program to study the feasibility of reusing stormwater to help meet regional demands in Southern California. These pilot programs are intended to encourage the development, monitoring, and study of new and existing stormwater projects by providing financial incentives for their construction/retrofit and monitoring/reporting costs. These pilot programs will help evaluate the potential benefits delivered by stormwater capture projects and provide a basis for potential future funding approaches. Metropolitan's Board authorized a total of $12.5 million for the stormwater pilot programs ($5 million for the District Use Pilot and $7.5 million for the Recharge Pilot).

Current Status and Results of Metropolitan's Local Resource Programs

Today, nearly one-half of the total recycled water and groundwater recovery production in the region has been developed with an incentive from one or more of Metropolitan's local resource programs. During fiscal year 2020, Metropolitan provided about $13 million for production of 71,000 acre-feet of recycled water for non-potable and indirect potable uses. Metropolitan provided about $4 million to support projects that produced about 50,000 acre-feet of recovered groundwater for municipal use. Since 1982, Metropolitan has invested $680 million to fund 85 recycled water projects and 27 groundwater recovery projects that have produced a cumulative total of about 4 million acre-feet.

Conservation Programs

Metropolitan's regional conservation programs and approaches have a long history. Decades ago, Metropolitan recognized that demand management at the consumer level would be an important part of balancing regional supplies and demands. Water conservation efforts were seen as a way to reduce the need for imported supplies and offset the need to transport or store additional water into or within the Metropolitan service area. The actual conservation of water takes place at the retail consumer level. Regional conservation approaches have proven to be effective at reaching retail consumers throughout Metropolitan's service area and successfully implementing water saving devices, programs and practices. Through the pooling of funding by Metropolitan's member agencies, Metropolitan is able to engage in regional campaigns with wide-reaching impact. Regional investments in demand management programs, of which conservation is a key part along with local supply programs, benefit all member agencies regardless of project location. These programs help to increase regional water supply

reliability, reduce demands for imported water supplies, decrease the burden on Metropolitan's infrastructure, reduce system costs, and free up conveyance capacity to the benefit of all member agencies.

Incentive-Based Conservation Programs

Conservation Credits Program

In 1988, Metropolitan's Board approved the Water Conservation Credits Program (Credits Program). The Credits Program is similar in concept to the Local Projects Program (LPP). The purpose of the Credits Program is to encourage local water agencies to implement effective water conservation projects through the use of financial incentives. The Credits Program provides financial assistance for water conservation projects that reduce demands on Metropolitan's imported water supplies and require Metropolitan's assistance to be financially feasible.

Initially, the Credits Program provided 50 percent of a member agency's program cost, up to a maximum of $75 per acre-foot of estimated water savings. The $75 Base Conservation Rate was established based Metropolitan's avoided cost of pumping SWP supplies. The Base Conservation Rate has been revisited by Metropolitan's Board and revised twice since 1988, from $75 to $154 per acre-foot in 1990 and from $154 to $195 per acre-foot in 2005.

In fiscal year 2020 Metropolitan processed more than 30,400 rebate applications totaling $18.9 million.

Member Agency Administered Program

Some member agencies also have unique programs within their service areas that provide local rebates that may differ from Metropolitan's regional program. Metropolitan continues to support these local efforts through a member agency administered funding program that adheres to the same funding guidelines as the Credits Program. The Member Agency Administered Program allows member agencies to receive funding for local conservation efforts that supplement, but do not duplicate, the rebates offered through Metropolitan's regional rebate program.

Water Savings Incentive Program

There are numerous commercial entities and industries within Metropolitan's service area that pursue unique savings opportunities that do not fall within the general rebate programs that Metropolitan provides. In 2012, Metropolitan designed the Water Savings Incentive Program (WSIP) to target these unique commercial and industrial projects. In addition to rebates for devices, under this program, Metropolitan provides financial incentives to businesses and industries that created their own custom water efficiency projects. Qualifying custom projects can receive funding for permanent water efficiency changes that result in reduced potable demand.

Non-Incentive Conservation Programs

In addition to its incentive-based conservation programs, Metropolitan also undertakes additional efforts throughout its service area that help achieve water savings without the use of rebates. Metropolitan's non-incentive conservation efforts include:

- residential and professional water efficient landscape training classes
- water audits for large landscapes
- research, development and studies of new water saving technologies
- advertising and outreach campaigns
- community outreach and education programs
- advocacy for legislation, codes, and standards that lead to increased water savings

Current Status and Results of Metropolitan's Conservation Programs

Since 1990, Metropolitan has invested $824 million in conservation rebates that have resulted in a cumulative savings of 3.27 million acre-feet of water. These investments include $450 million in turf removal and other rebates during the last drought which resulted in 175 million square feet of lawn turf removed. During fiscal year 2020, 1.06 million acre-feet of water is estimated to have been conserved. This annual total includes Metropolitan's Conservation Credits Program; code-based conservation achieved through Metropolitan-sponsored legislation; building plumbing codes and ordinances; reduced consumption resulting from changes in water pricing; and pre-1990 device retrofits.

Infeasibility of Accounting Regional Investments in Reduced Reliance Below the Regional Level

The accounting of regional investments that contribute to reduced reliance on supplies from the Delta watershed is straightforward to calculate and report at the regional aggregate level. However, any similar accounting is infeasible for the individual member agencies or their customers. As described above, the region (through Metropolitan) makes significant investments in projects, programs and other resources that reduce reliance on the Delta. In fact, all of Metropolitan's investments in Colorado River supplies, groundwater and surface storage, local resources development and demand management measures that reduce reliance on the Delta are collectively funded by revenues generated from the member agencies through rates and charges.

Metropolitan's revenues cannot be matched to the demands or supply production history of an individual agency, or consistently across the agencies within the service area. Each project or program funded by the region has a different online date, useful life, incentive rate and structure, and production schedule. It is infeasible to account for all these things over the life of each project or program and provide a nexus to each member agency's contributions to Metropolitan's revenue stream over time. Accounting at the regional level allows for the incorporation of the local supplies and water use efficiency programs done by member agencies and their customers through both the regional programs and through their own specific local programs. As shown above, despite the infeasibility of accounting reduced Delta reliance below the regional level, Metropolitan's member agencies and their customers have together made substantial contributions to the region's reduced reliance.

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Link to Metropolitan's 2020 UWMP once final

Appendix 11

Addendum to
The Metropolitan Water District of Southern California's
2015 Urban Water Management Plan

Quantifying Regional Self-Reliance and Reduced Reliance on Water Supplies from the Delta Watershed

June 2021

Appendix 11
METROPOLITAN'S REDUCED DELTA RELIANCE REPORTING
Addendum to Metropolitan's 2015 Urban Water Management Plan

A.11.1 Background

Under the Sacramento-San Joaquin Delta Reform Act of 2009, state and local public agencies proposing a covered action in the Delta,[1] prior to initiating the implementation of that action, must prepare a written certification of consistency with detailed findings as to whether the covered action is consistent with applicable Delta Plan policies and submit that certification to the Delta Stewardship Council.[2] Anyone may appeal a certification of consistency, and if the Delta Stewardship Council grants the appeal, the covered action may not be implemented until the agency proposing the covered action submits a revised certification of consistency, and either no appeal is filed, or the Delta Stewardship Council denies the subsequent appeal.[3]

An urban water supplier that anticipates participating in or receiving water from a proposed covered action such as a multi-year water transfer, conveyance facility, or new diversion that involves transferring water through, exporting water from, or using water in the Delta should provide information in their 2015 and 2020 Urban Water Management Plans (UWMPs) that can then be used in the covered action process to demonstrate consistency with Delta Plan Policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (WR P1).[4]

WR P1 details what is needed for a covered action to demonstrate consistency with reduced reliance on the Delta and improved regional self-reliance. WR P1 subsection (a) states that:

(a) Water shall not be exported from, transferred through, or used in the Delta if all of the following apply:

> *(1) One or more water suppliers that would receive water as a result of the export, transfer, or use have failed to adequately contribute to reduced reliance on the Delta and improved regional self-reliance consistent with all of the requirements listed in paragraph (1) of subsection (c);*
>
> *(2) That failure has significantly caused the need for the export, transfer, or use; and*
>
> *(3) The export, transfer, or use would have a significant adverse environmental impact in the Delta.*

WR P1 subsection (c)(1) further defines what adequately contributing to reduced reliance on the Delta means in terms of (a)(1) above.

(c)(1) Water suppliers that have done all the following are contributing to reduced reliance on the Delta and improved regional self-reliance and are therefore consistent with this policy:

> *(A) Completed a current Urban or Agricultural Water Management Plan (Plan) which has been reviewed by the California Department of Water Resources for compliance with the applicable requirements of Water Code Division 6, Parts 2.55, 2.6, and 2.8;*

[1] Water Code, § 85057.5; Cal. Code Regs. tit. 23, § 5001.
[2] Water Code, § 85225; Delta Plan, App. D.
[3] Water Code, §§ 85225.10-85225.25; Delta Plan, App. D.
[4] Cal. Code Regs., tit. 23, § 5003.

(B) Identified, evaluated, and commenced implementation, consistent with the implementation schedule set forth in the Plan, of all programs and projects included in the Plan that are locally cost effective and technically feasible which reduce reliance on the Delta; and

(C) Included in the Plan, commencing in 2015, the expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance. The expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance shall be reported in the Plan as the reduction in the amount of water used, or in the percentage of water used, from the Delta watershed. For the purposes of reporting, water efficiency is considered a new source of water supply, consistent with Water Code section 1011(a).

The analysis and documentation provided below include all of the elements described in WR P1(c)(1) that need to be included in a water supplier's UWMP to support a certification of consistency for a future covered action.

A.11.2 Summary of Expected Outcomes for Reduced Reliance on the Delta

As stated in WR P1(c)(1)(C), the policy requires that, commencing in 2015, UWMPs include expected outcomes for measurable reduction in Delta reliance and improved regional self-reliance. WR P1 further states that those outcomes shall be reported in the UWMP as the reduction in the amount of water used, or in the percentage of water used, from the Delta.

The expected outcomes for Metropolitan's Delta reliance and regional self-reliance were developed using the approach and guidance described in Appendix C of DWR's Urban Water Management Plan Guidebook 2020 (Guidebook Appendix C) issued in March 2021.

The data used in this analysis represent the total regional efforts of Metropolitan and its member agencies and their customers (many of them, retail agencies) and were developed in conjunction with Metropolitan's member agencies as part of the UWMP coordination process as described in Section 5 of Metropolitan's UWMP. In accordance with UMWP requirements, Metropolitan's member agencies and their customers (many of them, retail agencies) also report demands and supplies for their service areas in their respective UWMPs. The data reported by those agencies are not additive to the regional totals shown in Metropolitan's UWMP; rather, their reporting represents subtotals of the regional total and should be considered as such for the purposes of determining reduced reliance on the Delta.

While the demands that Metropolitan's member agencies and their customers report in their UWMPs are a good reflection of the demands in their respective service areas, they do not adequately represent each water supplier's contributions to reduced reliance on the Delta. In order to calculate and report their reliance on water supplies from the Delta watershed, water suppliers that receive water from the Delta through other regional or wholesale water suppliers would need to determine the amount of Delta water that they receive from the regional or wholesale supplier. Two specific pieces of information are needed to accomplish this: first is the quantity of demands on the regional or wholesale water supplier that accurately reflect a supplier's contributions to reduced reliance on the Delta, and second is the quantity of a supplier's demands on the regional or wholesale water supplier that are met by supplies from the Delta watershed.

For water suppliers that make investments in regional projects or programs it may be infeasible to quantify their demands on the regional or wholesale water supplier in a way that accurately reflects their individual contributions to reduced reliance on the Delta. Due to the extensive, long-standing and successful implementation of regional demand management and local resource

incentive programs in Metropolitan's service area, this infeasibility holds true for Metropolitan's members as well their customers. For Metropolitan's service area, reduced reliance on supplies from the Delta watershed can only be accurately accounted at the regional level, as is demonstrated in this analysis.

The following provides a summary of the near-term (2025) and long-term (2045) expected outcomes for Metropolitan's Delta reliance and regional self-reliance. The results show that as a region, Metropolitan and its members as well as their customers are measurably reducing reliance on the Delta and improving regional self-reliance, both as an amount of water used and as a percentage of water used.

Expected Outcomes for Regional Self-Reliance

- Near-term (2025) – Normal water year regional self-reliance is expected to increase by 813 TAF from the 2010 baseline; this represents an increase of almost 25 percent of 2025 normal water year retail demands (Table A.11-2).
- Long-term (2045) – Normal water year regional self-reliance is expected to increase by more than 1.28 MAF from the 2010 baseline, this represents an increase of more than 25 percent of 2045 normal water year retail demands (Table A.11-2).

Expected Outcomes for Reduced Reliance on Supplies from the Delta Watershed

- Near-term (2025) – Normal water year reliance on supplies from the Delta watershed decreased by 301 TAF from the 2010 baseline, this represents a decrease of 3 percent of 2025 normal water year retail demands (Table A.11-3).
- Long-term (2045) – Normal water year reliance on supplies from the Delta watershed decreased by 314 TAF from the 2010 baseline, this represents a decrease of just over 5 percent of 2045 normal water year retail demands (Table A.11-3).

A11.3 Demonstration of Reduced Reliance on the Delta

The methodology used to determine Metropolitan's reduced Delta reliance and improved regional self-reliance is consistent with the approach detailed in DWR's UWMP Guidebook Appendix C, including the use of narrative justifications for the accounting of supplies and the documentation of specific data sources. Some of the key assumptions underlying Metropolitan's demonstration of reduced reliance include:

- All data were obtained from the current 2020 UWMP or previously adopted UWMPs and represent average or normal water year conditions.
- All analyses were conducted at the service area level, and all data reflect the total contributions of Metropolitan and its members as well as their customers.
- No projects or programs that are described in the UWMPs as "Projects Under Development" were included in the accounting of supplies.

Baseline and Expected Outcomes

In order to calculate the expected outcomes for measurable reduction in Delta reliance and improved regional self-reliance, a baseline is needed to compare against. This analysis uses a normal water year representation of 2010 as the baseline, which is consistent with the approach described in the Guidebook Appendix C. Data for the 2010 baseline were taken from Metropolitan's 2005 UWMP as the UWMPs generally do not provide normal water year data for the year that they are adopted (i.e., 2005 UWMP forecasts begin in 2010, 2010 UWMP forecasts begin in 2015, and so on).

Consistent with the 2010 baseline data approach, the expected outcomes for reduced Delta reliance and improved regional self-reliance for 2015 and 2020 were taken from Metropolitan's 2010 and 2015 UWMPs respectively. Expected outcomes for 2025-2045 are from the current 2020 UWMP. Documentation of the specific data sources and assumptions are included in the discussions below.

Service Area Demands without Water Use Efficiency

In alignment with the Guidebook Appendix C, this analysis uses normal water year demands, rather than normal water year supplies to calculate expected outcomes in terms of the percentage of water used. Using normal water year demands serves as a proxy for the amount of supplies that would be used in a normal water year, which helps alleviate issues associated with how supply capability is presented to fulfill requirements of the Act versus how supplies might be accounted for to demonstrate consistency with WR P1.

Because WR P1 considers water use efficiency savings a source of water supply, water suppliers such as Metropolitan that explicitly calculate and report water use efficiency savings in their UWMP will need to make an adjustment to properly reflect normal water year demands in the calculation of reduced reliance. As explained in the Guidebook Appendix C, water use efficiency savings must be added back to the normal year demands to represent demands without water use efficiency savings accounted for; otherwise the effect of water use efficiency savings on regional self-reliance would be overestimated. Table A.11-1 shows the results of this adjustment for Metropolitan. Supporting narratives and documentation for all of the data shown in Table A.11-1 are provided below.

Table A.11-1
Demands without Water Use Efficiency Accounted For

Total Service Area Water Demands (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Service Area Demands with Water Use Efficiency Accounted For	4,628,000	4,563,000	4,163,000	3,763,000	3,821,000	3,893,000	3,936,000	3,985,000
Reported Water Use Efficiency	865,000	936,000	1,056,000	1,162,000	1,211,000	1,263,000	1,325,000	1,389,000
Service Area Demands without Water Use Efficiency Accounted For	**5,493,000**	**5,499,000**	**5,219,000**	**4,925,000**	**5,032,000**	**5,156,000**	**5,261,000**	**5,374,000**

Service Area Demands without Water Use Efficiency

The service area demands shown in Table A.11-1 represent the total retail water demands for Metropolitan's service area and include municipal and industrial demands, agricultural demands, seawater barrier demands, and storage replenishment demands. These demand types and the modeling methodologies used to calculate them are described in Section 2.2 and Appendix 1 of Metropolitan's UWMP.

Water Use Efficiency

The water use efficiency numbers shown in Table A.11-1 represent the total water use efficiency savings (conservation) for Metropolitan's region, including savings from active, code-based, price-effect and pre-1990 sources. These sources of water use efficiency and the methodologies used to calculate them are described in Section 2.2, Section 3.4, Section 3.7 and Appendix 1 of Metropolitan's UWMP.

The demand and water use efficiency data shown in Table A.11-1 were collected from the following sources:

- Baseline (2010) values – Metropolitan's 2005 UWMP, Table 2-6: Metropolitan Regional Water Demand Average Year
- 2015 values – Metropolitan's 2010 UWMP, Table 2-8: Metropolitan Regional Water Demands Average Year
- 2020 values – Metropolitan's 2015 UWMP, Table 2-3: Metropolitan Regional Water Demands Average Year
- 2025-2045 values – Metropolitan's 2020 UWMP, Table 2-3: Metropolitan Regional Water Demands Normal Water Year

Supplies Contributing to Regional Self-Reliance

For a covered action to demonstrate consistency with the Delta Plan, WR P1 subsection (c)(1)(C) states that water suppliers must report the expected outcomes for measurable improvement in regional self-reliance. Table A.11-2 shows expected outcomes for supplies contributing to regional self-reliance both in amount and as a percentage. The numbers shown in Table A.11-2 represent efforts to improve regional self-reliance for Metropolitan's entire service area and include the total contributions of Metropolitan and its members as well as their customers. Supporting narratives and documentation for the all of the data shown in Table A.11-2 are provided below.

The results shown in Table A.11-2 demonstrate that Metropolitan's service area is measurably improving its regional self-reliance. In the near-term (2025), the expected outcome for normal water year regional self-reliance increases by 747 TAF from the 2010 baseline; this represents an increase of about 23 percent of 2025 normal water year retail demands. In the long-term (2045), normal water year regional self-reliance is expected to increase by more than 1.2 MAF from the 2010 baseline; this represents an increase of 25 percent of 2045 normal water year retail demands.

Table A.11-2
Supplies Contributing to Regional Self-Reliance

Water Supplies Contributing to Regional Self-Reliance (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Water Use Efficiency	865,000	936,000	1,056,000	1,162,000	1,211,000	1,263,000	1,325,000	1,389,000
Water Recycling	316,000	348,000	436,000	550,000	613,000	687,000	698,000	706,000
Stormwater Capture and Use	100,000	103,000	110,000	80,000	82,000	82,000	82,000	82,000
Advanced Water Technologies	111,000	101,000	194,000	194,000	208,000	209,000	209,000	210,000
Conjunctive Use Projects	1,416,000	1,429,000	1,303,000	1,255,000	1,273,000	1,296,000	1,311,000	1,326,000
Local and Regional Water Supply and Storage Projects	252,000	224,000	261,000	257,000	257,000	258,000	258,000	258,000
Other Programs and Projects that Contribute to Regional Self-Reliance	875,000	1,250,000	1,200,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Water Supplies Contributing to Regional Self-Reliance	**3,935,000**	**4,391,000**	**4,560,000**	**4,748,000**	**4,894,000**	**5,045,000**	**5,133,000**	**5,221,000**

Service Area Demands without Water Use Efficiency (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Service Area Demands without Water Use Efficiency Accounted For	5,493,000	5,499,000	5,219,000	4,925,000	5,032,000	5,156,000	5,261,000	5,374,000

Change in Regional Self Reliance (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Water Supplies Contributing to Regional Self-Reliance	3,935,000	4,391,000	4,560,000	4,748,000	4,894,000	5,045,000	5,133,000	5,221,000
Change in Supplies Contributing to Regional Self-Reliance	**NA**	**456,000**	**625,000**	**813,000**	**959,000**	**1,110,000**	**1,198,000**	**1,286,000**

Percent Change in Regional Self Reliance (As Percent of Demand w/out WUE)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Percent of Supplies Contributing to Regional Self-Reliance	71.6%	79.9%	87.4%	96.4%	97.3%	97.8%	97.6%	97.2%
Change in Percent of Supplies Contributing to Regional Self-Reliance	**NA**	**8.2%**	**15.7%**	**24.8%**	**25.6%**	**26.2%**	**25.9%**	**25.5%**

Water Use Efficiency

The water use efficiency information shown in Table A.11-2 is taken directly from Table A.11-1 above.

Water Recycling

The water recycling values shown in Table A.11-2 reflect the total recycled water production in Metropolitan's service area as described in Section 3.5 and Appendix 2 of Metropolitan's UWMP.

Stormwater Capture and Use

The stormwater capture and use data shown in Table A.11-2 include supplies from local surface water production as described in Section 1.4 and Appendix 2 of Metropolitan's UWMP.

These values do not include production from regional storage reservoirs; storage in these reservoirs is comprised of previously stored water from sources already reflected in Tables A.11-2 and A.11-3. These regional storage resources are generally used to provide additional regional self-reliance in dry years, which is not reflected in this normal water year analysis. The regional storage reservoirs and their yields are described in Section 3.6, Appendix 2 and Appendix 3 of Metropolitan's UWMP.

The stormwater capture and use values shown in Table A.11-2 also do not include stormwater capture that is used to recharge local groundwater basins. Stormwater capture for groundwater recharge supports production of groundwater in the region, and for the purposes of this analysis that production is already captured in Table A.11-2 under conjunctive use projects.

Advanced Water Technologies

The advanced water technologies data shown in Table A.11-2 include total groundwater recovery and seawater desalination production in Metropolitan's service area as described in Section 3.5 and Appendix 2 of Metropolitan's UWMP.

Conjunctive Use Projects

The values for conjunctive use projects shown in Table A.11-2 represent total groundwater production in the region as described in Section 1.4 and Appendix 2 of Metropolitan's UWMP.

The conjunctive use projects numbers shown in Table A.11-2 do not include production from regional groundwater conjunctive use programs. As described in the stormwater capture and use discussion above, these regional storage programs rely on previously stored water from sources already reflected in Tables A.11-2 and A.11-3 and are generally used to provide additional regional self-reliance in dry-years. The regional groundwater conjunctive use programs and their yields are described in Section 3.6 and Appendix 3.

Local and Regional Water Supply and Storage Programs

The data for local and regional water supply and storage programs shown in Table A.11-2 include supplies from the Los Angeles Aqueduct. This supply is described in Section 1.4 and Appendix 2 of Metropolitan's UWMP.

The local and regional supply numbers shown in Table A.11-2, except for "Other Programs and Projects that Contribute to Regional Self-Reliance" which is discussed below, were obtained from the following sources:

- Baseline (2010) values – Metropolitan's 2005 UWMP, Table 2-6: Metropolitan Regional Water Demand Average Year

- 2015 values – Metropolitan's 2010 UWMP, Table 2-8: Metropolitan Regional Water Demands Average Year
- 2020 values – Metropolitan's 2015 UWMP, Table 2-3: Metropolitan Regional Water Demands Average Year
- 2025-2045 values – Metropolitan's 2020 UWMP, Table 2-3: Metropolitan Regional Water Demands Normal Water Year

Other Programs and Projects that Contribute to Regional Self-Reliance

Other programs and projects that contribute to regional self-reliance shown in Table A.11-2 include current programs from the Colorado River Aqueduct. Colorado River supplies include Metropolitan's basic Colorado River apportionment, as well as supplies that result from existing and committed programs, including those from the IID-MWD Conservation Program, the implementation of the Quantification Settlement Agreement (QSA), related agreements, and the exchange agreement with SDCWA. Colorado River Aqueduct supplies and programs are described in Section 3.1 and Appendix 3 of Metropolitan's UWMP.

The values shown in Table A.11-2 for other programs and projects that contribute to regional self-reliance come from the following sources:

- Baseline (2010) values – Metropolitan's 2005 UWMP, Table A.3-7: Maximum Expected Colorado River Aqueduct Deliveries Year 2010 (Average Year)
- 2015 values – Metropolitan's 2010 UWMP, Table A.3-7: Maximum Expected Colorado River Aqueduct Deliveries Year 2015 (Average Year)
- 2020 values – Metropolitan's 2015 UWMP, Table A.3-7: Maximum Expected Colorado River Aqueduct Deliveries Year 2020 (Average Year)
- 2025-2045 values – Metropolitan's 2020 UWMP, Table A.3-7: Maximum Expected Colorado River Aqueduct Deliveries Years 2025, 2030, 2035, 2040, 2045 (Normal Water Year)

Reliance on Water Supplies from the Delta Watershed

In order for a covered action to demonstrate consistency with the Delta Plan, WR P1 subsection (c)(1)(C) requires that water suppliers report the expected outcomes for measurable reductions in supplies from the Delta watershed either as an amount or as a percentage. This analysis provides both calculations. Based on the methodology described in Guidebook Appendix C, and consistent with the approach of this analysis in not including projects under development, this accounting does not include any supplies from potential future covered actions. Table A.11-3 shows the expected outcomes for reliance on supplies from the Delta watershed for Metropolitan's service area. Supporting narratives and documentation for the all of the data shown in Table A.11-3 are provided below.

The results shown in Table A.11-3 demonstrate that Metropolitan's service area is measurably reducing its Delta reliance. In the near-term (2025), the expected outcome for normal water year reliance on supplies from the Delta watershed decreased by 301 TAF from the 2010 baseline; this represents a decrease of 3 percent of 2025 normal water year retail demands. In the long-term (2045), normal water year reliance on supplies from the Delta watershed decreased by 314 TAF from the 2010 baseline; this represents a decrease of just over 5 percent of 2045 normal water year retail demands.

Table A.11-3
Reliance on Water Supplies from the Delta Watershed

Water Supplies from the Delta Watershed (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
CVP/SWP Contract Supplies	1,472,000	1,029,000	984,000	1,133,000	1,130,000	1,128,000	1,126,000	1,126,000
Delta/Delta Tributary Diversions	-	-	-	-	-	-	-	-
Transfers and Exchanges of Supplies from the Delta Watershed	20,000	44,000	91,000	58,000	52,000	52,000	52,000	52,000
Other Water Supplies from the Delta Watershed	-	-	-	-	-	-	-	-
Total Water Supplies from the Delta Watershed	**1,492,000**	**1,073,000**	**1,075,000**	**1,191,000**	**1,182,000**	**1,180,000**	**1,178,000**	**1,178,000**

Service Area Demands without Water Use Efficiency (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Service Area Demands without Water Use Efficiency Accounted For	5,493,000	5,499,000	5,219,000	4,925,000	5,032,000	5,156,000	5,261,000	5,374,000

Change in Supplies from the Delta Watershed (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Water Supplies from the Delta Watershed	1,492,000	1,073,000	1,075,000	1,191,000	1,182,000	1,180,000	1,178,000	1,178,000
Change in Supplies from the Delta Watershed	**NA**	**(419,000)**	**(417,000)**	**(301,000)**	**(310,000)**	**(312,000)**	**(314,000)**	**(314,000)**

Percent Change in Supplies from the Delta Watershed (As a Percent of Demand w/out WUE)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Percent of Supplies from the Delta Watershed	27.2%	19.5%	20.6%	24.2%	23.5%	22.9%	22.4%	21.9%
Change in Percent of Supplies from the Delta Watershed	**NA**	**-7.6%**	**-6.6%**	**-3.0%**	**-3.7%**	**-4.3%**	**-4.8%**	**-5.2%**

CVP/SWP Contract Supplies

The CVP/SWP contract supplies shown in Table A.11-3 include Metropolitan's SWP Table A and Article 21 supplies. These supplies are described in Section 3.2 and Appendix 3 of Metropolitan's UWMP.

The values shown in Table A.11-3 do not include Desert Water Agency/Coachella Valley Water District SWP contract supplies. These supplies are exchanged with Desert Water Agency and Coachella Valley Water District for an equal amount of Colorado River water, which is reflected in the Colorado River Aqueduct supplies shown in Table A.11-2. In addition, Desert Water Agency and Coachella Valley Water District should include their SWP contract supplies in their own accountings of reduced reliance. Additional information on these exchange agreements can be found in Section 3.2 and Appendix 3 of Metropolitan's UWMP.

These values also do not include supplies from San Luis Carryover storage or Central Valley storage programs because storage in these programs comprises previously stored water from sources already reflected in Table A.11-3. These storage programs are generally used to provide additional regional self-reliance in dry years, which is not reflected in this normal water year analysis. The Central Valley storage projects and their yields are described in Section 3.3, and Appendix 3. San Luis Carryover storage is described in Section 3.2 and Appendix 3.

Transfers and Exchanges of Supplies from the Delta Watershed

The transfers and exchanges of supplies from the Delta watershed shown in Table A.11-3 include supplies from the San Bernardino Valley MWD Program, Yuba River Accord Purchase Program, the San Gabriel Valley MWD Program, Irvine Ranch Water District Storage and Exchange Program, and other generic SWP and Central Valley transfers and exchanges. These programs are described in Section 3.2 and Appendix 3 of Metropolitan's UWMP.

Supplies from the Delta Watershed shown in Table A.11-3 are from the following sources:

- Baseline (2010) values – Metropolitan's 2005 UWMP, Table A.3-7: California Aqueduct Program Capabilities Year 2010 (Average Year)

- 2015 values – Metropolitan's 2010 UWMP, Table A.3-7: California Aqueduct Program Capabilities Year 2015 (Average Year)
- 2020 values – Metropolitan's 2015 UWMP, Table A.3-7: California Aqueduct Program Capabilities Year 2020 (Average Year)
- 2025-2045 values – Metropolitan's 2020 UWMP, Table A.3-7: California Aqueduct Program Capabilities Years 2025, 2030, 2035, 2040, 2045 (Normal Water Year)

A.11.4 UWMP Implementation

In addition to the analysis and documentation described above, WR P1 subsection (c)(1)(B) requires that all programs and projects included in the UWMP that are locally cost-effective and technically feasible, which reduce reliance on the Delta, are identified, evaluated, and implemented consistent with the implementation schedule. WR P1 (c)(1)(B) states that:

> *(B) Identified, evaluated, and commenced implementation, consistent with the implementation schedule set forth in the Plan, of all programs and projects included in the Plan that are locally cost effective and technically feasible which reduce reliance on the Delta*[.]

In accordance with Water Code Section 10631(f), water suppliers must already include in their UWMP a detailed description of expected future projects and programs that they may implement to increase the amount of water supply available to them in normal and single-dry water years and for a period of drought lasting five consecutive years. The UWMP description must also identify specific projects, include a description of the increase in water supply that is expected to be available from each project, and include an estimate regarding the implementation timeline for each project or program.

Section 3 of Metropolitan's UWMP summarizes the implementation plan and continued progress in developing a diversified water portfolio to meet the region's water needs.

Water Use Efficiency

The water use efficiency numbers used in this analysis include the total water use efficiency savings (conservation) for the service area, including savings from active, code-based, price-effect and pre-1990 savings. The specific water use efficiency programs and their implementation are described in Section 3.4 of Metropolitan's UWMP.

Water Recycling

The water recycling values used in this analysis reflect the total recycled water production in Metropolitan's service area. Water recycling programs and implementation are discussed in Section 3.5 of Metropolitan's UWMP. In addition, individual project-level details are provided in Appendix 5.

Stormwater Capture and Use

The stormwater capture and use data used in this analysis include supplies from local surface water production. Local surface water production and its implementation are discussed in Appendix 2 of Metropolitan's UWMP.

Advanced Water Technologies

The advanced water technologies data used in this analysis include total groundwater recovery and seawater desalination production in Metropolitan's service. Groundwater recovery and seawater desalination programs and implementation are described in Section 3.5 of Metropolitan's UWMP. In addition, individual project-level details are provided in Appendix 5.

Conjunctive Use Projects

The values for conjunctive use projects used in this analysis represent total groundwater production in the region. Groundwater production and its implementation are discussed in Appendix 2 of Metropolitan's UWMP.

Local and Regional Water Supply and Storage Programs

The data for local and regional water supply and storage programs shown this analysis include supplies from the Los Angeles Aqueduct. This program and its implementation are described in Appendix 2 of Metropolitan's UWMP.

Other Programs and Projects that Contribute to Regional Self-Reliance

Other programs and projects that contribute to regional self-reliance used in this analysis include current programs from the Colorado River Aqueduct. Colorado River supplies include Metropolitan's basic Colorado River apportionment, as well as supplies that result from existing and committed programs, including those from the IID-MWD Conservation Program, the implementation of the Quantification Settlement Agreement (QSA), related agreements, and the exchange agreement with SDCWA. Colorado River Aqueduct programs and their implementation are described in Section 3.1 and Appendix 3 of Metropolitan's UWMP.

CVP/SWP Contract Supplies

The CVP/SWP contract supplies shown in this analysis include Metropolitan's SWP Table A and Article 21 supplies. These supplies and their implementation are described in Section 3.2 and Appendix 3 of Metropolitan's UWMP.

Transfers and Exchanges of Supplies from the Delta Watershed

The transfers and exchanges of supplies from the Delta watershed shown in this analysis include supplies from the San Bernardino Valley MWD Program, Yuba River Accord Purchase Program, the San Gabriel Valley MWD Program, Irvine Ranch Water District Storage and Exchange Program, and other generic SWP and Central Valley transfers and exchanges. These programs and their implementation are described in Section 3.2 and Appendix 3 of Metropolitan's UWMP.

A.11.5 2015 UWMP Appendix 11

The information contained in this Appendix 11 is also intended to be a new Appendix 11 attached to Metropolitan's 2015 UWMP consistent with WR P1 subsection (c)(1)(C) (Cal. Code Regs. tit. 23, § 5003). Metropolitan provided notice of the availability of the draft 2020 UWMP (including this Appendix 11 which will also be a new Appendix 11 to its 2015 UWMP) and WSCP and the public hearing to consider adoption of both plans and Appendix 11 to the 2015 UWMP in accordance with CWC Sections 10621(b) and 10642, and Government Code Section 6066, and Chapter 17.5 (starting with Section 7290) of Division 7 of Title 1 of the Government Code. The public review drafts of the 2020 UWMP, Appendix 11 to the 2015 UWMP, and the WSCP were posted prominently on Metropolitan's website, mwdh2o.com, starting February 1, 2021, more than 60 days in advance of the public hearing on April 12, 2021. The notice of availability of the documents was sent to Metropolitan's member agencies, as well as cities and counties in Metropolitan's service area. In addition, a public notice advertising the public hearing in English and Spanish was published in 12 Southern California newspapers. The notification in English language newspapers was published on February 1 and 8, 2021. The notification was published on January 28-30, 2021 and February 1, 4-6, and 8, 2021 in Spanish language newspapers, satisfying the requirement for non-English language notification. Copies of: (1) the notification letter sent to the member agencies, cities and counties in Metropolitan's service area, and (2) the notice published in the newspapers are included in the 2020 UWMP Section 5. Thus, this Appendix 11 to Metropolitan's 2020 UWMP, which was adopted with Metropolitan's 2020 UWMP, will also be recognized and treated as Appendix 11 to Metropolitan's 2015 UWMP.

Metropolitan held the public hearing for the draft 2020 UWMP, draft Appendix 11 to the 2015 UWMP, and draft WSCP on April 12, 2021, at the Board's Water Planning and Stewardship Committee meeting, held online due to COVID-19 concerns. On May 11, 2021, Metropolitan's Board determined that the 2020 UWMP and the WSCP are consistent with the MWD Act and accurately represent the water resources plan for Metropolitan's service area. In addition, Metropolitan's Board determined that Appendix 11 to both the 2015 UWMP and the 2020 UWMP includes all of the elements described in Delta Plan Policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (Cal. Code Regs. tit. 23, § 5003), which need to be included in a water supplier's UWMP to support a certification of consistency for a future covered action. As stated in Resolutions 9279, 9280, and 9281, the Board adopted the 2020 UWMP, Appendix 11 to the 2015 UWMP, and the WSCP and authorized their submittal to the State of California. Copies of Resolutions 9279, 9280, and 9281 are included in the 2020 UWMP Section 5, and Resolution 9281 for the WSCP is attached to the WSCP as Attachment C.

Appendix 11

QUANTIFYING REGIONAL SELF-RELIANCE AND REDUCED RELIANCE ON WATER SUPPLIES FROM THE DELTA WATERSHED

Appendix 11
METROPOLITAN'S
REDUCED DELTA RELIANCE REPORTING

A.11.1 Background

Under the Sacramento-San Joaquin Delta Reform Act of 2009, state and local public agencies proposing a covered action in the Delta,[1] prior to initiating the implementation of that action, must prepare a written certification of consistency with detailed findings as to whether the covered action is consistent with applicable Delta Plan policies and submit that certification to the Delta Stewardship Council.[2] Anyone may appeal a certification of consistency, and if the Delta Stewardship Council grants the appeal, the covered action may not be implemented until the agency proposing the covered action submits a revised certification of consistency, and either no appeal is filed, or the Delta Stewardship Council denies the subsequent appeal.[3]

An urban water supplier that anticipates participating in or receiving water from a proposed covered action such as a multi-year water transfer, conveyance facility, or new diversion that involves transferring water through, exporting water from, or using water in the Delta should provide information in their 2015 and 2020 Urban Water Management Plans (UWMPs) that can then be used in the covered action process to demonstrate consistency with Delta Plan Policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (WR P1).[4]

WR P1 details what is needed for a covered action to demonstrate consistency with reduced reliance on the Delta and improved regional self-reliance. WR P1 subsection (a) states that:

(a) Water shall not be exported from, transferred through, or used in the Delta if all of the following apply:

> *(1) One or more water suppliers that would receive water as a result of the export, transfer, or use have failed to adequately contribute to reduced reliance on the Delta and improved regional self-reliance consistent with all of the requirements listed in paragraph (1) of subsection (c);*
>
> *(2) That failure has significantly caused the need for the export, transfer, or use; and*
>
> *(3) The export, transfer, or use would have a significant adverse environmental impact in the Delta.*

WR P1 subsection (c)(1) further defines what adequately contributing to reduced reliance on the Delta means in terms of (a)(1) above.

(c)(1) Water suppliers that have done all the following are contributing to reduced reliance on the Delta and improved regional self-reliance and are therefore consistent with this policy:

> *(A) Completed a current Urban or Agricultural Water Management Plan (Plan) which has been reviewed by the California Department of Water Resources for compliance with the applicable requirements of Water Code Division 6, Parts 2.55, 2.6, and 2.8;*

[1] Water Code, § 85057.5; Cal. Code Regs. tit. 23, § 5001.
[2] Water Code, § 85225; Delta Plan, App. D.
[3] Water Code, §§ 85225.10-85225.25; Delta Plan, App. D.
[4] Cal. Code Regs., tit. 23, § 5003.

(B) Identified, evaluated, and commenced implementation, consistent with the implementation schedule set forth in the Plan, of all programs and projects included in the Plan that are locally cost effective and technically feasible which reduce reliance on the Delta; and

(C) Included in the Plan, commencing in 2015, the expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance. The expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance shall be reported in the Plan as the reduction in the amount of water used, or in the percentage of water used, from the Delta watershed. For the purposes of reporting, water efficiency is considered a new source of water supply, consistent with Water Code Section 1011(a).

The analysis and documentation provided below include all of the elements described in WR P1(c)(1) that need to be included in a water supplier's UWMP to support a certification of consistency for a future covered action.

A.11.2 Summary of Expected Outcomes for Reduced Reliance on the Delta

As stated in WR P1(c)(1)(C), the policy requires that, commencing in 2015, UWMPs include expected outcomes for measurable reduction in Delta reliance and improved regional self-reliance. WR P1 further states that those outcomes shall be reported in the UWMP as the reduction in the amount of water used, or in the percentage of water used, from the Delta.

The expected outcomes for Metropolitan's Delta reliance and regional self-reliance were developed using the approach and guidance described in Appendix C of DWR's Urban Water Management Plan Guidebook 2020 (Guidebook Appendix C) issued in March 2021.

The data used in this analysis represent the total regional efforts of Metropolitan and its member agencies and their customers (many of them, retail agencies) and were developed in conjunction with Metropolitan's member agencies as part of the UWMP coordination process as described in Section 5 of Metropolitan's UWMP. In accordance with UMWP requirements, Metropolitan's member agencies and their customers (many of them, retail agencies) also report demands and supplies for their service areas in their respective UWMPs. The data reported by those agencies are not additive to the regional totals shown in Metropolitan's UWMP; rather, their reporting represents subtotals of the regional total and should be considered as such for the purposes of determining reduced reliance on the Delta.

While the demands that Metropolitan's member agencies and their customers report in their UWMPs are a good reflection of the demands in their respective service areas, they do not adequately represent each water supplier's contributions to reduced reliance on the Delta. In order to calculate and report their reliance on water supplies from the Delta watershed, water suppliers that receive water from the Delta through other regional or wholesale water suppliers would need to determine the amount of Delta water that they receive from the regional or wholesale supplier. Two specific pieces of information are needed to accomplish this: first is the quantity of demands on the regional or wholesale water supplier that accurately reflect a supplier's contributions to reduced reliance on the Delta, and second is the quantity of a supplier's demands on the regional or wholesale water supplier that are met by supplies from the Delta watershed.

For water suppliers that make investments in regional projects or programs it may be infeasible to quantify their demands on the regional or wholesale water supplier in a way that accurately reflects their individual contributions to reduced reliance on the Delta. Due to the extensive, long-

standing and successful implementation of regional demand management and local resource incentive programs in Metropolitan's service area, this infeasibility holds true for Metropolitan's members as well their customers. For Metropolitan's service area, reduced reliance on supplies from the Delta watershed can only be accurately accounted at the regional level, as is demonstrated in this analysis.

The following provides a summary of the near-term (2025) and long-term (2045) expected outcomes for Metropolitan's Delta reliance and regional self-reliance. The results show that as a region, Metropolitan and its members as well as their customers are measurably reducing reliance on the Delta and improving regional self-reliance, both as an amount of water used and as a percentage of water used.

Expected Outcomes for Regional Self-Reliance

- Near-term (2025) – Normal water year regional self-reliance is expected to increase by 813 TAF from the 2010 baseline; this represents an increase of almost 25 percent of 2025 normal water year retail demands (Table A.11-2).
- Long-term (2045) – Normal water year regional self-reliance is expected to increase by more than 1.28 MAF from the 2010 baseline, this represents an increase of more than 25 percent of 2045 normal water year retail demands (Table A.11-2).

Expected Outcomes for Reduced Reliance on Supplies from the Delta Watershed

- Near-term (2025) – Normal water year reliance on supplies from the Delta watershed decreased by 301 TAF from the 2010 baseline, this represents a decrease of 3 percent of 2025 normal water year retail demands (Table A.11-3).
- Long-term (2045) – Normal water year reliance on supplies from the Delta watershed decreased by 314 TAF from the 2010 baseline, this represents a decrease of just over 5 percent of 2045 normal water year retail demands (Table A.11-3).

A11.3 Demonstration of Reduced Reliance on the Delta

The methodology used to determine Metropolitan's reduced Delta reliance and improved regional self-reliance is consistent with the approach detailed in DWR's UWMP Guidebook Appendix C, including the use of narrative justifications for the accounting of supplies and the documentation of specific data sources. Some of the key assumptions underlying Metropolitan's demonstration of reduced reliance include:

- All data were obtained from the current 2020 UWMP or previously adopted UWMPs and represent average or normal water year conditions.
- All analyses were conducted at the service area level, and all data reflect the total contributions of Metropolitan and its members as well as their customers.
- No projects or programs that are described in the UWMPs as "Projects Under Development" were included in the accounting of supplies.

Baseline and Expected Outcomes

In order to calculate the expected outcomes for measurable reduction in Delta reliance and improved regional self-reliance, a baseline is needed to compare against. This analysis uses a normal water year representation of 2010 as the baseline, which is consistent with the approach described in the Guidebook Appendix C. Data for the 2010 baseline were taken from Metropolitan's 2005 UWMP as the UWMPs generally do not provide normal water year data for

the year that they are adopted (i.e., 2005 UWMP forecasts begin in 2010, 2010 UWMP forecasts begin in 2015, and so on).

Consistent with the 2010 baseline data approach, the expected outcomes for reduced Delta reliance and improved regional self-reliance for 2015 and 2020 were taken from Metropolitan's 2010 and 2015 UWMPs respectively. Expected outcomes for 2025-2045 are from the current 2020 UWMP. Documentation of the specific data sources and assumptions are included in the discussions below.

Service Area Demands without Water Use Efficiency

In alignment with the Guidebook Appendix C, this analysis uses normal water year demands, rather than normal water year supplies to calculate expected outcomes in terms of the percentage of water used. Using normal water year demands serves as a proxy for the amount of supplies that would be used in a normal water year, which helps alleviate issues associated with how supply capability is presented to fulfill requirements of the Act versus how supplies might be accounted for to demonstrate consistency with WR P1.

Because WR P1 considers water use efficiency savings a source of water supply, water suppliers such as Metropolitan that explicitly calculate and report water use efficiency savings in their UWMP will need to make an adjustment to properly reflect normal water year demands in the calculation of reduced reliance. As explained in the Guidebook Appendix C, water use efficiency savings must be added back to the normal year demands to represent demands without water use efficiency savings accounted for; otherwise the effect of water use efficiency savings on regional self-reliance would be overestimated. Table A.11-1 shows the results of this adjustment for Metropolitan. Supporting narratives and documentation for all of the data shown in Table A.11-1 are provided below.

Table A.11-1
Demands without Water Use Efficiency Accounted For

Total Service Area Water Demands (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Service Area Demands with Water Use Efficiency Accounted For	4,628,000	4,563,000	4,163,000	3,763,000	3,821,000	3,893,000	3,936,000	3,985,000
Reported Water Use Efficiency	865,000	936,000	1,056,000	1,162,000	1,211,000	1,263,000	1,325,000	1,389,000
Service Area Demands without Water Use Efficiency Accounted For	**5,493,000**	**5,499,000**	**5,219,000**	**4,925,000**	**5,032,000**	**5,156,000**	**5,261,000**	**5,374,000**

Service Area Demands without Water Use Efficiency

The service area demands shown in Table A.11-1 represent the total retail water demands for Metropolitan's service area and include municipal and industrial demands, agricultural demands, seawater barrier demands, and storage replenishment demands. These demand types and the modeling methodologies used to calculate them are described in Section 2.2 and Appendix 1 of Metropolitan's UWMP.

Water Use Efficiency

The water use efficiency numbers shown in Table A.11-1 represent the total water use efficiency savings (conservation) for Metropolitan's region, including savings from active, code-based, price-effect and pre-1990 sources. These sources of water use efficiency and the methodologies used to calculate them are described in Section 2.2, Section 3.4, Section 3.7 and Appendix 1 of Metropolitan's UWMP.

The demand and water use efficiency data shown in Table A.11-1 were collected from the following sources:

- Baseline (2010) values – Metropolitan's 2005 UWMP, Table 2-6: Metropolitan Regional Water Demand Average Year
- 2015 values – Metropolitan's 2010 UWMP, Table 2-8: Metropolitan Regional Water Demands Average Year
- 2020 values – Metropolitan's 2015 UWMP, Table 2-3: Metropolitan Regional Water Demands Average Year
- 2025-2045 values – Metropolitan's 2020 UWMP, Table 2-3: Metropolitan Regional Water Demands Normal Water Year

Supplies Contributing to Regional Self-Reliance

For a covered action to demonstrate consistency with the Delta Plan, WR P1 subsection (c)(1)(C) states that water suppliers must report the expected outcomes for measurable improvement in regional self-reliance. Table A.11-2 shows expected outcomes for supplies contributing to regional self-reliance both in amount and as a percentage. The numbers shown in Table A.11-2 represent efforts to improve regional self-reliance for Metropolitan's entire service area and include the total contributions of Metropolitan and its members as well as their customers. Supporting narratives and documentation for the all of the data shown in Table A.11-2 are provided below.

The results shown in Table A.11-2 demonstrate that Metropolitan's service area is measurably improving its regional self-reliance. In the near-term (2025), the expected outcome for normal water year regional self-reliance increases by 747 TAF from the 2010 baseline; this represents an increase of about 23 percent of 2025 normal water year retail demands. In the long-term (2045), normal water year regional self-reliance is expected to increase by more than 1.2 MAF from the 2010 baseline; this represents an increase of 25 percent of 2045 normal water year retail demands.

Table A.11-2
Supplies Contributing to Regional Self-Reliance

Water Supplies Contributing to Regional Self-Reliance (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Water Use Efficiency	865,000	936,000	1,056,000	1,162,000	1,211,000	1,263,000	1,325,000	1,389,000
Water Recycling	316,000	348,000	436,000	550,000	613,000	687,000	698,000	706,000
Stormwater Capture and Use	100,000	103,000	110,000	80,000	82,000	82,000	82,000	82,000
Advanced Water Technologies	111,000	101,000	194,000	194,000	208,000	209,000	209,000	210,000
Conjunctive Use Projects	1,416,000	1,429,000	1,303,000	1,255,000	1,273,000	1,296,000	1,311,000	1,326,000
Local and Regional Water Supply and Storage Projects	252,000	224,000	261,000	257,000	257,000	258,000	258,000	258,000
Other Programs and Projects that Contribute to Regional Self-Reliance	875,000	1,250,000	1,200,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Water Supplies Contributing to Regional Self-Reliance	**3,935,000**	**4,391,000**	**4,560,000**	**4,748,000**	**4,894,000**	**5,045,000**	**5,133,000**	**5,221,000**

Service Area Demands without Water Use Efficiency (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Service Area Demands without Water Use Efficiency Accounted For	5,493,000	5,499,000	5,219,000	4,925,000	5,032,000	5,156,000	5,261,000	5,374,000

Change in Regional Self Reliance (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Water Supplies Contributing to Regional Self-Reliance	3,935,000	4,391,000	4,560,000	4,748,000	4,894,000	5,045,000	5,133,000	5,221,000
Change in Supplies Contributing to Regional Self-Reliance	**NA**	**456,000**	**625,000**	**813,000**	**959,000**	**1,110,000**	**1,198,000**	**1,286,000**

Percent Change in Regional Self Reliance (As Percent of Demand w/out WUE)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Percent of Supplies Contributing to Regional Self-Reliance	71.6%	79.9%	87.4%	96.4%	97.3%	97.8%	97.6%	97.2%
Change in Percent of Supplies Contributing to Regional Self-Reliance	**NA**	**8.2%**	**15.7%**	**24.8%**	**25.6%**	**26.2%**	**25.9%**	**25.5%**

Water Use Efficiency

The water use efficiency information shown in Table A.11-2 is taken directly from Table A.11-1 above.

Water Recycling

The water recycling values shown in Table A.11-2 reflect the total recycled water production in Metropolitan's service area as described in Section 3.5 and Appendix 2 of Metropolitan's UWMP.

Stormwater Capture and Use

The stormwater capture and use data shown in Table A.11-2 include supplies from local surface water production as described in Section 1.4 and Appendix 2 of Metropolitan's UWMP.

These values do not include production from regional storage reservoirs; storage in these reservoirs is comprised of previously stored water from sources already reflected in Tables A.11-2 and A.11-3. These regional storage resources are generally used to provide additional regional self-reliance in dry years, which is not reflected in this normal water year analysis. The regional storage reservoirs and their yields are described in Section 3.6, Appendix 2 and Appendix 3 of Metropolitan's UWMP.

The stormwater capture and use values shown in Table A.11-2 also do not include stormwater capture that is used to recharge local groundwater basins. Stormwater capture for groundwater recharge supports production of groundwater in the region, and for the purposes of this analysis that production is already captured in Table A.11-2 under conjunctive use projects.

Advanced Water Technologies

The advanced water technologies data shown in Table A.11-2 include total groundwater recovery and seawater desalination production in Metropolitan's service area as described in Section 3.5 and Appendix 2 of Metropolitan's UWMP.

Conjunctive Use Projects

The values for conjunctive use projects shown in Table A.11-2 represent total groundwater production in the region as described in Section 1.4 and Appendix 2 of Metropolitan's UWMP.

The conjunctive use projects numbers shown in Table A.11-2 do not include production from regional groundwater conjunctive use programs. As described in the stormwater capture and use discussion above, these regional storage programs rely on previously stored water from sources already reflected in Tables A.11-2 and A.11-3 and are generally used to provide additional regional self-reliance in dry-years. The regional groundwater conjunctive use programs and their yields are described in Section 3.6 and Appendix 3.

Local and Regional Water Supply and Storage Programs

The data for local and regional water supply and storage programs shown in Table A.11-2 include supplies from the Los Angeles Aqueduct. This supply is described in Section 1.4 and Appendix 2 of Metropolitan's UWMP.

The local and regional supply numbers shown in Table A.11-2, except for "Other Programs and Projects that Contribute to Regional Self-Reliance" which is discussed below, were obtained from the following sources:

- Baseline (2010) values – Metropolitan's 2005 UWMP, Table 2-6: Metropolitan Regional Water Demand Average Year

- 2015 values – Metropolitan's 2010 UWMP, Table 2-8: Metropolitan Regional Water Demands Average Year
- 2020 values – Metropolitan's 2015 UWMP, Table 2-3: Metropolitan Regional Water Demands Average Year
- 2025-2045 values – Metropolitan's 2020 UWMP, Table 2-3: Metropolitan Regional Water Demands Normal Water Year

Other Programs and Projects that Contribute to Regional Self-Reliance

Other programs and projects that contribute to regional self-reliance shown in Table A.11-2 include current programs from the Colorado River Aqueduct. Colorado River supplies include Metropolitan's basic Colorado River apportionment, as well as supplies that result from existing and committed programs, including those from the IID-MWD Conservation Program, the implementation of the Quantification Settlement Agreement (QSA), related agreements, and the exchange agreement with SDCWA. Colorado River Aqueduct supplies and programs are described in Section 3.1 and Appendix 3 of Metropolitan's UWMP.

The values shown in Table A.11-2 for other programs and projects that contribute to regional self-reliance come from the following sources:

- Baseline (2010) values – Metropolitan's 2005 UWMP, Table A.3-7: Maximum Expected Colorado River Aqueduct Deliveries Year 2010 (Average Year)
- 2015 values – Metropolitan's 2010 UWMP, Table A.3-7: Maximum Expected Colorado River Aqueduct Deliveries Year 2015 (Average Year)
- 2020 values – Metropolitan's 2015 UWMP, Table A.3-7: Maximum Expected Colorado River Aqueduct Deliveries Year 2020 (Average Year)
- 2025-2045 values – Metropolitan's 2020 UWMP, Table A.3-7: Maximum Expected Colorado River Aqueduct Deliveries Years 2025, 2030, 2035, 2040, 2045 (Normal Water Year)

Reliance on Water Supplies from the Delta Watershed

In order for a covered action to demonstrate consistency with the Delta Plan, WR P1 subsection (c)(1)(C) requires that water suppliers report the expected outcomes for measurable reductions in supplies from the Delta watershed either as an amount or as a percentage. This analysis provides both calculations. Based on the methodology described in Guidebook Appendix C, and consistent with the approach of this analysis in not including projects under development, this accounting does not include any supplies from potential future covered actions. Table A.11-3 shows the expected outcomes for reliance on supplies from the Delta watershed for Metropolitan's service area. Supporting narratives and documentation for the all of the data shown in Table A.11-3 are provided below.

The results shown in Table A.11-3 demonstrate that Metropolitan's service area is measurably reducing its Delta reliance. In the near-term (2025), the expected outcome for normal water year reliance on supplies from the Delta watershed decreased by 301 TAF from the 2010 baseline; this represents a decrease of 3 percent of 2025 normal water year retail demands. In the long-term (2045), normal water year reliance on supplies from the Delta watershed decreased by 314 TAF from the 2010 baseline; this represents a decrease of just over 5 percent of 2045 normal water year retail demands.

Table A.11-3
Reliance on Water Supplies from the Delta Watershed

Water Supplies from the Delta Watershed (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
CVP/SWP Contract Supplies	1,472,000	1,029,000	984,000	1,133,000	1,130,000	1,128,000	1,126,000	1,126,000
Delta/Delta Tributary Diversions	-	-	-	-	-	-	-	-
Transfers and Exchanges of Supplies from the Delta Watershed	20,000	44,000	91,000	58,000	52,000	52,000	52,000	52,000
Other Water Supplies from the Delta Watershed	-	-	-	-	-	-	-	-
Total Water Supplies from the Delta Watershed	**1,492,000**	**1,073,000**	**1,075,000**	**1,191,000**	**1,182,000**	**1,180,000**	**1,178,000**	**1,178,000**

Service Area Demands without Water Use Efficiency (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Service Area Demands without Water Use Efficiency Accounted For	5,493,000	5,499,000	5,219,000	4,925,000	5,032,000	5,156,000	5,261,000	5,374,000

Change in Supplies from the Delta Watershed (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Water Supplies from the Delta Watershed	1,492,000	1,073,000	1,075,000	1,191,000	1,182,000	1,180,000	1,178,000	1,178,000
Change in Supplies from the Delta Watershed	**NA**	**(419,000)**	**(417,000)**	**(301,000)**	**(310,000)**	**(312,000)**	**(314,000)**	**(314,000)**

Percent Change in Supplies from the Delta Watershed (As a Percent of Demand w/out WUE)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Percent of Supplies from the Delta Watershed	27.2%	19.5%	20.6%	24.2%	23.5%	22.9%	22.4%	21.9%
Change in Percent of Supplies from the Delta Watershed	**NA**	**-7.6%**	**-6.6%**	**-3.0%**	**-3.7%**	**-4.3%**	**-4.8%**	**-5.2%**

CVP/SWP Contract Supplies

The CVP/SWP contract supplies shown in Table A.11-3 include Metropolitan's SWP Table A and Article 21 supplies. These supplies are described in Section 3.2 and Appendix 3 of Metropolitan's UWMP.

The values shown in Table A.11-3 do not include Desert Water Agency/Coachella Valley Water District SWP contract supplies. These supplies are exchanged with Desert Water Agency and Coachella Valley Water District for an equal amount of Colorado River water, which is reflected in the Colorado River Aqueduct supplies shown in Table A.11-2. In addition, Desert Water Agency and Coachella Valley Water District should include their SWP contract supplies in their own accountings of reduced reliance. Additional information on these exchange agreements can be found in Section 3.2 and Appendix 3 of Metropolitan's UWMP.

These values also do not include supplies from San Luis Carryover storage or Central Valley storage programs because storage in these programs comprises previously stored water from sources already reflected in Table A.11-3. These storage programs are generally used to provide additional regional self-reliance in dry years, which is not reflected in this normal water year analysis. The Central Valley storage projects and their yields are described in Section 3.3, and Appendix 3. San Luis Carryover storage is described in Section 3.2 and Appendix 3.

Transfers and Exchanges of Supplies from the Delta Watershed

The transfers and exchanges of supplies from the Delta watershed shown in Table A.11-3 include supplies from the San Bernardino Valley MWD Program, Yuba River Accord Purchase Program, the San Gabriel Valley MWD Program, Irvine Ranch Water District Storage and Exchange Program, and other generic SWP and Central Valley transfers and exchanges. These programs are described in Section 3.2 and Appendix 3 of Metropolitan's UWMP.

Supplies from the Delta Watershed shown in Table A.11-3 are from the following sources:

- Baseline (2010) values – Metropolitan's 2005 UWMP, Table A.3-7: California Aqueduct Program Capabilities Year 2010 (Average Year)

- 2015 values – Metropolitan's 2010 UWMP, Table A.3-7: California Aqueduct Program Capabilities Year 2015 (Average Year)
- 2020 values – Metropolitan's 2015 UWMP, Table A.3-7: California Aqueduct Program Capabilities Year 2020 (Average Year)
- 2025-2045 values – Metropolitan's 2020 UWMP, Table A.3-7: California Aqueduct Program Capabilities Years 2025, 2030, 2035, 2040, 2045 (Normal Water Year)

A.11.4 UWMP Implementation

In addition to the analysis and documentation described above, WR P1 subsection (c)(1)(B) requires that all programs and projects included in the UWMP that are locally cost-effective and technically feasible, which reduce reliance on the Delta, are identified, evaluated, and implemented consistent with the implementation schedule. WR P1 (c)(1)(B) states that:

> *(B) Identified, evaluated, and commenced implementation, consistent with the implementation schedule set forth in the Plan, of all programs and projects included in the Plan that are locally cost effective and technically feasible which reduce reliance on the Delta*[.]

In accordance with Water Code Section 10631(f), water suppliers must already include in their UWMP a detailed description of expected future projects and programs that they may implement to increase the amount of water supply available to them in normal and single-dry water years and for a period of drought lasting five consecutive years. The UWMP description must also identify specific projects, include a description of the increase in water supply that is expected to be available from each project, and include an estimate regarding the implementation timeline for each project or program.

Section 3 of Metropolitan's UWMP summarizes the implementation plan and continued progress in developing a diversified water portfolio to meet the region's water needs.

Water Use Efficiency

The water use efficiency numbers used in this analysis include the total water use efficiency savings (conservation) for the service area, including savings from active, code-based, price-effect and pre-1990 savings. The specific water use efficiency programs and their implementation are described in Section 3.4 of Metropolitan's UWMP.

Water Recycling

The water recycling values used in this analysis reflect the total recycled water production in Metropolitan's service area. Water recycling programs and implementation are discussed in Section 3.5 of Metropolitan's UWMP. In addition, individual project-level details are provided in Appendix 5.

Stormwater Capture and Use

The stormwater capture and use data used in this analysis include supplies from local surface water production. Local surface water production and its implementation are discussed in Appendix 2 of Metropolitan's UWMP.

Advanced Water Technologies

The advanced water technologies data used in this analysis include total groundwater recovery and seawater desalination production in Metropolitan's service. Groundwater recovery and seawater desalination programs and implementation are described in Section 3.5 of Metropolitan's UWMP. In addition, individual project-level details are provided in Appendix 5.

Conjunctive Use Projects

The values for conjunctive use projects used in this analysis represent total groundwater production in the region. Groundwater production and its implementation are discussed in Appendix 2 of Metropolitan's UWMP.

Local and Regional Water Supply and Storage Programs

The data for local and regional water supply and storage programs shown this analysis include supplies from the Los Angeles Aqueduct. This program and its implementation are described in Appendix 2 of Metropolitan's UWMP.

Other Programs and Projects that Contribute to Regional Self-Reliance

Other programs and projects that contribute to regional self-reliance used in this analysis include current programs from the Colorado River Aqueduct. Colorado River supplies include Metropolitan's basic Colorado River apportionment, as well as supplies that result from existing and committed programs, including those from the IID-MWD Conservation Program, the implementation of the Quantification Settlement Agreement (QSA), related agreements, and the exchange agreement with SDCWA. Colorado River Aqueduct programs and their implementation are described in Section 3.1 and Appendix 3 of Metropolitan's UWMP.

CVP/SWP Contract Supplies

The CVP/SWP contract supplies shown in this analysis include Metropolitan's SWP Table A and Article 21 supplies. These supplies and their implementation are described in Section 3.2 and Appendix 3 of Metropolitan's UWMP.

Transfers and Exchanges of Supplies from the Delta Watershed

The transfers and exchanges of supplies from the Delta watershed shown in this analysis include supplies from the San Bernardino Valley MWD Program, Yuba River Accord Purchase Program, the San Gabriel Valley MWD Program, Irvine Ranch Water District Storage and Exchange Program, and other generic SWP and Central Valley transfers and exchanges. These programs and their implementation are described in Section 3.2 and Appendix 3 of Metropolitan's UWMP.

A.11.5 2015 UWMP Appendix 11

The information contained in this Appendix 11 is also intended to be a new Appendix 11 attached to Metropolitan's 2015 UWMP consistent with WR P1 subsection (c)(1)(C) (Cal. Code Regs. tit. 23, § 5003). Metropolitan provided notice of the availability of the draft 2020 UWMP (including this Appendix 11 which will also be a new Appendix 11 to its 2015 UWMP) and WSCP and the public hearing to consider adoption of both plans and Appendix 11 to the 2015 UWMP in accordance with CWC Sections 10621(b) and 10642, and Government Code Section 6066, and Chapter 17.5 (starting with Section 7290) of Division 7 of Title 1 of the Government Code. The public review drafts of the 2020 UWMP, Appendix 11 to the 2015 UWMP, and the WSCP were posted prominently on Metropolitan's website, mwdh2o.com, starting February 1, 2021, more than 60 days in advance of the public hearing on April 12, 2021. The notice of availability of the documents was sent to Metropolitan's member agencies, as well as cities and counties in Metropolitan's service area. In addition, a public notice advertising the public hearing in English and Spanish was published in 12 Southern California newspapers. The notification in English language newspapers was published on February 1 and 8, 2021. The notification was published on January 28-30, 2021 and February 1, 4-6, and 8, 2021 in Spanish language newspapers, satisfying the requirement for non-English language notification. Copies of: (1) the notification letter sent to the member agencies, cities and counties in Metropolitan's service area, and (2) the notice published in the newspapers are included in the 2020 UWMP Section 5. Thus, this Appendix 11 to Metropolitan's 2020 UWMP, which was adopted with Metropolitan's 2020 UWMP, will also be recognized and treated as Appendix 11 to Metropolitan's 2015 UWMP.

Metropolitan held the public hearing for the draft 2020 UWMP, draft Appendix 11 to the 2015 UWMP, and draft WSCP on April 12, 2021, at the Board's Water Planning and Stewardship Committee meeting, held online due to COVID-19 concerns. On May 11, 2021, Metropolitan's Board determined that the 2020 UWMP and the WSCP are consistent with the MWD Act and accurately represent the water resources plan for Metropolitan's service area. In addition, Metropolitan's Board determined that Appendix 11 to both the 2015 UWMP and the 2020 UWMP includes all of the elements described in Delta Plan Policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (Cal. Code Regs. tit. 23, § 5003), which need to be included in a water supplier's UWMP to support a certification of consistency for a future covered action. As stated in Resolutions 9279, 9280, and 9281, the Board adopted the 2020 UWMP, Appendix 11 to the 2015 UWMP, and the WSCP and authorized their submittal to the State of California. Copies of Resolutions 9279, 9280, and 9281 are included in the 2020 UWMP Section 5, and Resolution 9281 for the WSCP is attached to the WSCP as Attachment C.

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APPENDIX C

COMPLETED PLAN CHECKLIST

Retail	Wholesale	2020 Guidebook Location	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Chapter 1	A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities.	Introduction and Overview	Chapter 1 Lay Description
x	x	Chapter 1	Each plan shall include a simple description of the supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a supplier may also choose to include a simple description at the beginning of each chapter.	Summary	Beginning of each Chapter
x	x	Section 2.2	Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.	Plan Preparation	Section 2.2
x	x	Section 2.6	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan Preparation	Section 2.6
x	x	Section 2.6.2	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan and contingency plan.	Plan Preparation	Section 2.6.2
x		Section 2.6, Section 6.1	Retail suppliers will include documentation that they have provided their wholesale supplier(s) - if any - with water use projections from that source.	System Supplies	Sections 2.6 and 6.1
	x	Section 2.6	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	Section 2.6
x	x	Section 3.1	Describe the water supplier service area.	System Description	Section 3.1
x	x	Section 3.3	Describe the climate of the service area of the supplier.	System Description	Section 3.3
x	x	Section 3.4	Provide population projections for 2025, 2030, 2035, 2040 and optionally 2045.	System Description	Section 3.4
x	x	Section 3.4.2	Describe other social, economic, and demographic factors affecting the supplier's water management planning.	System Description	Section 3.4.2
x	x	Sections 3.4 and 5.4	Indicate the current population of the service area.	System Description and Baselines and Targets	Sections 3.4 and 5.4
x	x	Section 3.5	Describe the land uses within the service area.	System Description	Section 3.5
x	x	Section 4.2	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Section 4.2
x	x	Section 4.2.4	Retail suppliers shall provide data to show the distribution loss standards were met.	System Water Use	Section 4.2.4
x	x	Section 4.2.6	In projected water use, include estimates of water savings from adopted codes, plans and other policies or laws.	System Water Use	Section 4.2.6
x	x	Section 4.2.6	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	System Water Use	Section 4.2.6
x	optional	Section 4.3.2.4	Report the distribution system water loss for each of the 5 years preceding the plan update.	System Water Use	Section 4.3.2
x	optional	Section 4.4	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Section 4.4
x	x	Section 4.5	Demands under climate change considerations must be included as part of the drought risk assessment.	System Water Use	Section 4.5
x		Chapter 5	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	Baselines and Targets	Chapter 5
x		Chapter 5	Retail suppliers shall meet their water use target by December 31, 2020.	Baselines and Targets	Chapter 5
	x	Section 5.1	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	Not applicable

Retail	Wholesale	2020 Guidebook Location	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x		Section 5.2	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	Not applicable
x		Section 5.5	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5 year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	Sections 5.2, 5.3, and 5.5
x		Section 5.5 and Appendix E	Retail suppliers shall report on their compliance in meeting their water use targets. The data shall be reported using a standardized form in the SBX7-7 2020 Compliance Form.	Baselines and Targets	Section 5.5
x	x	Sections 6.1 and 6.2	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought.	System Supplies	Sections 6.1, 6.2, 7.1, and 7.2
x	x	Sections 6.1	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, *including changes in supply due to climate change.*	System Supplies	Section 6.1
x	x	Section 6.1	When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies.	System Supplies	Section 6.1
x	x	Section 6.1.1	Describe measures taken to acquire and develop planned sources of water.	System Supplies	Section 6.1.1
x	x	Section 6.2.8	Identify and quantify the existing and planned sources of water available for 2020, 2025, 2030, 2035, 2040 and optionally 2045.	System Supplies	Section 6.2.8
x	x	Section 6.2	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Section 6.2
x	x	Section 6.2.2	Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System Supplies	Section 6.2.2
x	x	Section 6.2.2	Describe the groundwater basin.	System Supplies	Section 6.2.2
x	x	Section 6.2.2	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	Section 6.2.2
x	x	Section 6.2.2.1	For unadjudicated basins, indicate whether or not the department has identified the basin as a high or medium priority. Describe efforts by the supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	System Supplies	Section 6.2.2
x	x	Section 6.2.2.4	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	System Supplies	Section 6.2.2
x	x	Section 6.2.2	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Section 6.2.2
x	x	Section 6.2.7	Describe the opportunities for exchanges or transfers of water on a short-term or long- term basis.	System Supplies	Section 6.2.7
x	x	Section 6.2.5	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System Supplies (Recycled Water)	Section 6.2.5
x	x	Section 6.2.5	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Section 6.2.5
x	x	Section 6.2.5	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	Section 6.2.5
x	x	Section 6.2.5	Describe the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	System Supplies (Recycled Water)	Section 6.2.5
x	x	Section 6.2.5	Describe the actions which may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System Supplies (Recycled Water)	Section 6.2.5
x	x	Section 6.2.5	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Section 6.2.5
x	x	Section 6.2.6	Describe desalinated water project opportunities for long-term supply.	System Supplies	Section 6.2.6
x	x	Section 6.2.5	Describe the wastewater collection and treatment systems in the supplier's service area with quantified amount of collection and treatment and the disposal methods.	System Supplies (Recycled Water)	Section 6.2.5
x	x	Section 6.2.8, Section 6.3.7	Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and for a period of drought lasting 5 consecutive water years.	System Supplies	Sections 6.2.8 and 6.2.9

Retail	Wholesale	2020 Guidebook Location	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 6.4 and Appendix O	The UWMP must include energy information, as stated in the code, that a supplier can readily obtain.	System Suppliers, Energy Intensity	Section 6.4
x	x	Section 7.2	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability	Water Supply Reliability Assessment	Section 7.2
x	x	Section 7.2.4	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	Section 7.2.4
x	x	Section 7.3	Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	Section 7.3
x	x	Section 7.3	Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects.	Water Supply Reliability Assessment	Section 7.3
x	x	Section 7.3	Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts 5 consecutive years.	Water Supply Reliability Assessment	Section 7.3
x	x	Section 7.3	Include a determination of the reliability of each source of supply under a variety of water shortage conditions.	Water Supply Reliability Assessment	Section 7.3
x	x	Section 7.3	Include a comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.	Water Supply Reliability Assessment	Section 7.3
x	x	Section 7.3	Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.	Water Supply Reliability Assessment	Section 7.3
x	x	Chapter 8	Provide a water shortage contingency plan (WSCP) with specified elements below.	Water Shortage Contingency Planning	Chapter 8
x	x	Chapter 8	Provide the analysis of water supply reliability (from Chapter 7 of Guidebook) in the WSCP	Water Shortage Contingency Planning	Chapter 8
x	x	Section 8.10	Describe reevaluation and improvement procedures for monitoring and evaluation the water shortage contingency plan to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Water Shortage Contingency Planning	Section 8.10
x	x	Section 8.2	Provide the written decision-making process and other methods that the supplier will use each year to determine its water reliability.	Water Shortage Contingency Planning	Section 8.2
x	x	Section 8.2	Provide data and methodology to evaluate the supplier's water reliability for the current year and one dry year pursuant to factors in the code.	Water Shortage Contingency Planning	Section 8.2
x	x	Section 8.3	Define six standard water shortage levels of 10, 20, 30, 40, 50 percent shortage and greater than 50 percent shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	Water Shortage Contingency Planning	Section 8.3
x	x	Section 8.3	Suppliers with an existing water shortage contingency plan that uses different water shortage levels must cross reference their categories with the six standard categories.	Water Shortage Contingency Planning	Section 8.3
x	x	Section 8.4	Suppliers with water shortage contingency plans that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Water Shortage Contingency Planning	Section 8.4.2
x	x	Section 8.4	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Water Shortage Contingency Planning	Section 8.4.1
x	x	Section 8.4	Specify locally appropriate operational changes.	Water Shortage Contingency Planning	Section 8.4.3
x	x	Section 8.4	Specify additional mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions are appropriate to local conditions.	Water Shortage Contingency Planning	Section 8.4.4
x	x	Section 8.4	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Water Shortage Contingency Planning	Section 8.4.7
x	x	Section 8.4.6	The plan shall include a seismic risk assessment and mitigation plan.	Water Shortage Contingency Plan	Section 8.4.6
x	x	Section 8.5	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Water Shortage Contingency Planning	Section 8.5

Retail	Wholesale	2020 Guidebook Location	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 8.5 and 8.6	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Water Shortage Contingency Planning	Sections 8.5 and 8.6
x		Section 8.6	Retail supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	Water Shortage Contingency Planning	Section 8.6
x		Section 8.7	Describe the legal authority that empowers the supplier to enforce shortage response actions.	Water Shortage Contingency Planning	Section 8.7
x	x	Section 8.7	Provide a statement that the supplier will declare a water shortage emergency Water Code Chapter 3.	Water Shortage Contingency Planning	Section 8.7
x	x	Section 8.7	Provide a statement that the supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	Water Shortage Contingency Planning	Section 8.7
x	x	Section 8.8	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	Section 8.8
x	x	Section 8.8	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	Section 8.8
x		Section 8.8	Retail suppliers must describe the cost of compliance with Water Code Chapter 3.3: Excessive Residential Water Use During Drought	Water Shortage Contingency Planning	Section 8.8
x		Section 8.9	Retail suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance.	Water Shortage Contingency Planning	Section 8.9
x		Section 8.11	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Water Shortage Contingency Planning	Section 8.11
x	x	Sections 8.12 and 10.4	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 30 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	Sections 8.12 and 10.4
x	x	Section 8.12	Make available the Water Shortage Contingency Plan to customers and any city or county where it provides water within 30 after adopted the plan.	Water Shortage Contingency Planning	Section 8.12
	x	Sections 9.1 and 9.3	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	Demand Management Measures	Not applicable
x		Sections 9.2 and 9.3	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	Sections 9.2 and 9.3
x		Chapter 10	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	Plan Adoption, Submittal, and Implementation	Chapter 10
x	x	Section 10.2.1	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Reported in Table 10-1.	Plan Adoption, Submittal, and Implementation	Section 10.2.1
x	x	Section 10.4	Each urban water supplier shall update and submit its 2020 plan to the department by July 1, 2021.	Plan Adoption, Submittal, and Implementation	Section 10.4
x	x	Sections 10.2.2, 10.3, and 10.5	Provide supporting documentation that the urban water supplier made the plan and contingency plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan and contingency plan.	Plan Adoption, Submittal, and Implementation	Sections 10.2, 10.3, and 10.5
x	x	Section 10.2.2	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	Section 10.2.2
x	x	Section 10.3.2	Provide supporting documentation that the plan and contingency plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Section 10.3.2
x	x	Section 10.4	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	Section 10.4.3
x	x	Section 10.4	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	Section 10.4
x	x	Sections 10.4.1 and 10.4.2	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	Sections 10.4.1 and 10.4.2
x	x	Section 10.5	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.5

Retail	Wholesale	2020 Guidebook Location	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 10.5	Provide supporting documentation that, not later than 30 days after filing a copy of its water shortage contingency plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.5
x	x	Section 10.6	If supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings.	Plan Adoption, Submittal, and Implementation	Section 10.6
x	x	Section 10.7.2	If revised, submit a copy of the water shortage contingency plan to DWR within 30 days of adoption.	Plan Adoption, Submittal, and Implementation	Section 10.7.2

APPENDIX D

60 – DAY NOTIFICATION LETTERS AND PUBLIC HEARING NOTIFICATIONS

CITY OF
SANTA FE SPRINGS
11710 E. TELEGRAPH ROAD ♦ CA ♦ 90670-3679 ♦ (562) 868-0511 ♦ (562) 868-7112 ♦ WWW.SANTAFESPRINGS.ORG
DEPARTMENT OF PUBLIC WORKS

January 15, 2021

City of Whittier
Attn: Brian Saeki, City Manager
12016 Hadley St.
Whittier, CA 90602

SUBJECT: 2020 Urban Water Management Plan Update

Dear Brian Saeki:

The City of Santa Fe Springs is currently in the process of reviewing its Urban Water Management Plan (UWMP) for the upcoming 2020 Update. The Urban Water Management Planning Act requires every urban water supplier, which provides water directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, to prepare and adopt an UWMP and periodically update that plan at least once every five years. The UWMP is a planning document and a source document to direct urban water suppliers to evaluate and compare their water supply and reliability to their existing water conservation efforts. The City of Santa Fe Springs is currently in the process of preparing the 2020 UWMP Update.

As an urban water supplier, the City of Santa Fe Springs is required pursuant to Section 10620(d)(3) of the California Water Code to coordinate with water management agencies, relevant public agencies, and other water suppliers regarding the preparation of the UWMP. Pursuant to Section 10621(b) of the California Water Code, the City of Santa Fe Springs will be reviewing the UWMP and will make amendments or changes, as appropriate. The City of Santa Fe Springs invites you to submit comments in anticipation of the development of our 2020 UWMP Update. Please provide written comments within the next 30 days to the City of Santa Fe Springs.

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DEPARTMENT OF PUBLIC WORKS

January 15, 2021

Central Basin Municipal Water District
Attn: Alex Rojas, General Manager
6252 Telegraph Road
Commerce, CA 90040

SUBJECT: 2020 Urban Water Management Plan Update

Dear Alex Rojas:

The City of Santa Fe Springs is currently in the process of reviewing its Urban Water Management Plan (UWMP) for the upcoming 2020 Update. The Urban Water Management Planning Act requires every urban water supplier, which provides water directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, to prepare and adopt an UWMP and periodically update that plan at least once every five years. The UWMP is a planning document and a source document to direct urban water suppliers to evaluate and compare their water supply and reliability to their existing water conservation efforts. The City of Santa Fe Springs is currently in the process of preparing the 2020 UWMP Update.

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DEPARTMENT OF PUBLIC WORKS

January 15, 2021

City of Downey
Attn: Gilbert A. Livas, City Manager
11111 Brookshire Ave
Downey, CA 90670

SUBJECT: 2020 Urban Water Management Plan Update

Dear Gilbert A. Livas:

The City of Santa Fe Springs is currently in the process of reviewing its Urban Water Management Plan (UWMP) for the upcoming 2020 Update. The Urban Water Management Planning Act requires every urban water supplier, which provides water directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, to prepare and adopt an UWMP and periodically update that plan at least once every five years. The UWMP is a planning document and a source document to direct urban water suppliers to evaluate and compare their water supply and reliability to their existing water conservation efforts. The City of Santa Fe Springs is currently in the process of preparing the 2020 UWMP Update.

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DEPARTMENT OF PUBLIC WORKS

January 15, 2021

City of Norwalk
Attn: Jesus M. Gomez, City Manager
12700 Norwalk Blvd
Norwalk, CA 90650

SUBJECT: 2020 Urban Water Management Plan Update

Dear Jesus M. Gomez:

The City of Santa Fe Springs is currently in the process of reviewing its Urban Water Management Plan (UWMP) for the upcoming 2020 Update. The Urban Water Management Planning Act requires every urban water supplier, which provides water directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, to prepare and adopt an UWMP and periodically update that plan at least once every five years. The UWMP is a planning document and a source document to direct urban water suppliers to evaluate and compare their water supply and reliability to their existing water conservation efforts. The City of Santa Fe Springs is currently in the process of preparing the 2020 UWMP Update.

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DEPARTMENT OF PUBLIC WORKS

January 15, 2021

City of Santa Fe Springs
Attn: Janet Martinez, City Clerk
11710 E. Telegraph Road
Santa Fe Springs, CA 90670

SUBJECT: 2020 Urban Water Management Plan Update

Dear Janet Martinez:

The City of Santa Fe Springs is currently in the process of reviewing its Urban Water Management Plan (UWMP) for the upcoming 2020 Update. The Urban Water Management Planning Act requires every urban water supplier, which provides water directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, to prepare and adopt an UWMP and periodically update that plan at least once every five years. The UWMP is a planning document and a source document to direct urban water suppliers to evaluate and compare their water supply and reliability to their existing water conservation efforts. The City of Santa Fe Springs is currently in the process of preparing the 2020 UWMP Update.

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DEPARTMENT OF PUBLIC WORKS

January 15, 2021

County of Los Angeles
Attn: Dean C. Logan, Registrar – Recorder / County Clerk
12400 Imperial Highway
Norwalk, CA 90650

SUBJECT: 2020 Urban Water Management Plan Update

Dear Dean C. Logan:

The City of Santa Fe Springs is currently in the process of reviewing its Urban Water Management Plan (UWMP) for the upcoming 2020 Update. The Urban Water Management Planning Act requires every urban water supplier, which provides water directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, to prepare and adopt an UWMP and periodically update that plan at least once every five years. The UWMP is a planning document and a source document to direct urban water suppliers to evaluate and compare their water supply and reliability to their existing water conservation efforts. The City of Santa Fe Springs is currently in the process of preparing the 2020 UWMP Update.

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Whittier Daily News
Affiliated with SGV Newspaper Group
605 E. Huntington Dr., Suite 100
Monrovia, CA 91016
626-962-8811 ext. 40885

MSY Water Utility

50104499-542010

CITY OF SANTA FE SPRINGS
ATTN: LINDA GUERRERO
11710 TELEGRAPH ROAD
SANTA FE SPRINGS, CA 90670

Account Number:	5007848
Ad Order Number:	0011472894
Customer's Reference / PO Number:	
Publication:	Whittier Daily News
Publication Dates:	07/01/2021, 07/06/2021, 07/13/2021
Total Amount:	$1,100.00
Payment Amount:	$0.00
Amount Due:	$1,100.00

Invoice Text: **SUBJECT: Notice of Public Hearing for 2020 Urban Water Management Plan and Water Shortage Contingency Plan**

The City of Santa Fe Springs (City) will hold a PUBLIC HEARING on July 20, 2021 for the purposes of adopting its 2020 Urban Water Management Plan and its Water Shortage Contingency Plan. The City's 2020 Urban Water Management Plan incorporates the City's Water Shortage Contingency Plan.

The 2020 Urban Water Management Plan and Water Shortage Contingency Plan were prepared pursuant to the "Urban Water Management Planning Act" and the California Water Code. The California Department of Water Resources requires every urban water supplier to prepare and adopt an Urban Water Management Plan, including the Water Shortage Contingency Plan, and periodically update the Urban Water Management Plan at least once every five years, in years ending in six and one.

This public hearing will be conducted in-person in the Santa Fe Springs City Council Chambers,Located at 11710 Telegraph Road, and are subject to posted COVID-19 protocols. Members of the public may provide public comment for this meeting in-person at the meeting or by written correspondence (hard copy or email): Public comments can be submitted via email to cityclerk@santafesprings.org or by hard copy to the Office of the City Clerk no later than 12:00 p.m. on the day of the meeting. Please identify the agenda item number in the subject line of the email or hard copy document. All written correspondence received by the 12:00 p.m. deadline will be distributed to the City Council prior to the meeting. During the meeting, your name will be read into the record. The document will be retained with the public record of the meeting.

Information regarding Santa Fe Springs' PUBLIC HEARING follows:

Date: July 20, 2021
Time: 6:00 PM
Place: Santa Fe Springs City Hall, 11710 Telegraph Road

The City invites all interested entities to attend and present their comments. A copy of the draft 2020 Urban Water Management Plan and Water Shortage Contingency Plan will be available at the City's website www.santafesprings.org. Please provide written comments by 12:00 p.m. on July 20, 2021 to the City of Santa Fe Springs.
Published: July 1, 6, 13, 2021 Whittier Daily News Ad#11472894

Whittier Daily News
Affiliated with SGV Newspaper Group
605 E. Huntington Dr., Suite 100
Monrovia, CA 91016
626-962-8811 ext. 40885

(Space below for use of County Clerk Only)

5007848

CITY OF SANTA FE SPRINGS
ATTN: LINDA GUERRERO
11710 TELEGRAPH ROAD
SANTA FE SPRINGS, CA 90670

Legal No. **0011472894**

SUBJECT: **Notice of Public Hearing for 2020 Urban Water Management Plan and Water Shortage Contingency Plan**

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Published: July 1, 6, 13, 2021 Whittier Daily News Ad#11472894

PROOF OF PUBLICATION
(2015.5 C.C.P.)

STATE OF CALIFORNIA
County of Los Angeles

I am a citizen of the United States, and a resident of the county aforesaid. I am over the age of eighteen years and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of WHITTIER DAILY NEWS, a newspaper of general circulation for the City of Whittier, by the Superior Court of the County of Los Angles, State of California, on the date of October 10, 1960, Case Number 369393. The notice, of which the annexed is a true printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

07/01/2021, 07/06/2021, 07/13/2021

I declare under the penalty of perjury that the foregoing is true and correct.

Executed at Monrovia, LA Co. California
On this 23th day of July, 2021.

Evangelina Almeida

Signature

CITY OF
SANTA FE SPRINGS
11710 E Telegraph Road ♦ Santa Fe Springs, CA 90670-3679 ♦ (562) 868-0511 ♦ (562) 868-8112
DEPARTMENT OF PUBLIC WORKS

June 28, 2021

Central Basin Municipal Water District
Attn: Alex Rojas, General Manager
6252 Telegraph Road
Commerce, CA 90040

SUBJECT: Notice of Public Hearing for 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Alex Rojas:

The City of Santa Fe Springs (City) will hold a PUBLIC HEARING on July 20, 2021 for the purposes of adopting its 2020 Urban Water Management Plan and its Water Shortage Contingency Plan. The City's 2020 Urban Water Management Plan incorporates the City's Water Shortage Contingency Plan.

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John M. Mora, Mayor ♦ Annette Rodriguez, Mayor Pro Tem
City Council
Jay Sarno ♦ Juanita Trujillo ♦ Joe Angel Zamora
City Manager
Raymond R. Cruz

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Time: 6:00 PM
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11710 E Telegraph Road ♦ Santa Fe Springs, CA 90670-3679 ♦ (562) 868-0511 ♦ (562) 868-8112
DEPARTMENT OF PUBLIC WORKS

June 28, 2021

County of Los Angeles
Attn: Dean C. Logan, Registrar – Recorder / County Clerk
12400 Imperial Highway
Norwalk, CA 90650

SUBJECT: Notice of Public Hearing for 2020 Urban Water Management Plan and Water Shortage Contingency Plan

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11710 E Telegraph Road ♦ Santa Fe Springs, CA 90670-3679 ♦ (562) 868-0511 ♦ (562) 868-8112
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June 28, 2021

City of Downey
Attn: Gilbert A. Livas, City Manager
11111 Brookshire Ave
Downey, CA 90670

SUBJECT: Notice of Public Hearing for 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Gilbert A. Livas:

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11710 E Telegraph Road ♦ Santa Fe Springs, CA 90670-3679 ♦ (562) 868-0511 ♦ (562) 868-8112
DEPARTMENT OF PUBLIC WORKS

June 28, 2021

City of Norwalk
Attn: Jesus M. Gomez, City Manager
12700 Norwalk Blvd
Norwalk, CA 90650

SUBJECT: Notice of Public Hearing for 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Jesus M. Gomez:

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DEPARTMENT OF PUBLIC WORKS

June 28, 2021

City of Santa Fe Springs
Attn: Janet Martinez, City Clerk
11710 E. Telegraph Road
Santa Fe Springs, CA 90670

SUBJECT: Notice of Public Hearing for 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Janet Martinez:

The City of Santa Fe Springs (City) will hold a PUBLIC HEARING on July 20, 2021 for the purposes of adopting its 2020 Urban Water Management Plan and its Water Shortage Contingency Plan. The City's 2020 Urban Water Management Plan incorporates the City's Water Shortage Contingency Plan.

The 2020 Urban Water Management Plan and Water Shortage Contingency Plan were prepared pursuant to the "Urban Water Management Planning Act" and the California Water Code. The California Department of Water Resources requires every urban water supplier to prepare and adopt an Urban Water Management Plan, including the Water Shortage Contingency Plan, and periodically update the Urban Water Management Plan at least once every five years, in years ending in six and one.

John M. Mora, Mayor ♦ Annette Rodriguez, Mayor Pro Tem
City Council
Jay Sarno ♦ Juanita Trujillo ♦ Joe Angel Zamora
City Manager
Raymond R. Cruz

This public hearing will be conducted in-person in the Santa Fe Springs City Council Chambers, Located at 11710 Telegraph Road, and are subject to posted COVID-19 protocols. Members of the public may provide public comment for this meeting in-person at the meeting or by written correspondence (hard copy or email): Public comments can be submitted via email to *cityclerk@santafesprings.org* or by hard copy to the Office of the City Clerk no later than 12:00 p.m. on the day of the meeting. Please identify the agenda item number in the subject line of the email or hard copy document. All written correspondence received by the 12:00 p.m. deadline will be distributed to the City Council prior to the meeting. During the meeting, your name will be read into the record. The document will be retained with the public record of the meeting.

Information regarding Santa Fe Springs' PUBLIC HEARING follows:

Date: July 20, 2021
Time: 6:00 PM
Place: Santa Fe Springs City Hall, 11710 Telegraph Road

The City invites all interested entities to attend and present their comments. A copy of the draft 2020 Urban Water Management Plan and Water Shortage Contingency Plan will be available at the City's website www.santafesprings.org. Please provide written comments by 12:00 p.m. on July 20, 2021 to the City of Santa Fe Springs.

CITY OF
SANTA FE SPRINGS
11710 E Telegraph Road ♦ Santa Fe Springs, CA 90670-3679 ♦ (562) 868-0511 ♦ (562) 868-8112
DEPARTMENT OF PUBLIC WORKS

June 28, 2021

City of Whittier
Attn: Brian Saeki, City Manager
12016 Hadley St.
Whittier, CA 90602

SUBJECT: Notice of Public Hearing for 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Brian Saeki:

The City of Santa Fe Springs (City) will hold a PUBLIC HEARING on July 20, 2021 for the purposes of adopting its 2020 Urban Water Management Plan and its Water Shortage Contingency Plan. The City's 2020 Urban Water Management Plan incorporates the City's Water Shortage Contingency Plan.

The 2020 Urban Water Management Plan and Water Shortage Contingency Plan were prepared pursuant to the "Urban Water Management Planning Act" and the California Water Code. The California Department of Water Resources requires every urban water supplier to prepare and adopt an Urban Water Management Plan, including the Water Shortage Contingency Plan, and periodically update the Urban Water Management Plan at least once every five years, in years ending in six and one.

John M. Mora, Mayor ♦ Annette Rodriguez, Mayor Pro Tem
City Council
Jay Sarno ♦ Juanita Trujillo ♦ Joe Angel Zamora
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Information regarding Santa Fe Springs' PUBLIC HEARING follows:

Date: July 20, 2021
Time: 6:00 PM
Place: Santa Fe Springs City Hall, 11710 Telegraph Road

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APPENDIX E

AWWA WATER LOSS AUDIT REPORTS

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0
American Water Works Association.
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? Click to access definition
+ Click to add a comment

Water Audit Report for: City of Santa Fe Springs Water Authority (1910245)
Reporting Year: 2016 | 1/2016 - 12/2016

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

<---------- Enter grading in column 'E' and 'J' ---------->

Master Meter and Supply Error Adjustments

WATER SUPPLIED

					Pcnt:	Value:	
Volume from own sources:	3	2,430.070	acre-ft/yr	3			acre-ft/yr
Water imported:	5	2,965.680	acre-ft/yr	5			acre-ft/yr
Water exported:	n/a	0.000	acre-ft/yr				acre-ft/yr
WATER SUPPLIED:		**5,395.750**	acre-ft/yr				

Enter negative % or value for under-registration
Enter positive % or value for over-registration

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:	
Billed metered:	7	5,136.700	acre-ft/yr			
Billed unmetered:	n/a	0.000	acre-ft/yr			
Unbilled metered:	n/a	0.000	acre-ft/yr			
Unbilled unmetered:	5	13.489	acre-ft/yr		13.489	acre-ft/yr
AUTHORIZED CONSUMPTION:		**5,150.189**	acre-ft/yr			

Use buttons to select percentage of water supplied **OR** value

WATER LOSSES (Water Supplied - Authorized Consumption)

245.561 acre-ft/yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		13.489	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	5	65.022	acre-ft/yr	1.25%		acre-ft/yr
Systematic data handling errors:		12.842	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: **91.353** acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: **154.208** acre-ft/yr

WATER LOSSES: **245.561** acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: **259.050** acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	6	108.0	miles
Number of active AND inactive service connections:	8	6,254	
Service connection density:		58	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure:	5	67.0	psi

COST DATA

Total annual cost of operating water system:	10	$10,688,600	$/Year	
Customer retail unit cost (applied to Apparent Losses):	5	$3.62	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	4	$808.00	$/acre-ft	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 54 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Water imported
3: Variable production cost (applied to Real Losses)

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0
American Water Works Association.
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? Click to access definition
+ Click to add a comment

Water Audit Report for: City of Santa Fe Springs Water Authority (1910245)
Reporting Year: 2017 1/2017 - 12/2017

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

Master Meter and Supply Error Adjustments

WATER SUPPLIED

<---------- Enter grading in column 'E' and 'J' ---------->

					Pcnt:	Value:	
Volume from own sources:	3	2,800.310	acre-ft/yr	3			acre-ft/yr
Water imported:	5	2,668.680	acre-ft/yr	5			acre-ft/yr
Water exported:	n/a	0.000	acre-ft/yr				acre-ft/yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 5,468.990 acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:	
Billed metered:	7	5,082.000	acre-ft/yr			
Billed unmetered:	n/a		acre-ft/yr			
Unbilled metered:	n/a		acre-ft/yr			
Unbilled unmetered:	5	13.672	acre-ft/yr		13.672	acre-ft/yr

Use buttons to select percentage of water supplied OR value

AUTHORIZED CONSUMPTION: ? 5,095.672 acre-ft/yr

WATER LOSSES (Water Supplied - Authorized Consumption) 373.318 acre-ft/yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		13.672	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	5	64.329	acre-ft/yr	1.25%		acre-ft/yr
Systematic data handling errors:		12.705	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: ? 90.707 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: ? 282.611 acre-ft/yr

WATER LOSSES: 373.318 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: ? 386.990 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	6	108.0	miles
Number of active AND inactive service connections:	9	6,313	
Service connection density:		58	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: 5 72.0 psi

COST DATA

Total annual cost of operating water system:	10	$11,825,200	$/Year	
Customer retail unit cost (applied to Apparent Losses):	5	$3.62	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	5	$817.00	$/acre-ft	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 55 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Water imported
3: Customer metering inaccuracies

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

American Water Works Association.
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? Click to access definition
+ Click to add a comment

Water Audit Report for: City of Santa Fe Springs Water Department (1910245)
Reporting Year: 2018 | 1/2018 - 12/2018

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

<---------- Enter grading in column 'E' and 'J' ---------->

Master Meter and Supply Error Adjustments

WATER SUPPLIED

					Pcnt:	Value:	
Volume from own sources:	n/a	0.000	acre-ft/yr				acre-ft/yr
Water imported:	5	5,668.580	acre-ft/yr	5	0.00%		acre-ft/yr
Water exported:	n/a	0.000	acre-ft/yr				acre-ft/yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 5,668.580 acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:	
Billed metered:	7	5,489.651	acre-ft/yr			
Billed unmetered:	n/a	0.000	acre-ft/yr			
Unbilled metered:	n/a	0.000	acre-ft/yr			
Unbilled unmetered:	5	14.171	acre-ft/yr		14.171	acre-ft/yr

Use buttons to select percentage of water supplied OR value

AUTHORIZED CONSUMPTION: ? 5,503.822 acre-ft/yr

WATER LOSSES (Water Supplied - Authorized Consumption) 164.758 acre-ft/yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		14.171	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	5	19.281	acre-ft/yr	0.35%	acre-ft/yr
Systematic data handling errors:		13.724	acre-ft/yr	0.25%	acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: ? 47.177 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: ? 117.581 acre-ft/yr

WATER LOSSES: 164.758 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: ? 178.929 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	6	108.0	miles
Number of active AND inactive service connections:	9	6,400	
Service connection density:		59	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: 5 66.0 psi

COST DATA

Total annual cost of operating water system:	9	$13,114,350	$/Year	
Customer retail unit cost (applied to Apparent Losses):	5	$3.62	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	5	$858.75	$/acre-ft	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 57 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Water imported
2: Customer metering inaccuracies
3: Customer retail unit cost (applied to Apparent Losses)

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

American Water Works Association.
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? Click to access definition
\+ Click to add a comment

Water Audit Report for: City of Santa Fe Springs Water Department (1910245)
Reporting Year: 2019 1/2019 - 12/2019

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

WATER SUPPLIED

<---------- Enter grading in column 'E' and 'J' ---------->

Master Meter and Supply Error Adjustments

						Pcnt:	Value:	
Volume from own sources:	n/a	0.000	acre-ft/yr					acre-ft/yr
Water imported:	5	5,242.447	acre-ft/yr			0.00%		acre-ft/yr
Water exported:	n/a	0.000	acre-ft/yr					acre-ft/yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 5,242.447 acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:	
Billed metered:	7	5,034.628	acre-ft/yr			
Billed unmetered:	n/a	0.000	acre-ft/yr			
Unbilled metered:	n/a	0.000	acre-ft/yr			
Unbilled unmetered:	5	13.106	acre-ft/yr		13.106	acre-ft/yr

Use buttons to select percentage of water supplied **OR** value

AUTHORIZED CONSUMPTION: 5,047.734 acre-ft/yr

WATER LOSSES (Water Supplied - Authorized Consumption)

194.713 acre-ft/yr

Apparent Losses

			Pcnt:	Value:	
Unauthorized consumption:	13.106	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	5	17.683	acre-ft/yr	0.35%	acre-ft/yr
Systematic data handling errors:		12.587	acre-ft/yr	0.25%	acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 43.376 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 151.337 acre-ft/yr

WATER LOSSES: 194.713 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 207.819 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	6	109.0	miles
Number of active AND inactive service connections:	9	6,788	
Service connection density:		62	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: 5 66.0 psi

COST DATA

Total annual cost of operating water system:	9	$12,858,450	$/Year
Customer retail unit cost (applied to Apparent Losses):	5	$3.62	$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	5	$972.26	$/acre-ft

☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 57 out of 100 ***

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Water imported
2: Customer metering inaccuracies
3: Customer retail unit cost (applied to Apparent Losses)

APPENDIX F

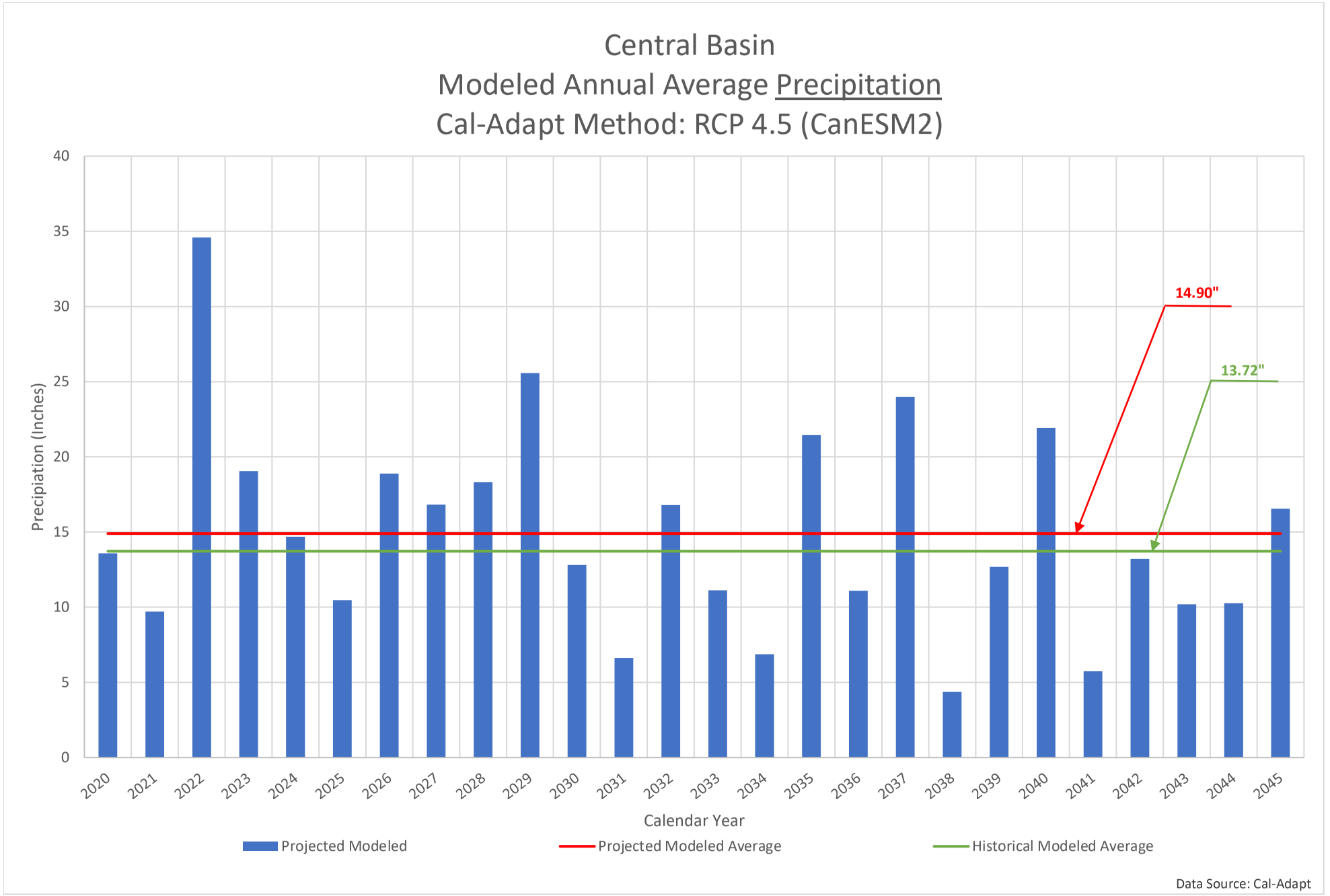
CLIMATE CHANGE CONSIDERATIONS (CAL- ADAPT DATA)

CENTRAL BASIN

MODELED ANNUAL AVERAGE PRECIPITATION

CAL-ADAPT METHOD: RCP 4.5 (CANESM2)

CAL-ADAPT DATA



Notes:

Projected Modeled Average includes modeled years 2020 through 2045

Historical Modeled Average includes modeled years 1950 through 2019

Cal-Adapt defines the general circulation model (GCM) CanESM2 as an "average simulation"

Cal-Adapt defines RCP 4.5 as a scenario in which emissions peak around 2040, then decline

Cal-Adapt
Annual Averages Tool - Precipitation
Central Basin

location	User Defined Boundary - Central Basin
climate variable	Precipitation
units	inches
scenario	rcp45

Projected Modeled Average: **14.89874 [inches]**
Historical Modeled Average: **13.72240 [inches]**

name	date	Year	Historical Average	Modeled Average	value
CanESM2	Sun Jan 01 1950 00:00:00 GMT-0800 (Pacific Standard Time)	1950			2.711204
CanESM2	Mon Jan 01 1951 00:00:00 GMT-0800 (Pacific Standard Time)	1951			14.92971
CanESM2	Tue Jan 01 1952 00:00:00 GMT-0800 (Pacific Standard Time)	1952			14.37643
CanESM2	Thu Jan 01 1953 00:00:00 GMT-0800 (Pacific Standard Time)	1953			10.62691
CanESM2	Fri Jan 01 1954 00:00:00 GMT-0800 (Pacific Standard Time)	1954			16.24152
CanESM2	Sat Jan 01 1955 00:00:00 GMT-0800 (Pacific Standard Time)	1955			23.99039
CanESM2	Sun Jan 01 1956 00:00:00 GMT-0800 (Pacific Standard Time)	1956			7.088746
CanESM2	Tue Jan 01 1957 00:00:00 GMT-0800 (Pacific Standard Time)	1957			10.47703
CanESM2	Wed Jan 01 1958 00:00:00 GMT-0800 (Pacific Standard Time)	1958			4.384411
CanESM2	Thu Jan 01 1959 00:00:00 GMT-0800 (Pacific Standard Time)	1959			8.905023
CanESM2	Fri Jan 01 1960 00:00:00 GMT-0800 (Pacific Standard Time)	1960			13.33926
CanESM2	Sun Jan 01 1961 00:00:00 GMT-0800 (Pacific Standard Time)	1961			13.29385
CanESM2	Mon Jan 01 1962 00:00:00 GMT-0800 (Pacific Standard Time)	1962			22.25729
CanESM2	Tue Jan 01 1963 00:00:00 GMT-0800 (Pacific Standard Time)	1963			5.046277
CanESM2	Wed Jan 01 1964 00:00:00 GMT-0800 (Pacific Standard Time)	1964			23.65362
CanESM2	Fri Jan 01 1965 00:00:00 GMT-0800 (Pacific Standard Time)	1965			29.53302
CanESM2	Sat Jan 01 1966 00:00:00 GMT-0800 (Pacific Standard Time)	1966			11.89462
CanESM2	Sun Jan 01 1967 00:00:00 GMT-0800 (Pacific Standard Time)	1967			17.65118
CanESM2	Mon Jan 01 1968 00:00:00 GMT-0800 (Pacific Standard Time)	1968			16.5368
CanESM2	Wed Jan 01 1969 00:00:00 GMT-0800 (Pacific Standard Time)	1969			31.08076
CanESM2	Thu Jan 01 1970 00:00:00 GMT-0800 (Pacific Standard Time)	1970			11.10033
CanESM2	Fri Jan 01 1971 00:00:00 GMT-0800 (Pacific Standard Time)	1971			3.89031
CanESM2	Sat Jan 01 1972 00:00:00 GMT-0800 (Pacific Standard Time)	1972			11.90623
CanESM2	Mon Jan 01 1973 00:00:00 GMT-0800 (Pacific Standard Time)	1973			11.35168
CanESM2	Tue Jan 01 1974 00:00:00 GMT-0800 (Pacific Standard Time)	1974			27.6406
CanESM2	Wed Jan 01 1975 00:00:00 GMT-0800 (Pacific Standard Time)	1975			7.240355
CanESM2	Thu Jan 01 1976 00:00:00 GMT-0800 (Pacific Standard Time)	1976			13.72431
CanESM2	Sat Jan 01 1977 00:00:00 GMT-0800 (Pacific Standard Time)	1977			16.3902
CanESM2	Sun Jan 01 1978 00:00:00 GMT-0800 (Pacific Standard Time)	1978			8.943045
CanESM2	Mon Jan 01 1979 00:00:00 GMT-0800 (Pacific Standard Time)	1979			8.955363
CanESM2	Tue Jan 01 1980 00:00:00 GMT-0800 (Pacific Standard Time)	1980			5.315283
CanESM2	Thu Jan 01 1981 00:00:00 GMT-0800 (Pacific Standard Time)	1981			12.0593
CanESM2	Fri Jan 01 1982 00:00:00 GMT-0800 (Pacific Standard Time)	1982			21.42766
CanESM2	Sat Jan 01 1983 00:00:00 GMT-0800 (Pacific Standard Time)	1983			12.02122
CanESM2	Sun Jan 01 1984 00:00:00 GMT-0800 (Pacific Standard Time)	1984			14.33201
CanESM2	Tue Jan 01 1985 00:00:00 GMT-0800 (Pacific Standard Time)	1985			33.68452
CanESM2	Wed Jan 01 1986 00:00:00 GMT-0800 (Pacific Standard Time)	1986			6.287982
CanESM2	Thu Jan 01 1987 00:00:00 GMT-0800 (Pacific Standard Time)	1987			15.10777
CanESM2	Fri Jan 01 1988 00:00:00 GMT-0800 (Pacific Standard Time)	1988			9.260901
CanESM2	Sun Jan 01 1989 00:00:00 GMT-0800 (Pacific Standard Time)	1989			15.46279
CanESM2	Mon Jan 01 1990 00:00:00 GMT-0800 (Pacific Standard Time)	1990			16.02319
CanESM2	Tue Jan 01 1991 00:00:00 GMT-0800 (Pacific Standard Time)	1991			18.35758
CanESM2	Wed Jan 01 1992 00:00:00 GMT-0800 (Pacific Standard Time)	1992			15.34088
CanESM2	Fri Jan 01 1993 00:00:00 GMT-0800 (Pacific Standard Time)	1993			11.07439
CanESM2	Sat Jan 01 1994 00:00:00 GMT-0800 (Pacific Standard Time)	1994			13.77059
CanESM2	Sun Jan 01 1995 00:00:00 GMT-0800 (Pacific Standard Time)	1995			11.83516
CanESM2	Mon Jan 01 1996 00:00:00 GMT-0800 (Pacific Standard Time)	1996			12.02629
CanESM2	Wed Jan 01 1997 00:00:00 GMT-0800 (Pacific Standard Time)	1997			40.54302
CanESM2	Thu Jan 01 1998 00:00:00 GMT-0800 (Pacific Standard Time)	1998			7.581085
CanESM2	Fri Jan 01 1999 00:00:00 GMT-0800 (Pacific Standard Time)	1999			9.345686
CanESM2	Sat Jan 01 2000 00:00:00 GMT-0800 (Pacific Standard Time)	2000			6.411961
CanESM2	Mon Jan 01 2001 00:00:00 GMT-0800 (Pacific Standard Time)	2001			8.649922

Cal-Adapt
Annual Averages Tool - Precipitation
Central Basin

location	User Defined Boundary - Central Basin
climate variable	Precipitation
units	inches
scenario	rcp45

Projected Modeled Average: **14.89874 [inches]**
Historical Modeled Average: **13.72240 [inches]**

name	date	Year	Historical Average	Modeled Average	value
CanESM2	Tue Jan 01 2002 00:00:00 GMT-0800 (Pacific Standard Time)	2002			11.65704
CanESM2	Wed Jan 01 2003 00:00:00 GMT-0800 (Pacific Standard Time)	2003			13.22306
CanESM2	Thu Jan 01 2004 00:00:00 GMT-0800 (Pacific Standard Time)	2004			14.98838
CanESM2	Sat Jan 01 2005 00:00:00 GMT-0800 (Pacific Standard Time)	2005			23.47014
CanESM2	Sun Jan 01 2006 00:00:00 GMT-0800 (Pacific Standard Time)	2006			11.89425
CanESM2	Mon Jan 01 2007 00:00:00 GMT-0800 (Pacific Standard Time)	2007			4.495376
CanESM2	Tue Jan 01 2008 00:00:00 GMT-0800 (Pacific Standard Time)	2008			11.29432
CanESM2	Thu Jan 01 2009 00:00:00 GMT-0800 (Pacific Standard Time)	2009			10.8637
CanESM2	Fri Jan 01 2010 00:00:00 GMT-0800 (Pacific Standard Time)	2010			11.74419
CanESM2	Sat Jan 01 2011 00:00:00 GMT-0800 (Pacific Standard Time)	2011			16.35504
CanESM2	Sun Jan 01 2012 00:00:00 GMT-0800 (Pacific Standard Time)	2012			6.021612
CanESM2	Tue Jan 01 2013 00:00:00 GMT-0800 (Pacific Standard Time)	2013			7.790606
CanESM2	Wed Jan 01 2014 00:00:00 GMT-0800 (Pacific Standard Time)	2014			6.588845
CanESM2	Thu Jan 01 2015 00:00:00 GMT-0800 (Pacific Standard Time)	2015			21.14658
CanESM2	Fri Jan 01 2016 00:00:00 GMT-0800 (Pacific Standard Time)	2016			29.24212
CanESM2	Sun Jan 01 2017 00:00:00 GMT-0800 (Pacific Standard Time)	2017			9.844625
CanESM2	Mon Jan 01 2018 00:00:00 GMT-0800 (Pacific Standard Time)	2018			5.430142
CanESM2	Tue Jan 01 2019 00:00:00 GMT-0800 (Pacific Standard Time)	2019	13.72239645		9.438077
CanESM2	Wed Jan 01 2020 00:00:00 GMT-0800 (Pacific Standard Time)	2020	13.72239645	14.89873563	13.58247
CanESM2	Fri Jan 01 2021 00:00:00 GMT-0800 (Pacific Standard Time)	2021	13.72239645	14.89873563	9.707081
CanESM2	Sat Jan 01 2022 00:00:00 GMT-0800 (Pacific Standard Time)	2022	13.72239645	14.89873563	34.58837
CanESM2	Sun Jan 01 2023 00:00:00 GMT-0800 (Pacific Standard Time)	2023	13.72239645	14.89873563	19.0544
CanESM2	Mon Jan 01 2024 00:00:00 GMT-0800 (Pacific Standard Time)	2024	13.72239645	14.89873563	14.68272
CanESM2	Wed Jan 01 2025 00:00:00 GMT-0800 (Pacific Standard Time)	2025	13.72239645	14.89873563	10.47002
CanESM2	Thu Jan 01 2026 00:00:00 GMT-0800 (Pacific Standard Time)	2026	13.72239645	14.89873563	18.87796
CanESM2	Fri Jan 01 2027 00:00:00 GMT-0800 (Pacific Standard Time)	2027	13.72239645	14.89873563	16.822
CanESM2	Sat Jan 01 2028 00:00:00 GMT-0800 (Pacific Standard Time)	2028	13.72239645	14.89873563	18.30698
CanESM2	Mon Jan 01 2029 00:00:00 GMT-0800 (Pacific Standard Time)	2029	13.72239645	14.89873563	25.56606
CanESM2	Tue Jan 01 2030 00:00:00 GMT-0800 (Pacific Standard Time)	2030	13.72239645	14.89873563	12.81422
CanESM2	Wed Jan 01 2031 00:00:00 GMT-0800 (Pacific Standard Time)	2031	13.72239645	14.89873563	6.631485
CanESM2	Thu Jan 01 2032 00:00:00 GMT-0800 (Pacific Standard Time)	2032	13.72239645	14.89873563	16.79226
CanESM2	Sat Jan 01 2033 00:00:00 GMT-0800 (Pacific Standard Time)	2033	13.72239645	14.89873563	11.12471
CanESM2	Sun Jan 01 2034 00:00:00 GMT-0800 (Pacific Standard Time)	2034	13.72239645	14.89873563	6.871288
CanESM2	Mon Jan 01 2035 00:00:00 GMT-0800 (Pacific Standard Time)	2035	13.72239645	14.89873563	21.4413
CanESM2	Tue Jan 01 2036 00:00:00 GMT-0800 (Pacific Standard Time)	2036	13.72239645	14.89873563	11.10212
CanESM2	Thu Jan 01 2037 00:00:00 GMT-0800 (Pacific Standard Time)	2037	13.72239645	14.89873563	23.99351
CanESM2	Fri Jan 01 2038 00:00:00 GMT-0800 (Pacific Standard Time)	2038	13.72239645	14.89873563	4.368184
CanESM2	Sat Jan 01 2039 00:00:00 GMT-0800 (Pacific Standard Time)	2039	13.72239645	14.89873563	12.68419
CanESM2	Sun Jan 01 2040 00:00:00 GMT-0800 (Pacific Standard Time)	2040	13.72239645	14.89873563	21.93329
CanESM2	Tue Jan 01 2041 00:00:00 GMT-0800 (Pacific Standard Time)	2041	13.72239645	14.89873563	5.741362
CanESM2	Wed Jan 01 2042 00:00:00 GMT-0800 (Pacific Standard Time)	2042	13.72239645	14.89873563	13.20755
CanESM2	Thu Jan 01 2043 00:00:00 GMT-0800 (Pacific Standard Time)	2043	13.72239645	14.89873563	10.18665
CanESM2	Fri Jan 01 2044 00:00:00 GMT-0800 (Pacific Standard Time)	2044	13.72239645	14.89873563	10.26452
CanESM2	Sun Jan 01 2045 00:00:00 GMT-0800 (Pacific Standard Time)	2045	13.72239645	14.89873563	16.55242
CanESM2	Mon Jan 01 2046 00:00:00 GMT-0800 (Pacific Standard Time)	2046	13.72239645		27.77441
CanESM2	Tue Jan 01 2047 00:00:00 GMT-0800 (Pacific Standard Time)	2047	13.72239645		22.46368
CanESM2	Wed Jan 01 2048 00:00:00 GMT-0800 (Pacific Standard Time)	2048	13.72239645		18.88688
CanESM2	Fri Jan 01 2049 00:00:00 GMT-0800 (Pacific Standard Time)	2049	13.72239645		8.667589
CanESM2	Sat Jan 01 2050 00:00:00 GMT-0800 (Pacific Standard Time)	2050	13.72239645		10.00292
CanESM2	Sun Jan 01 2051 00:00:00 GMT-0800 (Pacific Standard Time)	2051	13.72239645		7.326474
CanESM2	Mon Jan 01 2052 00:00:00 GMT-0800 (Pacific Standard Time)	2052	13.72239645		27.14731
CanESM2	Wed Jan 01 2053 00:00:00 GMT-0800 (Pacific Standard Time)	2053	13.72239645		9.759648

Cal-Adapt
Annual Averages Tool - Precipitation
Central Basin

location	User Defined Boundary - Central Basin
climate variable	Precipitation
units	inches
scenario	rcp45

Projected Modeled Average: **14.89874 [inches]**
Historical Modeled Average: **13.72240 [inches]**

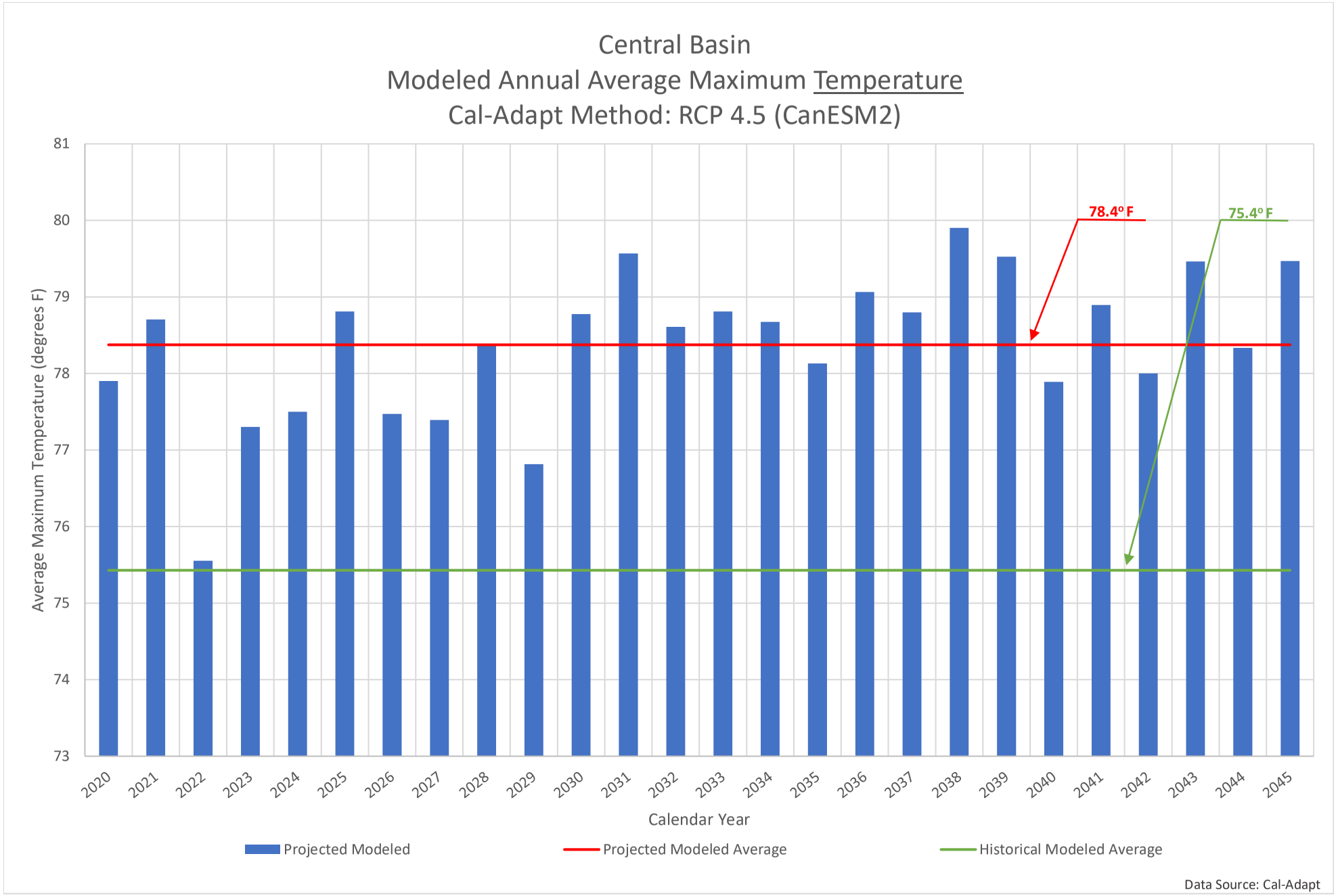
name	date	Year	Historical Average	Modeled Average	value
CanESM2	Thu Jan 01 2054 00:00:00 GMT-0800 (Pacific Standard Time)	2054	13.72239645		12.40571
CanESM2	Fri Jan 01 2055 00:00:00 GMT-0800 (Pacific Standard Time)	2055	13.72239645		9.147796
CanESM2	Sat Jan 01 2056 00:00:00 GMT-0800 (Pacific Standard Time)	2056	13.72239645		15.57772
CanESM2	Mon Jan 01 2057 00:00:00 GMT-0800 (Pacific Standard Time)	2057	13.72239645		12.66258
CanESM2	Tue Jan 01 2058 00:00:00 GMT-0800 (Pacific Standard Time)	2058	13.72239645		7.271203
CanESM2	Wed Jan 01 2059 00:00:00 GMT-0800 (Pacific Standard Time)	2059	13.72239645		29.27046
CanESM2	Thu Jan 01 2060 00:00:00 GMT-0800 (Pacific Standard Time)	2060	13.72239645		27.70644
CanESM2	Sat Jan 01 2061 00:00:00 GMT-0800 (Pacific Standard Time)	2061	13.72239645		4.950572
CanESM2	Sun Jan 01 2062 00:00:00 GMT-0800 (Pacific Standard Time)	2062	13.72239645		11.41258
CanESM2	Mon Jan 01 2063 00:00:00 GMT-0800 (Pacific Standard Time)	2063	13.72239645		3.654642
CanESM2	Tue Jan 01 2064 00:00:00 GMT-0800 (Pacific Standard Time)	2064	13.72239645		8.214566
CanESM2	Thu Jan 01 2065 00:00:00 GMT-0800 (Pacific Standard Time)	2065	13.72239645		11.61876
CanESM2	Fri Jan 01 2066 00:00:00 GMT-0800 (Pacific Standard Time)	2066	13.72239645		14.80172
CanESM2	Sat Jan 01 2067 00:00:00 GMT-0800 (Pacific Standard Time)	2067	13.72239645		19.90516
CanESM2	Sun Jan 01 2068 00:00:00 GMT-0800 (Pacific Standard Time)	2068	13.72239645		13.34654
CanESM2	Tue Jan 01 2069 00:00:00 GMT-0800 (Pacific Standard Time)	2069	13.72239645		26.78298
CanESM2	Wed Jan 01 2070 00:00:00 GMT-0800 (Pacific Standard Time)	2070	13.72239645		24.21188
CanESM2	Thu Jan 01 2071 00:00:00 GMT-0800 (Pacific Standard Time)	2071	13.72239645		18.31411
CanESM2	Fri Jan 01 2072 00:00:00 GMT-0800 (Pacific Standard Time)	2072	13.72239645		6.002166
CanESM2	Sun Jan 01 2073 00:00:00 GMT-0800 (Pacific Standard Time)	2073	13.72239645		25.56517
CanESM2	Mon Jan 01 2074 00:00:00 GMT-0800 (Pacific Standard Time)	2074	13.72239645		15.05161
CanESM2	Tue Jan 01 2075 00:00:00 GMT-0800 (Pacific Standard Time)	2075	13.72239645		20.92709
CanESM2	Wed Jan 01 2076 00:00:00 GMT-0800 (Pacific Standard Time)	2076	13.72239645		11.00945
CanESM2	Fri Jan 01 2077 00:00:00 GMT-0800 (Pacific Standard Time)	2077	13.72239645		22.11288
CanESM2	Sat Jan 01 2078 00:00:00 GMT-0800 (Pacific Standard Time)	2078	13.72239645		18.92326
CanESM2	Sun Jan 01 2079 00:00:00 GMT-0800 (Pacific Standard Time)	2079	13.72239645		20.65069
CanESM2	Mon Jan 01 2080 00:00:00 GMT-0800 (Pacific Standard Time)	2080	13.72239645		41.49389
CanESM2	Wed Jan 01 2081 00:00:00 GMT-0800 (Pacific Standard Time)	2081	13.72239645		16.41931
CanESM2	Thu Jan 01 2082 00:00:00 GMT-0800 (Pacific Standard Time)	2082	13.72239645		14.65818
CanESM2	Fri Jan 01 2083 00:00:00 GMT-0800 (Pacific Standard Time)	2083	13.72239645		13.02577
CanESM2	Sat Jan 01 2084 00:00:00 GMT-0800 (Pacific Standard Time)	2084	13.72239645		16.81547
CanESM2	Mon Jan 01 2085 00:00:00 GMT-0800 (Pacific Standard Time)	2085	13.72239645		7.584033
CanESM2	Tue Jan 01 2086 00:00:00 GMT-0800 (Pacific Standard Time)	2086	13.72239645		21.69217
CanESM2	Wed Jan 01 2087 00:00:00 GMT-0800 (Pacific Standard Time)	2087	13.72239645		8.520626
CanESM2	Thu Jan 01 2088 00:00:00 GMT-0800 (Pacific Standard Time)	2088	13.72239645		33.79725
CanESM2	Sat Jan 01 2089 00:00:00 GMT-0800 (Pacific Standard Time)	2089	13.72239645		15.19317
CanESM2	Sun Jan 01 2090 00:00:00 GMT-0800 (Pacific Standard Time)	2090	13.72239645		10.93645
CanESM2	Mon Jan 01 2091 00:00:00 GMT-0800 (Pacific Standard Time)	2091	13.72239645		4.858918
CanESM2	Tue Jan 01 2092 00:00:00 GMT-0800 (Pacific Standard Time)	2092	13.72239645		4.077083
CanESM2	Thu Jan 01 2093 00:00:00 GMT-0800 (Pacific Standard Time)	2093	13.72239645		26.28714
CanESM2	Fri Jan 01 2094 00:00:00 GMT-0800 (Pacific Standard Time)	2094	13.72239645		13.79538
CanESM2	Sat Jan 01 2095 00:00:00 GMT-0800 (Pacific Standard Time)	2095	13.72239645		6.434525
CanESM2	Sun Jan 01 2096 00:00:00 GMT-0800 (Pacific Standard Time)	2096	13.72239645		9.720349
CanESM2	Tue Jan 01 2097 00:00:00 GMT-0800 (Pacific Standard Time)	2097	13.72239645		15.93864
CanESM2	Wed Jan 01 2098 00:00:00 GMT-0800 (Pacific Standard Time)	2098	13.72239645		20.52491
CanESM2	Thu Jan 01 2099 00:00:00 GMT-0800 (Pacific Standard Time)	2099	13.72239645		9.708835
CanESM2	Fri Jan 01 2100 00:00:00 GMT-0800 (Pacific Standard Time)	2100	13.72239645		14.42276

CENTRAL BASIN

MODELED ANNUAL AVERAGE TEMPERATURE

CAL-ADAPT METHOD: RCP 4.5 (CANESM2)

CAL-ADAPT DATA



Notes:

Projected Modeled Average includes modeled years 2020 through 2045

Historical Modeled Average includes modeled years 1950 through 2019

Cal-Adapt defines the general circulation model (GCM) CanESM2 as an "average simulation"

Cal-Adapt defines RCP 4.5 as a scenario in which emissions peak around 2040, then decline

Cal-Adapt
Annual Averages Tool - Maximum Temperature
Central Basin

location	User Defined Boundary - Central Basin
climate variable	Maximum Temperature
units	°F
scenario	rcp45

Projected Modeled Average: **78.37471 °F**
Historical Modeled Average: **75.42910 °F**

name	date	Year	Historical Average	Modeled Average	value
CanESM2	Sun Jan 01 1950 00:00:00 GMT-0800 (Pacific Standard Time)	1950			76.81594
CanESM2	Mon Jan 01 1951 00:00:00 GMT-0800 (Pacific Standard Time)	1951			75.09323
CanESM2	Tue Jan 01 1952 00:00:00 GMT-0800 (Pacific Standard Time)	1952			74.11544
CanESM2	Thu Jan 01 1953 00:00:00 GMT-0800 (Pacific Standard Time)	1953			75.0258
CanESM2	Fri Jan 01 1954 00:00:00 GMT-0800 (Pacific Standard Time)	1954			74.06848
CanESM2	Sat Jan 01 1955 00:00:00 GMT-0800 (Pacific Standard Time)	1955			73.66977
CanESM2	Sun Jan 01 1956 00:00:00 GMT-0800 (Pacific Standard Time)	1956			75.06849
CanESM2	Tue Jan 01 1957 00:00:00 GMT-0800 (Pacific Standard Time)	1957			75.02455
CanESM2	Wed Jan 01 1958 00:00:00 GMT-0800 (Pacific Standard Time)	1958			74.71398
CanESM2	Thu Jan 01 1959 00:00:00 GMT-0800 (Pacific Standard Time)	1959			75.93509
CanESM2	Fri Jan 01 1960 00:00:00 GMT-0800 (Pacific Standard Time)	1960			75.27767
CanESM2	Sun Jan 01 1961 00:00:00 GMT-0800 (Pacific Standard Time)	1961			73.89659
CanESM2	Mon Jan 01 1962 00:00:00 GMT-0800 (Pacific Standard Time)	1962			74.88831
CanESM2	Tue Jan 01 1963 00:00:00 GMT-0800 (Pacific Standard Time)	1963			77.5504
CanESM2	Wed Jan 01 1964 00:00:00 GMT-0800 (Pacific Standard Time)	1964			73.73211
CanESM2	Fri Jan 01 1965 00:00:00 GMT-0800 (Pacific Standard Time)	1965			72.11022
CanESM2	Sat Jan 01 1966 00:00:00 GMT-0800 (Pacific Standard Time)	1966			73.73795
CanESM2	Sun Jan 01 1967 00:00:00 GMT-0800 (Pacific Standard Time)	1967			74.92674
CanESM2	Mon Jan 01 1968 00:00:00 GMT-0800 (Pacific Standard Time)	1968			74.39023
CanESM2	Wed Jan 01 1969 00:00:00 GMT-0800 (Pacific Standard Time)	1969			73.83777
CanESM2	Thu Jan 01 1970 00:00:00 GMT-0800 (Pacific Standard Time)	1970			73.03439
CanESM2	Fri Jan 01 1971 00:00:00 GMT-0800 (Pacific Standard Time)	1971			74.74292
CanESM2	Sat Jan 01 1972 00:00:00 GMT-0800 (Pacific Standard Time)	1972			74.89177
CanESM2	Mon Jan 01 1973 00:00:00 GMT-0800 (Pacific Standard Time)	1973			74.89842
CanESM2	Tue Jan 01 1974 00:00:00 GMT-0800 (Pacific Standard Time)	1974			75.40034
CanESM2	Wed Jan 01 1975 00:00:00 GMT-0800 (Pacific Standard Time)	1975			76.61719
CanESM2	Thu Jan 01 1976 00:00:00 GMT-0800 (Pacific Standard Time)	1976			74.83677
CanESM2	Sat Jan 01 1977 00:00:00 GMT-0800 (Pacific Standard Time)	1977			74.29179
CanESM2	Sun Jan 01 1978 00:00:00 GMT-0800 (Pacific Standard Time)	1978			76.03504
CanESM2	Mon Jan 01 1979 00:00:00 GMT-0800 (Pacific Standard Time)	1979			76.29205
CanESM2	Tue Jan 01 1980 00:00:00 GMT-0800 (Pacific Standard Time)	1980			77.65762
CanESM2	Thu Jan 01 1981 00:00:00 GMT-0800 (Pacific Standard Time)	1981			77.00924
CanESM2	Fri Jan 01 1982 00:00:00 GMT-0800 (Pacific Standard Time)	1982			73.78987
CanESM2	Sat Jan 01 1983 00:00:00 GMT-0800 (Pacific Standard Time)	1983			74.44761
CanESM2	Sun Jan 01 1984 00:00:00 GMT-0800 (Pacific Standard Time)	1984			73.79973
CanESM2	Tue Jan 01 1985 00:00:00 GMT-0800 (Pacific Standard Time)	1985			73.29404
CanESM2	Wed Jan 01 1986 00:00:00 GMT-0800 (Pacific Standard Time)	1986			74.73086
CanESM2	Thu Jan 01 1987 00:00:00 GMT-0800 (Pacific Standard Time)	1987			73.88843
CanESM2	Fri Jan 01 1988 00:00:00 GMT-0800 (Pacific Standard Time)	1988			74.50882
CanESM2	Sun Jan 01 1989 00:00:00 GMT-0800 (Pacific Standard Time)	1989			74.04036
CanESM2	Mon Jan 01 1990 00:00:00 GMT-0800 (Pacific Standard Time)	1990			74.5839
CanESM2	Tue Jan 01 1991 00:00:00 GMT-0800 (Pacific Standard Time)	1991			75.46996
CanESM2	Wed Jan 01 1992 00:00:00 GMT-0800 (Pacific Standard Time)	1992			73.32562
CanESM2	Fri Jan 01 1993 00:00:00 GMT-0800 (Pacific Standard Time)	1993			76.37235
CanESM2	Sat Jan 01 1994 00:00:00 GMT-0800 (Pacific Standard Time)	1994			73.36906
CanESM2	Sun Jan 01 1995 00:00:00 GMT-0800 (Pacific Standard Time)	1995			76.05676
CanESM2	Mon Jan 01 1996 00:00:00 GMT-0800 (Pacific Standard Time)	1996			76.1869
CanESM2	Wed Jan 01 1997 00:00:00 GMT-0800 (Pacific Standard Time)	1997			74.65371
CanESM2	Thu Jan 01 1998 00:00:00 GMT-0800 (Pacific Standard Time)	1998			76.05054
CanESM2	Fri Jan 01 1999 00:00:00 GMT-0800 (Pacific Standard Time)	1999			76.954
CanESM2	Sat Jan 01 2000 00:00:00 GMT-0800 (Pacific Standard Time)	2000			76.5939
CanESM2	Mon Jan 01 2001 00:00:00 GMT-0800 (Pacific Standard Time)	2001			76.75888

Cal-Adapt
Annual Averages Tool - Maximum Temperature
Central Basin

location	User Defined Boundary - Central Basin
climate variable	Maximum Temperature
units	°F
scenario	rcp45

Projected Modeled Average: **78.37471 °F**
Historical Modeled Average: **75.42910 °F**

name	date	Year	Historical Average	Modeled Average	value
CanESM2	Tue Jan 01 2002 00:00:00 GMT-0800 (Pacific Standard Time)	2002			76.45095
CanESM2	Wed Jan 01 2003 00:00:00 GMT-0800 (Pacific Standard Time)	2003			75.01004
CanESM2	Thu Jan 01 2004 00:00:00 GMT-0800 (Pacific Standard Time)	2004			76.18596
CanESM2	Sat Jan 01 2005 00:00:00 GMT-0800 (Pacific Standard Time)	2005			76.06153
CanESM2	Sun Jan 01 2006 00:00:00 GMT-0800 (Pacific Standard Time)	2006			75.81518
CanESM2	Mon Jan 01 2007 00:00:00 GMT-0800 (Pacific Standard Time)	2007			76.53652
CanESM2	Tue Jan 01 2008 00:00:00 GMT-0800 (Pacific Standard Time)	2008			76.90854
CanESM2	Thu Jan 01 2009 00:00:00 GMT-0800 (Pacific Standard Time)	2009			77.60979
CanESM2	Fri Jan 01 2010 00:00:00 GMT-0800 (Pacific Standard Time)	2010			76.91934
CanESM2	Sat Jan 01 2011 00:00:00 GMT-0800 (Pacific Standard Time)	2011			77.10655
CanESM2	Sun Jan 01 2012 00:00:00 GMT-0800 (Pacific Standard Time)	2012			77.90654
CanESM2	Tue Jan 01 2013 00:00:00 GMT-0800 (Pacific Standard Time)	2013			78.77252
CanESM2	Wed Jan 01 2014 00:00:00 GMT-0800 (Pacific Standard Time)	2014			76.24993
CanESM2	Thu Jan 01 2015 00:00:00 GMT-0800 (Pacific Standard Time)	2015			76.18709
CanESM2	Fri Jan 01 2016 00:00:00 GMT-0800 (Pacific Standard Time)	2016			75.22148
CanESM2	Sun Jan 01 2017 00:00:00 GMT-0800 (Pacific Standard Time)	2017			76.63658
CanESM2	Mon Jan 01 2018 00:00:00 GMT-0800 (Pacific Standard Time)	2018			78.54419
CanESM2	Tue Jan 01 2019 00:00:00 GMT-0800 (Pacific Standard Time)	2019	75.42910037		77.45271
CanESM2	Wed Jan 01 2020 00:00:00 GMT-0800 (Pacific Standard Time)	2020	75.42910037	78.37470886	77.90284
CanESM2	Fri Jan 01 2021 00:00:00 GMT-0800 (Pacific Standard Time)	2021	75.42910037	78.37470886	78.70459
CanESM2	Sat Jan 01 2022 00:00:00 GMT-0800 (Pacific Standard Time)	2022	75.42910037	78.37470886	75.55427
CanESM2	Sun Jan 01 2023 00:00:00 GMT-0800 (Pacific Standard Time)	2023	75.42910037	78.37470886	77.30179
CanESM2	Mon Jan 01 2024 00:00:00 GMT-0800 (Pacific Standard Time)	2024	75.42910037	78.37470886	77.49998
CanESM2	Wed Jan 01 2025 00:00:00 GMT-0800 (Pacific Standard Time)	2025	75.42910037	78.37470886	78.8105
CanESM2	Thu Jan 01 2026 00:00:00 GMT-0800 (Pacific Standard Time)	2026	75.42910037	78.37470886	77.47173
CanESM2	Fri Jan 01 2027 00:00:00 GMT-0800 (Pacific Standard Time)	2027	75.42910037	78.37470886	77.39326
CanESM2	Sat Jan 01 2028 00:00:00 GMT-0800 (Pacific Standard Time)	2028	75.42910037	78.37470886	78.37676
CanESM2	Mon Jan 01 2029 00:00:00 GMT-0800 (Pacific Standard Time)	2029	75.42910037	78.37470886	76.81463
CanESM2	Tue Jan 01 2030 00:00:00 GMT-0800 (Pacific Standard Time)	2030	75.42910037	78.37470886	78.77666
CanESM2	Wed Jan 01 2031 00:00:00 GMT-0800 (Pacific Standard Time)	2031	75.42910037	78.37470886	79.56799
CanESM2	Thu Jan 01 2032 00:00:00 GMT-0800 (Pacific Standard Time)	2032	75.42910037	78.37470886	78.60872
CanESM2	Sat Jan 01 2033 00:00:00 GMT-0800 (Pacific Standard Time)	2033	75.42910037	78.37470886	78.80861
CanESM2	Sun Jan 01 2034 00:00:00 GMT-0800 (Pacific Standard Time)	2034	75.42910037	78.37470886	78.67489
CanESM2	Mon Jan 01 2035 00:00:00 GMT-0800 (Pacific Standard Time)	2035	75.42910037	78.37470886	78.12972
CanESM2	Tue Jan 01 2036 00:00:00 GMT-0800 (Pacific Standard Time)	2036	75.42910037	78.37470886	79.06538
CanESM2	Thu Jan 01 2037 00:00:00 GMT-0800 (Pacific Standard Time)	2037	75.42910037	78.37470886	78.7997
CanESM2	Fri Jan 01 2038 00:00:00 GMT-0800 (Pacific Standard Time)	2038	75.42910037	78.37470886	79.90191
CanESM2	Sat Jan 01 2039 00:00:00 GMT-0800 (Pacific Standard Time)	2039	75.42910037	78.37470886	79.52668
CanESM2	Sun Jan 01 2040 00:00:00 GMT-0800 (Pacific Standard Time)	2040	75.42910037	78.37470886	77.88959
CanESM2	Tue Jan 01 2041 00:00:00 GMT-0800 (Pacific Standard Time)	2041	75.42910037	78.37470886	78.89424
CanESM2	Wed Jan 01 2042 00:00:00 GMT-0800 (Pacific Standard Time)	2042	75.42910037	78.37470886	78.00215
CanESM2	Thu Jan 01 2043 00:00:00 GMT-0800 (Pacific Standard Time)	2043	75.42910037	78.37470886	79.46227
CanESM2	Fri Jan 01 2044 00:00:00 GMT-0800 (Pacific Standard Time)	2044	75.42910037	78.37470886	78.33426
CanESM2	Sun Jan 01 2045 00:00:00 GMT-0800 (Pacific Standard Time)	2045	75.42910037	78.37470886	79.4693
CanESM2	Mon Jan 01 2046 00:00:00 GMT-0800 (Pacific Standard Time)	2046			78.21366
CanESM2	Tue Jan 01 2047 00:00:00 GMT-0800 (Pacific Standard Time)	2047			78.16745
CanESM2	Wed Jan 01 2048 00:00:00 GMT-0800 (Pacific Standard Time)	2048			79.00869
CanESM2	Fri Jan 01 2049 00:00:00 GMT-0800 (Pacific Standard Time)	2049			78.76172
CanESM2	Sat Jan 01 2050 00:00:00 GMT-0800 (Pacific Standard Time)	2050			79.95276
CanESM2	Sun Jan 01 2051 00:00:00 GMT-0800 (Pacific Standard Time)	2051			79.6668
CanESM2	Mon Jan 01 2052 00:00:00 GMT-0800 (Pacific Standard Time)	2052			78.20725
CanESM2	Wed Jan 01 2053 00:00:00 GMT-0800 (Pacific Standard Time)	2053			79.77849

Cal-Adapt
Annual Averages Tool - Maximum Temperature
Central Basin

location	User Defined Boundary - Central Basin
climate variable	Maximum Temperature
units	°F
scenario	rcp45

Projected Modeled Average: **78.37471 °F**
Historical Modeled Average: **75.42910 °F**

name	date	Year	Historical Average	Modeled Average	value
CanESM2	Thu Jan 01 2054 00:00:00 GMT-0800 (Pacific Standard Time)	2054			81.20495
CanESM2	Fri Jan 01 2055 00:00:00 GMT-0800 (Pacific Standard Time)	2055			82.21394
CanESM2	Sat Jan 01 2056 00:00:00 GMT-0800 (Pacific Standard Time)	2056			79.87422
CanESM2	Mon Jan 01 2057 00:00:00 GMT-0800 (Pacific Standard Time)	2057			79.48531
CanESM2	Tue Jan 01 2058 00:00:00 GMT-0800 (Pacific Standard Time)	2058			81.88786
CanESM2	Wed Jan 01 2059 00:00:00 GMT-0800 (Pacific Standard Time)	2059			79.8483
CanESM2	Thu Jan 01 2060 00:00:00 GMT-0800 (Pacific Standard Time)	2060			78.93825
CanESM2	Sat Jan 01 2061 00:00:00 GMT-0800 (Pacific Standard Time)	2061			80.80398
CanESM2	Sun Jan 01 2062 00:00:00 GMT-0800 (Pacific Standard Time)	2062			80.77498
CanESM2	Mon Jan 01 2063 00:00:00 GMT-0800 (Pacific Standard Time)	2063			81.62168
CanESM2	Tue Jan 01 2064 00:00:00 GMT-0800 (Pacific Standard Time)	2064			81.41727
CanESM2	Thu Jan 01 2065 00:00:00 GMT-0800 (Pacific Standard Time)	2065			79.64433
CanESM2	Fri Jan 01 2066 00:00:00 GMT-0800 (Pacific Standard Time)	2066			79.12803
CanESM2	Sat Jan 01 2067 00:00:00 GMT-0800 (Pacific Standard Time)	2067			77.56873
CanESM2	Sun Jan 01 2068 00:00:00 GMT-0800 (Pacific Standard Time)	2068			78.93649
CanESM2	Tue Jan 01 2069 00:00:00 GMT-0800 (Pacific Standard Time)	2069			79.5317
CanESM2	Wed Jan 01 2070 00:00:00 GMT-0800 (Pacific Standard Time)	2070			79.32315
CanESM2	Thu Jan 01 2071 00:00:00 GMT-0800 (Pacific Standard Time)	2071			79.38442
CanESM2	Fri Jan 01 2072 00:00:00 GMT-0800 (Pacific Standard Time)	2072			81.95296
CanESM2	Sun Jan 01 2073 00:00:00 GMT-0800 (Pacific Standard Time)	2073			79.15277
CanESM2	Mon Jan 01 2074 00:00:00 GMT-0800 (Pacific Standard Time)	2074			82.33441
CanESM2	Tue Jan 01 2075 00:00:00 GMT-0800 (Pacific Standard Time)	2075			80.22528
CanESM2	Wed Jan 01 2076 00:00:00 GMT-0800 (Pacific Standard Time)	2076			80.37602
CanESM2	Fri Jan 01 2077 00:00:00 GMT-0800 (Pacific Standard Time)	2077			81.16308
CanESM2	Sat Jan 01 2078 00:00:00 GMT-0800 (Pacific Standard Time)	2078			79.65826
CanESM2	Sun Jan 01 2079 00:00:00 GMT-0800 (Pacific Standard Time)	2079			81.26578
CanESM2	Mon Jan 01 2080 00:00:00 GMT-0800 (Pacific Standard Time)	2080			80.30891
CanESM2	Wed Jan 01 2081 00:00:00 GMT-0800 (Pacific Standard Time)	2081			80.40226
CanESM2	Thu Jan 01 2082 00:00:00 GMT-0800 (Pacific Standard Time)	2082			81.18511
CanESM2	Fri Jan 01 2083 00:00:00 GMT-0800 (Pacific Standard Time)	2083			79.49623
CanESM2	Sat Jan 01 2084 00:00:00 GMT-0800 (Pacific Standard Time)	2084			80.14512
CanESM2	Mon Jan 01 2085 00:00:00 GMT-0800 (Pacific Standard Time)	2085			80.17983
CanESM2	Tue Jan 01 2086 00:00:00 GMT-0800 (Pacific Standard Time)	2086			80.42222
CanESM2	Wed Jan 01 2087 00:00:00 GMT-0800 (Pacific Standard Time)	2087			81.76029
CanESM2	Thu Jan 01 2088 00:00:00 GMT-0800 (Pacific Standard Time)	2088			80.45757
CanESM2	Sat Jan 01 2089 00:00:00 GMT-0800 (Pacific Standard Time)	2089			80.29346
CanESM2	Sun Jan 01 2090 00:00:00 GMT-0800 (Pacific Standard Time)	2090			79.77905
CanESM2	Mon Jan 01 2091 00:00:00 GMT-0800 (Pacific Standard Time)	2091			79.51293
CanESM2	Tue Jan 01 2092 00:00:00 GMT-0800 (Pacific Standard Time)	2092			80.75489
CanESM2	Thu Jan 01 2093 00:00:00 GMT-0800 (Pacific Standard Time)	2093			79.90386
CanESM2	Fri Jan 01 2094 00:00:00 GMT-0800 (Pacific Standard Time)	2094			78.46119
CanESM2	Sat Jan 01 2095 00:00:00 GMT-0800 (Pacific Standard Time)	2095			80.46391
CanESM2	Sun Jan 01 2096 00:00:00 GMT-0800 (Pacific Standard Time)	2096			80.02276
CanESM2	Tue Jan 01 2097 00:00:00 GMT-0800 (Pacific Standard Time)	2097			80.06407
CanESM2	Wed Jan 01 2098 00:00:00 GMT-0800 (Pacific Standard Time)	2098			79.7292
CanESM2	Thu Jan 01 2099 00:00:00 GMT-0800 (Pacific Standard Time)	2099			80.91749
CanESM2	Fri Jan 01 2100 00:00:00 GMT-0800 (Pacific Standard Time)	2100			82.13603

APPENDIX G

SB X7-7 VERIFICATION FORM

SB X7-7 Table 0: Units of Measure Used in UWMP* *(select one from the drop down list)*
Acre Feet
**The unit of measure must be consistent with Table 2-3*
NOTES:

SB X7-7 Table-1: Baseline Period Ranges			
Baseline	**Parameter**	**Value**	**Units**
10- to 15-year baseline period	2008 total water deliveries	1,606	Acre Feet
	2008 total volume of delivered recycled water	186	Acre Feet
	2008 recycled water as a percent of total deliveries	11.58%	Percent
	Number of years in baseline period[1, 2]	10	Years
	Year beginning baseline period range	1999	
	Year ending baseline period range[3]	2008	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2003	
	Year ending baseline period range[4]	2007	

[1] *If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period.* [2] *The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.*

[3] *The ending year must be between December 31, 2004 and December 31, 2010.*

[4] *The ending year must be between December 31, 2007 and December 31, 2010.*

NOTES:

SB X7-7 Table 2: Method for Population Estimates	
Method Used to Determine Population (may check more than one)	
☐	**1. Department of Finance** (DOF) DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
☐	**2. Persons-per-Connection Method**
☑	**3. DWR Population Tool**
❑	**4. Other** DWR recommends pre-review
NOTES:	

SB X7-7 Table 3: Service Area Population		
Year		Population
10 to 15 Year Baseline Population		
Year 1	1999	16,024
Year 2	2000	16,054
Year 3	2001	15,669
Year 4	2002	15,269
Year 5	2003	14,884
Year 6	2004	14,471
Year 7	2005	14,071
Year 8	2006	13,672
Year 9	2007	13,277
Year 10	2008	15,364
Year 11		
Year 12		
Year 13		
Year 14		
Year 15		
5 Year Baseline Population		
Year 1	2003	14,884
Year 2	2004	14,471
Year 3	2005	14,071
Year 4	2006	13,672
Year 5	2007	13,277
2015 Compliance Year Population		
2015		14,644
NOTES: The 2015 population was calculated using the persons per connection for 2010 calculated using the DWR Population Tool and then multiplying the 2010 persons per connection by the number of connections for 2015.		

SB X7-7 Table 4: Annual Gross Water Use *									
Baseline Year *Fm SB X7-7 Table 3*		**Volume Into Distribution System** *This column will remain blank until SB X7-7 Table 4-A is completed.*	**Deductions**					**Annual Gross Water Use**
			Exported Water	**Change in Dist. System Storage (+/-)**	**Indirect Recycled Water** *This column will remain blank until SB X7-7 Table 4-B is completed.*	**Water Delivered for Agricultural Use**	**Process Water** *This column will remain blank until SB X7-7 Table 4-D is completed.*	
10 to 15 Year Baseline - Gross Water Use								
Year 1	1999	7,741	180		-		2,117.1	5,444
Year 2	2000	7,339	180		-		2,004.5	5,154
Year 3	2001	7,119	180		-		1,652.6	5,286
Year 4	2002	7,527	180		-		2,321.4	5,026
Year 5	2003	7,592	180		-		2,521.2	4,891
Year 6	2004	7,404	180		-		2,206.7	5,017
Year 7	2005	7,362	180		-		1,932.2	5,250
Year 8	2006	7,283	180		-		1,881.0	5,222
Year 9	2007	7,594	114		-		1,981.3	5,499
Year 10	2008	7,174	194		-		1,851.2	5,129
Year 11	0	-			-		-	-
Year 12	0	-			-		-	-
Year 13	0	-			-		-	-
Year 14	0	-			-		-	-
Year 15	0	-			-		-	-
10 - 15 year baseline average gross water use								**5,192**
5 Year Baseline - Gross Water Use								
Year 1	2003	7,592	180		-		2,521.2	4,891
Year 2	2004	7,404	180		-		2,206.7	5,017
Year 3	2005	7,362	180		-		1,932.2	5,250
Year 4	2006	7,283	180		-		1,881.0	5,222
Year 5	2007	7,594	114		-		1,981.3	5,499
5 year baseline average gross water use								**5,176**
2015 Compliance Year - Gross Water Use								
2015		5,430	158		-		1,505.5	**3,766**

* NOTE that the units of measure must remain consistent throughout the UWMP, as reported in Table 2-3

NOTES:

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)

Complete one table for each source.

Name of Source	Groundwater Wells
This water source is:	
☑	The supplier's own water source
☐	A purchased or imported source

Baseline Year *Fm SB X7-7 Table 3*		Volume Entering Distribution System	Meter Error Adjustment* *Optional (+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1999	4,083		4,083
Year 2	2000	2,944		2,944
Year 3	2001	2,929		2,929
Year 4	2002	3,696		3,696
Year 5	2003	3,882		3,882
Year 6	2004	2,978		2,978
Year 7	2005	2,974		2,974
Year 8	2006	2,096		2,096
Year 9	2007	1,575		1,575
Year 10	2008	1,445		1,445
Year 11	0			-
Year 12	0			-
Year 13	0			-
Year 14	0			-
Year 15	0			-
5 Year Baseline - Water into Distribution System				
Year 1	2003	3,882		3,882
Year 2	2004	2,978		2,978
Year 3	2005	2,974		2,974
Year 4	2006	2,096		2,096
Year 5	2007	1,575		1,575
2015 Compliance Year - Water into Distribution System				
2015		-		-

** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 4-A: Volume Entering the Distribution				
Name of Source	MWD Imported Water			
This water source is:				
☐	The supplier's own water source			
☑	A purchased or imported source			
Baseline Year *Fm SB X7-7 Table 3*		Volume Entering Distribution System	Meter Error Adjustment* *Optional (+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1999	3658		3,658
Year 2	2000	4395		4,395
Year 3	2001	4190		4,190
Year 4	2002	3831		3,831
Year 5	2003	3710		3,710
Year 6	2004	4253		4,253
Year 7	2005	2273		2,273
Year 8	2006	3669		3,669
Year 9	2007	4492		4,492
Year 10	2008	4083		4,083
Year 11	0			0
Year 12	0			0
Year 13	0			0
Year 14	0			0
Year 15	0			0
5 Year Baseline - Water into Distribution System				
Year 1	2003	3710		3,710
Year 2	2004	4253		4,253
Year 3	2005	2273		2,273
Year 4	2006	3669		3,669
Year 5	2007	4492		4,492
2015 Compliance Year - Water into Distribution System				
2015		2,714		2,714
** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*				
NOTES:				

SB X7-7 Table 4-A: Volume Entering the Distribution				
Name of Source	CB WQPP (Treated Groundwater)			
This water source is:				
☐	The supplier's own water source			
☑	A purchased or imported source			
Baseline Year *Fm SB X7-7 Table 3*		Volume Entering Distribution System	Meter Error Adjustment* *Optional (+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1999	0		0
Year 2	2000	0		0
Year 3	2001	0		0
Year 4	2002	0		0
Year 5	2003	0		0
Year 6	2004	173		173
Year 7	2005	2115		2,115
Year 8	2006	1518		1,518
Year 9	2007	1527		1,527
Year 10	2008	1646		1,646
Year 11	-			0
Year 12	-			0
Year 13	-			0
Year 14	-			0
Year 15	-			0
5 Year Baseline - Water into Distribution System				
Year 1	2003	0		0
Year 2	2004	173		173
Year 3	2005	2115		2,115
Year 4	2006	1518		1,518
Year 5	2007	1527		1,527
2015 Compliance Year - Water into Distribution System				
2015		2,716		2,716
** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*				
NOTES:				

SB X7-7 Table 4-C: Process Water Deduction Eligibility *(For use only by agencies that are deducting process water) Choose Only One*	
☑	**Criteria 1**- Industrial water use is equal to or greater than 12% of gross water use. Complete SB X7-7 Table 4-C.1
☐	**Criteria 2** - Industrial water use is equal to or greater than 15 GPCD. Complete SB X7-7 Table 4-C.2
☐	**Criteria 3** - Non-industrial use is equal to or less than 120 GPCD. Complete SB X7-7 Table 4-C.3
☐	**Criteria 4** - Disadvantaged Community. Complete SB x7-7 Table 4-C.4
NOTES:	

SB X7-7 Table 4-C.1: Process Water Deduction Eligibility

Criteria 1

Industrial water use is equal to or greater than 12% of gross water use

Baseline Year *Fm SB X7-7 Table 3*		Gross Water Use Without Process Water Deduction	Industrial Water Use	Percent Industrial Water	**Eligible for Exclusion Y/N**
10 to 15 Year Baseline - Process Water Deduction Eligibility					
Year 1	1999	7,561	2,117	28%	YES
Year 2	2000	7,159	2,005	28%	YES
Year 3	2001	6,939	1,653	24%	YES
Year 4	2002	7,347	2,321	32%	YES
Year 5	2003	7,412	2,521	34%	YES
Year 6	2004	7,224	2,207	31%	YES
Year 7	2005	7,182	1,932	27%	YES
Year 8	2006	7,103	1,881	26%	YES
Year 9	2007	7,480	1,981	26%	YES
Year 10	2008	6,980	1,851	27%	YES
Year 11	0	-			NO
Year 12	0	-			NO
Year 13	0	-			NO
Year 14	0	-			NO
Year 15	0	-			NO
5 Year Baseline - Process Water Deduction Eligibility					
Year 1	2003	7,412	2,521	34%	YES
Year 2	2004	7,224	2,207	31%	YES
Year 3	2005	7,182	1,932	27%	YES
Year 4	2006	7,103	1,881	26%	YES
Year 5	2007	7,480	1,981	26%	YES
2015 Compliance Year - Process Water Deduction Eligiblity					
2015		5,272	1,506	29%	YES

NOTES:

SB X7-7 Table 4-D: Process Water Deduction - Volume *Complete a separate table for each industrial customer with a process water exclusion*						
Name of Industrial Customer		*Total Industrial Use*				
Baseline Year *Fm SB X7-7 Table 3*		Industrial Customer's Total Water Use	Total Volume Supplied by Water Agency	% of Water Supplied by Water Agency	Customer's Total Process Water Use	Volume of Process Water Eligible for Exclusion for this Customer
10 to 15 Year Baseline - Process Water Deduction						
Year 1	1999	2,117	2,117	100%	2,117	2,117
Year 2	2000	2,005	2,005	100%	2,005	2,005
Year 3	2001	1,653	1,653	100%	1,653	1,653
Year 4	2002	2,321	2,321	100%	2,321	2,321
Year 5	2003	2,521	2,521	100%	2,521	2,521
Year 6	2004	2,207	2,207	100%	2,207	2,207
Year 7	2005	1,932	1,932	100%	1,932	1,932
Year 8	2006	1,881	1,881	100%	1,881	1,881
Year 9	2007	1,981	1,981	100%	1,981	1,981
Year 10	2008	1,851	1,851	100%	1,851	1,851
Year 11	0					-
Year 12	0					-
Year 13	0					-
Year 14	0					-
Year 15	0					-
5 Year Baseline - Process Water Deduction						
Year 1	2003	2,521	2,521	100%	2,521	2,521
Year 2	2004	2,207	2,207	100%	2,207	2,207
Year 3	2005	1,932	1,932	100%	1,932	1,932
Year 4	2006	1,881	1,881	100%	1,881	1,881
Year 5	2007	1,981	1,981	100%	1,981	1,981
2015 Compliance Year - Process Water Deduction						
2015		1,506	1,506	100%	1,506	1,506
NOTES: Breakdown by customer not available.						

SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Annual Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1999	16,024	5,444	303
Year 2	2000	16,054	5,154	287
Year 3	2001	15,669	5,286	301
Year 4	2002	15,269	5,026	294
Year 5	2003	14,884	4,891	293
Year 6	2004	14,471	5,017	310
Year 7	2005	14,071	5,250	333
Year 8	2006	13,672	5,222	341
Year 9	2007	13,277	5,499	370
Year 10	2008	15,364	5,129	298
Year 11	0	-	-	
Year 12	0	-	-	
Year 13	0	-	-	
Year 14	0	-	-	
Year 15	0	-	-	
10-15 Year Average Baseline GPCD				**313**
5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2003	14,884	4,891	293
Year 2	2004	14,471	5,017	310
Year 3	2005	14,071	5,250	333
Year 4	2006	13,672	5,222	341
Year 5	2007	13,277	5,499	370
5 Year Average Baseline GPCD				**329**
2015 Compliance Year GPCD				
2015		14,644	3,766	**230**
NOTES:				

SB X7-7 Table 6: Gallons per Capita per Day *Summary From Table SB X7-7 Table 5*	
10-15 Year Baseline GPCD	313
5 Year Baseline GPCD	329
2015 Compliance Year GPCD	230
NOTES:	

SB X7-7 Table 7: 2020 Target Method *Select Only One*		
Target Method		Supporting Documentation
☑	Method 1	SB X7-7 Table 7A
☐	Method 2	SB X7-7 Tables 7B, 7C, and 7D *Contact DWR for these tables*
☐	Method 3	SB X7-7 Table 7-E
☐	Method 4	Method 4 Calculator
NOTES:		

SB X7-7 Table 7-A: Target Method 1 20% Reduction	
10-15 Year Baseline GPCD	**2020 Target GPCD**
313	**250**
NOTES:	

SB X7-7 Table 7-E: Target Method 3				
Agency May Select More Than One as Applicable	Percentage of Service Area in This Hydrological Region	Hydrologic Region	"2020 Plan" Regional Targets	Method 3 Regional Targets (95%)
☐		North Coast	137	130
☐		North Lahontan	173	164
☐		Sacramento River	176	167
☐		San Francisco Bay	131	124
☐		San Joaquin River	174	165
☐		Central Coast	123	117
☐		Tulare Lake	188	179
☐		South Lahontan	170	162
☑	100%	South Coast	149	142
☐		Colorado River	211	200
Target *(If more than one region is selected, this value is calculated.)*				**142**
NOTES:				

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target			
5 Year Baseline GPCD *From SB X7-7 Table 5*	Maximum 2020 Target[1]	Calculated 2020 Target[2]	**Confirmed 2020 Target**
329	313	250	**250**

[1] Maximum 2020 Target is 95% of the 5 Year Baseline GPCD *[2] 2020 Target is calculated based on the selected Target Method, see SB X7-7 Table 7 and corresponding tables for agency's calculated target.*

NOTES:

SB X7-7 Table 8: 2015 Interim Target GPCD		
Confirmed 2020 Target *Fm SB X7-7 Table 7-F*	10-15 year Baseline GPCD *Fm SB X7-7 Table 5*	**2015 Interim Target GPCD**
250	313	**281**
NOTES:		

SB X7-7 Table 9: 2015 Compliance								
Actual 2015 GPCD	2015 Interim Target GPCD	Optional Adjustments *(in GPCD)* Enter "0" if Adjustment Not Used: Extraordinary Events	Weather Normalization	Economic Adjustment	TOTAL Adjustments	Adjusted 2015 GPCD	2015 GPCD *(Adjusted if applicable)*	**Did Supplier Achieve Targeted Reduction for 2015?**
230	281	*0*	*0*	*0*	-	230	230	**YES**
NOTES:								

APPENDIX H

SB X7-7 2020 COMPLIANCE FORM

SB X7-7 2020 Compliance Form

The SB X7-7 2020 Compliance Form is for the calculation of 2020 compliance only. All retail suppliers must complete the SB X7-7 Compliance Form. Baseline and target calculations are done in the SB X 7-7 Verification Form.

The SB X7-7 Verification Form is for the calculation of baselines and targets and is a separate workbook from the SB X7-7 2020 Compliance Form.

Most Suppliers will have completed the SB X7-7 Verification Form with their 2015 UWMP and do not need to complete this form again in 2020. See Chapter 5 Section 5.3 of the UWMP Guidebook for more information regarding which Suppliers must, or may, complete the SB X7-7 Verification Form for their 2020 UWMP. 2020 compliance calculations are done in the SB X7-7 2020 Compliance Form.

WUE Data Portal Entry Exceptions

The data from the tables below will not be entered into WUE Data Portal tables. These tables will be submitted as separate uploads, in Excel, to WUE Data Portal.

Process Water Deduction

SB X7-7 tables 4-C, 4-C.1, 4-C.2, 4-C.3, 4-C.4 and 4-D

A supplier that will use the process water deduction will complete the appropriate tables in Excel, submit them as a separate upload to the WUE Data Portal, and include them in its UWMP.

SB X7-7 Table 0: Units of Measure Used in 2020 UWMP* *(select one from the drop down list)*
Acre Feet
**The unit of measure must be consistent throughout the UWMP, as reported in Submittal Table 2-3.*
NOTES:

SB X7-7 Table 2: Method for 2020 Population Estimate	
Method Used to Determine 2020 Population (may check more than one)	
☐	**1. Department of Finance** (DOF) or **American Community Survey** (ACS)
☐	**2. Persons-per-Connection Method**
☑	**3. DWR Population Tool**
☐	**4. Other** DWR recommends pre-review
NOTES:	

SB X7-7 Table 3: 2020 Service Area Population	
2020 Compliance Year Population	
2020	14,830
NOTES:	

SB X7-7 Table 4: 2020 Gross Water Use							
Compliance Year 2020	**2020 Volume Into Distribution System** *This column will remain blank until SB X7-7 Table 4-A is completed.*	**2020 Deductions**					**2020 Gross Water Use**
		Exported Water *	**Change in Dist. System Storage*** (+/-)	**Indirect Recycled Water** *This column will remain blank until SB X7-7 Table 4-B is completed.*	**Water Delivered for Agricultural Use***	**Process Water** *This column will remain blank until SB X7-7 Table 4-D is completed.*	
	4,977			-		1,271	**3,706**

*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment

Complete one table for each source.

Name of Source	Central Basin WQPP
This water source is *(check one)* **:**	
☐	The supplier's own water source
☑	A purchased or imported source

Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional (+/-)*	Corrected Volume Entering Distribution System
	2,413	-	2,413

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.*

[2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s) Meter Error Adjustment

Complete one table for each source.

Name of Source	Central Basin/MWD Imported Water
This water source is *(check one)* **:**	
☐	The supplier's own water source
☑	A purchased or imported source

Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional (+/-)*	Corrected Volume Entering Distribution System
	2,564		2,564

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.*

[2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 4-B: 2020 Indirect Recycled Water Use Deduction *(For use only by agencies that are deducting indirect recycled water)*

2020 Compliance Year	2020 Surface Reservoir Augmentation					2020 Groundwater Recharge			Total Deductible Volume of Indirect Recycled Water Entering the Distribution System
	Volume Discharged from Reservoir for Distribution System Delivery[1]	Percent Recycled Water	Recycled Water Delivered to Treatment Plant	Transmission/ Treatment Loss[1]	Recycled Volume Entering Distribution System from Surface Reservoir Augmentation	Recycled Water Pumped by Utility[1,2]	Transmission/ Treatment Losses[1]	Recycled Volume Entering Distribution System from Groundwater Recharge	
			-		-			-	-

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.*

[2] *Suppliers will provide supplemental sheets to document the calculation for their input into "Recycled Water Pumped by Utility". The volume reported in this cell must be less than total groundwater pumped - See Methodology 1, Step 8, section 2.c.*

SB X7-7 Table 4-C: 2020 Process Water Deduction Eligibility (For use only by agencies that are deducting process water) Choose Only One	
☑	**Criteria 1**- Industrial water use is equal to or greater than 12% of gross water use. Complete SB X7-7 Table 4-C.1
☐	**Criteria 2** - Industrial water use is equal to or greater than 15 GPCD. Complete SB X7-7 Table 4-C.2
☐	**Criteria 3** - Non-industrial use is equal to or less than 120 GPCD. Complete SB X7-7 Table 4-C.3
☐	**Criteria 4** - Disadvantaged Community. Complete SB x7-7 Table 4-C.4
NOTES:	

SB X7-7 Table 4-C.1: 2020 Process Water Deduction Eligibility

(For use only by agencies that are deducting process water using Criteria 1)

Criteria 1

Industrial water use is equal to or greater than 12% of gross water use

2020 Compliance Year	2020 Gross Water Use Without Process Water Deduction	2020 Industrial Water Use	Percent Industrial Water	Eligible for Exclusion Y/N
	4,977	1,271	26%	YES

NOTES:

SB X7-7 Table 4-C.2: 2020 Process Water Deduction Eligibility

(For use only by agencies that are deducting process water using Criteria 2)

Criteria 2

Industrial water use is equal to or greater than 15 GPCD

2020 Compliance Year	2020 Industrial Water Use	2020 Population	2020 Industrial GPCD	**Eligible for Exclusion Y/N**
		14,830	-	NO

NOTES:

SB X7-7 Table 4-C.3: 2020 Process Water Deduction Eligibility

(For use only by agencies that are deducting process water using Criteria 3)

Criteria 3

Non-industrial use is equal to or less than 120 GPCD

2020 Compliance Year	2020 Gross Water Use Without Process Water Deduction *Fm SB X7-7 Table 4*	2020 Industrial Water Use	2020 Non-industrial Water Use	2020 Population *Fm SB X7-7 Table 3*	Non-Industrial GPCD	**Eligible for Exclusion Y/N**
	4,977		4,977	14,830	300	NO

NOTES:

SB X7-7 Table 4-C.4: 2020 Process Water Deduction Eligibility ***(For use only by agencies that are deducting process water using Criteria 4)***

Criteria 4

Disadvantaged Community. A "Disadvantaged Community" (DAC) is a community with a median household income less than 80 percent of the statewide average.

SELECT ONE

"Disadvantaged Community" status was determined using one of the methods listed below:

1. IRWM DAC Mapping tool https://gis.water.ca.gov/app/dacs/

☐	If using the IRWM DAC Mapping Tool, include a screen shot from the tool showing that the service area is considered a DAC.

2. 2020 Median Income

	California Median Household Income*		Service Area Median Household Income	Percentage of Statewide Average	**Eligible for Exclusion? Y/N**
☐	**2020**	**$75,235**		0%	YES

*California median household income 2015 -2019 as reported in US Census Bureau QuickFacts.

NOTES

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume

Complete a separate table for each industrial customer with a process water exclusion

Name of Industrial Customer	*Tri-Star Dyeing & Finish*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
	378	378	100%	378	378

*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume

Complete a separate table for each industrial customer with a process water exclusion

Name of Industrial Customer	*Air Products & Chemicals*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
	17	17	100%	17	17

*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume

Complete a separate table for each industrial customer with a process water exclusion

Name of Industrial Customer	*Queen Div/Shaw Ind*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
	58	58	100%	58	58

*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume

Complete a separate table for each industrial customer with a process water exclusion

Name of Industrial Customer	*Safeway Inc.*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
	168	168	100%	168	168

*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume

Complete a separate table for each industrial customer with a process water exclusion

Name of Industrial Customer	*All Pure Chemical Co*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
	144	144	100%	144	144

*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume

Complete a separate table for each industrial customer with a process water exclusion

Name of Industrial Customer	*Goodrich Corp*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
	87	87	100%	87	87

*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume

Complete a separate table for each industrial customer with a process water exclusion

Name of Industrial Customer	*Kik Socal A/P*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
	75	75	100%	75	75

*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume

Complete a separate table for each industrial customer with a process water exclusion

Name of Industrial Customer	*Bumble Bee Foods*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
	68	68	100%	68	68

*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume

Complete a separate table for each industrial customer with a process water exclusion

Name of Industrial Customer	*Day Lee Meats, Inc.*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
	59	59	100%	59	59

*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume

Complete a separate table for each industrial customer with a process water exclusion

Name of Industrial Customer	*G & K Services*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
	57	57	100%	57	57

*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume

Name of Industrial Customer	*Heraeus Precious Metals*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
	35	35	100%	35	35

*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume

Name of Industrial Customer	*Donaire Jon*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
	32	32	100%	32	32

*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume					
Name of Industrial Customer	*International Paper MS#2*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
	43	43	100%	43	43
*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.					
NOTES:					

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume					
Name of Industrial Customer	*Trojan Battery*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
	22	22	100%	22	22
*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.					
NOTES:					

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume					
Name of Industrial Customer	*California Boring*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
	16	16	100%	16	16
*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.					
NOTES:					

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume					
Name of Industrial Customer	*Golden Spclty Foods LLC*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
	12	12	100%	12	12
*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.					
NOTES:					

SB X7-7 Table 5: 2020 Gallons Per Capita Per Day (GPCD)		
2020 Gross Water *Fm SB X7-7 Table 4*	**2020 Population** *Fm SB X7-7 Table 3*	**2020 GPCD**
3,706	14,830	**223**
NOTES:		

SB X7-7 Table 9: 2020 Compliance							
Actual 2020 GPCD[1]	Optional Adjustments to 2020 GPCD Enter "0" if Adjustment Not Used Extraordinary Events[1]	Weather Normalization[1]	Economic Adjustment[1]	TOTAL Adjustments[1]	Adjusted 2020 GPCD [1] *(Adjusted if applicable)*	2020 Confirmed Target GPCD [1, 2]	**Did Supplier Achieve Targeted Reduction for 2020?**
223	-	-	-	-	223	250	**YES**

[1] *All values are reported in GPCD*

[2] ***2020 Confirmed Target GPCD*** *is taken from the Supplier's SB X7-7 Verification Form Table SB X7-7, 7-F.*

NOTES:

APPENDIX I

CENTRAL BASIN THIRD AMENDED JUDGMENT

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SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

CENTRAL AND WEST BASIN WATER REPLENISHMENT DISTRICT, etc., Plaintiff, vs. CHARLES E. ADAMS, et al., Defendant	Case No.: 786,656 THIRD AMENDED JUDGMENT (Declaring and establishing water rights in Central Basin, enjoining extractions therefrom in excess of specified quantities and providing for the storage and extraction of stored water.)
CITY OF LAKEWOOD, a municipal corporation, Cross-Complainant vs. CHARLES E. ADAMS, et al., Cross-Defendants.	Assigned for all purposes to Hon. Abraham Khan Dept. 51

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The original judgment in this action was entered on or about August 27, 1965. Pursuant to the reserved and continuing jurisdiction of the court under the Judgment herein, certain amendments to said Judgment and temporary orders have heretofore been made and entered. Continuing jurisdiction of the court for this action is currently assigned to Hon. Abraham Khan.

The Motion of Plaintiff WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA (which originally brought this action under its former name "Central and West Basin Water Replenishment District"), and of defendants, City of Lakewood, City of Long Beach, Golden State Water Company, California Water Service Company, City of Los Angeles, City of Cerritos, City of Downey, City of Signal Hill, Pico Water District, Bellflower-Somerset Mutual Water Company, LaHabra Heights County Water District, City of Norwalk, Orchard Dale Water District, Montebello Land & Water Company, South Montebello Irrigation District, Sativa Los Angeles County Water District, City of Vernon and Central Basin Municipal Water District ("Moving Parties") herein for further amendments to the Judgment, notice thereof and of the hearing thereon having been duly and regularly given to all parties, came on for hearing in Department 51 of the above-entitled court on December 18, 2013 at 9:00 a.m. before said Hon. Abraham Khan. This "Third Amended Judgment" incorporates amendments and orders heretofore made to the extent presently operable and amendments pursuant to said last mentioned motion. To the extent this Amended Judgment is a restatement of the Judgment as heretofore amended, it is for convenience in incorporating all matters in one document, is not a readjudication of such matters and is not intended to reopen any such matters. As used hereinafter the word "Judgment" shall include the original Judgment entered in this action as amended to date, including this Third Amended Judgment.

There exists in the County of Los Angeles, State of California, an underground water basin or reservoir known and hereinafter referred to as the "Central Basin" or "Basin" described in Appendix "1" to this Judgment.

Within this Judgment, the following terms, words, phrases and clauses are used by the Court with the following meanings:

"Adjudicated Storage Capacity" means 220,000 acre-feet of the Available Dewatered

Space which has been apportioned herein for Individual Storage Accounts and Community Storage.

"Administrative Body" is defined in Section II(A).

"Administrative Year" means the twelve (12) month period beginning July 1 and ending June 30.

"Allowed Pumping Allocation" is that quantity in acre feet which the Court adjudges to be the maximum quantity which a party should be allowed to extract annually from Central Basin as set forth in Part I hereof, which constitutes 80% of such party's Total Water Right.

"Allowed Pumping Allocation for a particular Administrative Year" and "Allowed Pumping Allocation in the following Administrative Year" and similar clauses, mean the Allowed Pumping Allocation as increased in a particular Administrative Year by any authorized carryovers pursuant to Section III(A) of this Judgment and as reduced by reason of any over-extractions in a previous Administrative Year.

"Artificial Replenishment" is the replenishment of Central Basin achieved through the spreading or injection of imported or recycled water for percolation thereof into Central Basin by a governmental agency, including WRD.

"Artificial Replenishment Water" means water captured or procured by WRD to replenish the Basin, either directly by percolating or injecting the water into the Basin, or through in lieu replenishment by substituting surface water (or payment therefor) in lieu of production and use of groundwater.

"Available Dewatered Space" means the total amount of space available to hold groundwater within the Central Basin without causing Material Physical Harm, which space is allocated between Adjudicated Storage Capacity and Basin Operating Reserve.

"Base Water Right" is the highest continuous extractions of water by a party from Central Basin for a beneficial use in any period of five consecutive years after the commencement of overdraft in Central Basin and prior to the commencement of this action, as to which there has been no cessation of use by that party during any subsequent period of five consecutive years. As employed in the above definition, the words "extractions of water by a party" and "cessation

of use by that party" include such extractions and cessations by any predecessor or predecessors in interest.

"Basin Operating Reserve" means a total of 110,000 acre feet of Available Dewatered Space available for Basin operations as provided in Section IV(L). The Basin Operating Reserve added to the Adjudicated Storage Capacity equals the amount of Available Dewatered Space.

"Calendar Year" is the twelve month period commencing January 1 of each year and ending December 31 of each year.

"Carryover" is defined in Section III(A).

"Carryover Conversion" means the process of transferring water properly held as Carryover into Stored Water, or the water so converted to Stored Water.

"Central Basin" is the underground basin or reservoir underlying the Central Basin Area, the exterior boundaries of which Central Basin are the same as the exterior boundaries of Central Basin Area.

"Central Basin Area" is the territory described in Appendix "1" to this Judgment and is a segment of the territory comprising Plaintiff District.

"Central Basin Water Rights Panel" means the constituent body of Watermaster consisting of seven (7) Parties elected from among parties holding Allowed Pumping Allocations as provided in Section II(B).

"CEQA" refers to the California Environmental Quality Act, Public Resources Code §§ 21000 *et seq*.

"Community Storage Pool" is defined in Section IV(E).

"Declared Water Emergency" means a period commencing with the adoption of a resolution of the Board of Directors of WRD declaring that conditions within the Central Basin relating to natural and imported supplies of water are such that, without implementation of the water emergency provisions of this Judgment, the water resources of the Central Basin risk degradation. Such Declaration may be made as provided in Section III(A)(3).

"Disadvantaged Community" means any area that is served by a Water Purveyor and that consists of one or more contiguous census tracts which, based upon the most-recent United

States Census data, demonstrates a median household income which is less than eighty percent (80%) of the median household income for all Census Tracts within the state of California. The identification of Disadvantaged Communities shall be made by Watermaster following each decennial census.

"Extraction," "extractions," "extracting," "extracted," and other variations of the same noun and verb, mean pumping, taking, diverting or withdrawing groundwater by any manner or means whatsoever from Central Basin.

"Imported Water" means water brought into Central Basin Area from a non-tributary source by a party and any predecessors in interest, either through purchase directly from Metropolitan Water District of Southern California ("MWD"), the Central Basin Municipal Water District ("CBMWD"), or any other MWD member agency and additionally, as to the Department of Water and Power of the City of Los Angeles, water brought into the Central Basin Area by that party by means of the Owens River Aqueduct. In the case of water imported for storage by a party pursuant to this Judgment, "Imported Water" means water brought into the Central Basin from any non-tributary source as one method for establishing storage in the Central Basin.

"Imported Water Use Credit" is the annual amount, computed on a calendar year basis, of Imported Water which any party and any predecessors in interest, who have timely made the required filings under Water Code Section 1005.1, have imported into Central Basin Area in any calendar year and subsequent to July 9, 1951, for beneficial use therein, but not exceeding the amount by which that party and any predecessors in interest reduces his or their extractions of groundwater from Central Basin in that calendar year from the level of his or their extractions in the preceding calendar year, or in any prior calendar year not earlier than the calendar year 1950, whichever is the greater.

"Individual Storage Allocation" is defined in Section IV(D).

"Majority Protest" means a written protest filed with the Administrative Body of Watermaster within sixty (60) days following a protested event or decision, which evidences the concurrence of a majority of the Allowed Pumping Allocations held within the Basin as of the

date thereof.

"Material Physical Harm" means material physical injury or a material diminution in the quality or quantity of groundwater available within the Basin to support extraction of Total Water Rights or Stored Water, that is demonstrated to be attributable to the placement, recharge, injection, storage or recapture of Stored Water in the Central Basin, including, but not limited to, degradation of water quality, liquefaction, land subsidence and other material physical injury caused by elevated or lowered groundwater levels. Material Physical Harm does not include "economic injury" that results from other than direct physical causes, including any adverse effect on water rates, lease rates, or demand for water. Once fully mitigated, physical injury shall no longer be considered to be material.

"Natural Replenishment" means and includes all processes other than "Artificial Replenishment" by which water may become a part of the groundwater supply of Central Basin.

"Natural Safe Yield" is the maximum quantity of groundwater, not in excess of the long term average annual quantity of Natural Replenishment, which may be extracted annually from Central Basin without eventual depletion thereof or without otherwise causing eventual permanent damage to Central Basin as a source of groundwater for beneficial use, said maximum quantity being determined without reference to Artificial Replenishment.

"Outgoing Watermaster" is the State of California, Department of Water Resources, the Watermaster appointed pursuant to the terms of the Judgment before this Third Amendment.

"Overdraft" is that condition of a groundwater basin resulting from extractions in any given annual period or periods in excess of the long term average annual quantity of Natural Replenishment, or in excess of that quantity which may be extracted annually without otherwise causing eventual permanent damage to the basin.

"Party" means a party to this action. Whenever the term "party" is used in connection with a quantitative water right, or any quantitative right, privilege or obligation, or in connection with the assessment for the budget of the Watermaster, it shall be deemed to refer collectively to those parties to whom are attributed a Total Water Right in Part I of this Judgment.

"Person" or "persons" include individuals, partnerships, associations, governmental

agencies and corporations, and any and all types of entities.

"Recycled Water" means water that has been reclaimed through treatment appropriate for its intended use in compliance with applicable regulations.

"Regional Disadvantaged Communities Incentive Program" means a program to be developed by Watermaster in the manner provided in Section II(H) of this Judgment, and approved by the Court, whereby a portion of the Community Storage Pool is made available to or for the benefit of Disadvantaged Communities, on a priority basis within the Central Basin.

"Replenishment Assessment" means the replenishment assessment imposed by WRD upon each acre-foot of groundwater extracted from the Central Basin pursuant to WRD's enabling act, California Water Code §§ 60000 et seq.

"Small Water Producers Group" means a body consisting of parties holding no greater than 5,000 acre-feet of Allowed Pumping Allocation, as set forth on Appendix 3 hereto and as may be modified from time to time by the Group's own procedures and the requirements set forth in Appendix 3.

"Storage Panel" or "Central Basin Storage Panel" means a bicameral constituent body of Watermaster consisting of (i) the Central Basin Water Rights Panel and (ii) the Board of Directors of WRD.

"Storage Project" means an activity pertaining to the placement, recharge, injection, storage, transfer, or recapture of Stored Water within the Basin, but does not include actions by WRD undertaken in connection with its replenishment activities.

"Stored Water" means water, including Recycled Water, held within Available Dewatered Space as a result of spreading, injection, in-lieu delivery, or Carryover Conversion, where there is an intention to subsequently withdraw the water for reasonable and beneficial use pursuant to this Judgment.

"Total Water Right" is the quantity arrived at in the same manner as in the computation of "Base Water Right," but including as if extracted in any particular year the Imported Water Use Credit, if any, to which a particular party may be entitled.

"Water" includes only non-saline water, which is that having less than 1,000 parts of

chlorides to 1,000,000 parts of water.

"Water Augmentation Project" means pre-approved physical actions and management activities that provide demonstrated appreciable increases in long-term annual groundwater yield in the Basin that are initiated as provided in this Judgment after January 1, 2013.

"Water Purveyor" means a Party (and successors in interest) which sells water to the public, whether a regulated public utility, mutual water company or public entity. As that term is used in Section III(B)(6), "Water Purveyor," in addition to the foregoing, means a Party which has a connection or connections for the taking of Imported Water through the Metropolitan Water District of Southern California ("MWD"), or through a MWD-member agency, or access to such Imported Water through such connection, and which normally supplies at least a part of its customers' water needs with such Imported Water.

"Watermaster" is defined in Part II and is comprised of (i) the Administrative Body, (ii) the Central Basin Water Rights Panel, and (iii) the Central Basin Storage Panel. Watermaster, and the various constituent bodies of Watermaster, as designated in this Judgment, exist as a special master pursuant to this Judgment and Watermaster serves at the pleasure of the Court. Nothing herein shall be construed as creating an independent designation of "Watermaster" as a public agency subject to the provisions of CEQA, nor does membership or participation as the designated Watermaster expand any statutory, constitutional, or other powers of the members serving as part of the Watermaster.

"West Coast Basin" is the groundwater basin adjacent to the Central Basin which is the subject of a separate adjudication of groundwater rights in *California Water Service Company, et al. v. City of Compton, et al.*, Los Angeles Superior Court Case No. 506806.

"WRD" or "Water Replenishment District" is the plaintiff herein, the Water Replenishment District of Southern California, a special district of the State of California, which brought this action under its former name, "Central and West Basin Water Replenishment District."

In those instances where any of the above-defined words, terms, phrases or clauses are utilized in the definition of any of the other above-defined words, terms, phrases and clauses,

such use is with the same meaning as is above set forth.

NOW THEREFORE, IT IS ORDERED, DECLARED, ADJUDGED AND DECREED WITH RESPECT TO THE ACTION AND CROSS-ACTION AS FOLLOWS:

I. DECLARATION AND DETERMINATION OF WATER RIGHTS OF PARTIES; RESTRICTION ON THE EXERCISE THEREOF.[1]

A. Determination of Rights of Parties.

(1) Each party, except defendants The City of Los Angeles and Department of Water and Power of the City of Los Angeles, whose name is set forth in Appendix 2 and by this reference made a part hereof, and after whose name there appears under the column "Total Water Right" a figure other than "0," is the owner of and has the right to extract annually groundwater from Central Basin for beneficial use in the quantity set forth after that party's name under said column "Total Water Right" as of the close of the Administrative Year ending June 30, 2012 in accordance with the Watermaster Reports on file with this Court and the records of the Plaintiff. This tabulation does not take into account additions or subtractions from any Allowed Pumping Allocation of a producer for the 2012-2013 Administrative Year, nor other adjustments not representing change in fee title to water rights, such as leases of water rights, nor does it include the names of lessees of landowners where the lessees are exercising the water rights. The exercise of all water rights is subject, however, to the provisions of this Judgment as hereinafter contained. All of said rights are of the same legal force and effect and are without priority with reference to each other. Each party whose name is set forth in the tabulation in Appendix "2" of this

[1] Headings in the Judgment are for purposes of reference and the language of said headings do not constitute, other than for such purpose, a portion of this Judgment.

Judgment, and after whose name there appears under the column "Total Water Right" the figure "0," owns no rights to extract any groundwater from Central Basin, and has no right to extract any groundwater from Central Basin.

(2) Defendant The City of Los Angeles is the owner of the right to extract fifteen thousand (15,000) acre feet per annum of groundwater from Central Basin, but it has the right and ability to purchase or lease additional rights to extract groundwater and increase its Allowed Pumping Allocation. Defendant Department of Water and Power of the City of Los Angeles has no right to extract groundwater from Central Basin except insofar as it has the right, power, duty or obligation on behalf of defendant The City of Los Angeles to exercise the water rights in Central Basin of defendant The City of Los Angeles. The exercise of said rights is subject, however, to the provisions of this Judgment hereafter contained, including but not limited to, sharing with other parties in any subsequent decreases or increases in the quantity of extractions permitted from Central Basin, pursuant to continuing jurisdiction of the Court, on the basis that fifteen thousand (15,000) acre feet (and any increase in its Allowed Pumping Allocation) bears to the Allowed Pumping Allocations of the other parties.

(3) No party to this action is the owner of or has any right to extract groundwater from Central Basin except as herein affirmatively determined.

B. Parties Enjoined as to Quantities of Extractions.

(1) Each party, other than The State of California and The City of Los Angeles and Department of Water and Power of The City of Los Angeles, is enjoined and restrained in any Administrative Year commencing after the date this Judgment becomes final from extracting from Central Basin any quantity of Water greater than the party's Allowed Pumping Allocation as hereinafter set forth next to the name of the party in the tabulation appearing in Appendix 2 at the end of this Judgment, subject to further provisions of this Judgment. Subject to such further provisions, the officials, agents and employees of The State of

California are enjoined and restrained in any such Administrative Year from extracting from Central Basin collectively any quantity of water greater than the Allowed Pumping Allocation of The State of California as hereinafter set forth next to the name of that party in the same tabulation. Each party adjudged and declared above not to be the owner of and not to have the right to extract groundwater from Central Basin is enjoined and restrained in any Administrative Year commencing after the date this Judgment becomes final from extracting any groundwater from Central Basin, except as may be hereinafter permitted to any such party under this Judgment.

(2) The total extraction right for each party includes a party's Allowed Pumping Allocation (to the extent not transferred by agreement or otherwise), any contractual right acquired through lease or other agreement to extract or use the rights of another party, and any right to extract Stored Water or Carryover as provided in this Judgment. No party may extract in excess of 140% of the sum of (i) the party's Allowed Pumping Allocation and (ii) the party's leased water, except upon prior approval by the applicable body of Watermaster as required pursuant to Section IV(J)as provided herein. Upon application, the body specified in Section IV(J) shall approve a party's request to extract water in excess of such limit, provided there is no Material Physical Harm. Requests to extract water in excess of such limit shall be reviewed and either approved or denied within thirty (30) days of such request.

(3) Defendant The City of Los Angeles is enjoined and restrained in any Administrative Year commencing after the date this Judgment becomes final from extracting from Central Basin any quantity of water greater than fifteen thousand (15,000) acre feet or its Allowed Pumping Allocation, as recognized by the Watermaster, if it acquires additional rights to pump groundwater through purchase or lease, subject to further provisions of this Judgment, including but not limited to, sharing with other parties in any subsequent decreases or increases in

the quantity of extractions permitted from Central Basin by parties, pursuant to continuing jurisdiction of the Court, on the basis that fifteen thousand (15,000) acre feet (or the adjusted Allowed Pumping Allocation if additional rights are acquired) bears to the Allowed Pumping Allocations of the other parties. Defendant Department of Water and Power of The City of Los Angeles is enjoined and restrained in any Administrative Year commencing after the date this Judgment becomes final from extracting from Central Basin any quantity of water other than such as it may extract on behalf of defendant The City of Los Angeles, and which extractions, along with any extractions by said City, shall not exceed that quantity permitted by this Judgment to that City in any Administrative Year. Whenever in this Judgment the term "Allowed Pumping Allocation" appears, it shall be deemed to mean as to defendant The City of Los Angeles the quantity of fifteen thousand (15,000) acre feet unless the City of Los Angeles has acquired through purchase or lease right to extract additional groundwater. The limit on extraction as provided in the preceding Section I(B)(1) shall also apply to The City of Los Angeles.

(4) Any rights decreed and adjudicated herein may be transferred, assigned, licensed or leased by the owner thereof provided, however, that no such transfer shall be complete until compliance with the appropriate notice procedures established by Watermaster.

(5) Unless a party elects otherwise, production of water from the Basin for the use or benefit of the parties hereto shall be counted against the party's total extraction right in the following order: (i) Increased extractions by certain qualified water rights holders pursuant to Section IV(K), (ii) Exchange Pool production, (iii) production of Carryover water, (iv) production of leased water, , (v) production of Allowed Pumping Allocation, (vi) production of Stored Water, (vii) production of Drought Carryover (according to Watermaster's Rules), and (viii) production of water under an agreement with WRD during a period of

emergency pursuant to Section III(B)(6).

C. Parties Enjoined as to Export of Extractions.

Except as expressly authorized herein, or upon further order of the Court, all parties are enjoined and restrained from transporting water extracted from the Central Basin outside the boundaries of the Central Basin Area. For purposes of this Section, water supplied by a Water Purveyor to its customers located within any of its service areas contiguous to the Central Basin or within WRD's service area shall be exempt from the export prohibition of this Section provided that the Water Purveyor also provides water to a service area that overlies the Basin in whole or in part. The foregoing exemption is not made, nor is it related to, a determination of an underflow between the basins, a cost or benefit allocation, or any other factor relating to the allocation of the Replenishment Assessment by WRD. Further, this injunction and restriction does not apply to export of water that will take place pursuant to contractual obligations specifically identified on Appendix 4, nor does it apply to export of Stored Water not having its origin in Carryover Conversion. The export identified on Appendix 4 may continue to the extent that any such extraction does not violate any other provisions of this Judgment, provided however that no such export identified on Appendix 4 shall exceed 5,000 acre-feet in any Year.

II. APPOINTMENT OF WATERMASTER; WATERMASTER ADMINISTRATION PROVISIONS.

The particular bodies specified below are, jointly, hereby appointed Watermaster, for an indefinite term, but subject to removal by the Court, to administer this Judgment. Such bodies, which together shall constitute the "Watermaster," shall have restricted powers, duties and responsibilities as specified herein, it being the court's intention that particular constituent bodies of Watermaster have only limited and specified powers over certain aspects of the administration of this Judgment. The Outgoing Watermaster will exercise reasonable diligence in the complete transition of Watermaster duties and responsibilities within a reasonable time

following entry of this order, and to make available to the new Watermaster all records concerning Watermaster activities. The chair of the Central Basin Water Rights Panel (defined below) shall thereafter represent the Watermaster before the Court.

A. The Administrative Body.

Plaintiff Water Replenishment District of Southern California ("WRD") is appointed the Administrative Body of the Central Basin Watermaster ("Administrative Body"). In order to assist the Court in the administration of the provisions of this Judgment and to keep the Water Rights Panel and the Court fully advised in the premises, the Administrative Body shall have the following duties, powers and responsibilities:

(1) To Require Reports, Information and Records.

In consultation with the Water Rights Panel, the Administrative Body shall require the parties to furnish such reports, information and records as may be reasonably necessary to determine compliance or lack of compliance by any party with the provisions of this Judgment.

(2) Storage Projects.

The Administrative Body shall exercise such powers as may be specifically granted to it under this Judgment with regard to Stored Water.

(3) Annual Report.

The Administrative Body shall prepare, on or before the 15th day of the fourth month following the end of the preceding Administrative Year, an annual report for the consideration of the Water Rights Panel. The Chair of the Water Rights Panel shall submit to the Court either (1) the annual report prepared by the Administrative Body, following the adoption by the Water Rights Panel, or (2) an annual report separately prepared and adopted by the Water Rights Panel. The annual report prepared by the Administrative Body shall be limited to the following, unless otherwise required by the Court:

(a) Groundwater extractions

(b) Storage Accounts maintained by each party

(c) Status of the Regional Disadvantaged Community Incentive Program, if approved by the Court

(d) Exchange Pool operation

(e) Use of Imported Water

(f) Violations of this Judgment and corrective action taken by bodies of Watermaster having jurisdiction as provided in this Judgment

(g) Change of ownership of Total Water Rights

(h) Watermaster administration costs

(i) Water spread or imported into the Basin

(j) Water Augmentation Projects

(k) Whether the Administrative Body has become aware of the development of a Material Physical Harm, or imminent threat of the development of a Material Physical Harm, as required pursuant to Section IV(B) of this Judgment

(l) Other matters as agreed with the Water Rights Panel

(m) Recommendations, if any.

In consultation with the Water Rights Panel, the Administrative Body shall provide reasonable notice to all parties of all material actions or determinations by Watermaster or any constituent body thereof, and as otherwise provided by this Third Amended Judgment.

(4) Annual Budget and Appeal Procedure in Relation Thereto.

By April 1 of each Administrative Year, the Administrative Body shall prepare a proposed administrative budget for the subsequent year stating the anticipated expense for performing the administrative functions specified in this Judgment (the "Administrative Budget"). The Administrative Body shall mail a copy of the proposed Administrative Budget to each of the Parties at least 60 days

before the beginning of each Administrative Year. The Administrative Budget mailed to the Parties shall provide sufficient detail in the Administrative Budget to demonstrate a separation in accounting between the Administrative Budget and WRD's Replenishment Assessment and operating budget. For the first Administrative Year of operation under this Third Amended Judgment, if the Administrative Body is unable to meet the above time requirement, the Administrative Body shall mail said copies as soon as possible. The first year the Administrative Budget is prepared, the amount of that budget shall not exceed an amount equal to fifty percent (50%) of the 2012-2013 charge for Watermaster service for the Central Basin collected from Parties by the California Department of Water Resources. At all times, the Administrative Body shall maintain a separation in accounting between the Administrative Budget and WRD's Replenishment Assessment and operating budget. All increases in future budgets for the Administrative Body above the amount set forth above shall be subject to approval by the Water Rights Panel following a public meeting to be held prior to the beginning of the Administrative Year, provided that the approved budget shall not be less than the amount of the first-year budget for the Administrative Body, except upon further order of the Court. Any administrative function by WRD already paid for by the Replenishment Assessment shall not be added as an expense in the Administrative Budget. Similarly, any expense paid for by the Administrative Budget shall not be added to WRD's operating budget, or otherwise added to the calculation of the Replenishment Assessment. While WRD may approve the proposed Administrative Budget at the same meeting in which WRD adopts its annual Replenishment Assessment or annual budget, the Administrative Body's budget shall be separate and distinct from the Replenishment Assessment imposed pursuant to Water Code §60317 and WRD's operating budget.

If approval by the Water Rights Panel is required pursuant to the

foregoing, the Water Rights Panel shall act upon the proposed budget within 15 calendar days after the public meeting. If the Water Rights Panel does not approve the budget prior to such deadline, the matter may be appealed to the Court within sixty (60) days. If any Party hereto has any objection to the Administrative Budget, it shall present the same in writing to Watermaster within 15 days after the date of mailing of said tentative budget by the Administrative Body. The Parties shall make the payments otherwise required of them to the Administrative Body even though an appeal of such budget may be pending. Upon any revision by the Court, the Administrative Body shall either remit to the Parties their pro rata portions of any reduction in the budget, or shall credit their accounts with respect to their budget assessments for the next ensuing Administrative Year, as the Court shall direct.

The amount of the Administrative Budget to be assessed to each party shall be determined as follows: If that portion of the final budget to be assessed to the Parties is equal to or less than $20.00 per party then the cost shall be equally apportioned among the Parties. If that portion of the final budget to be assessed to Parties is greater than $20.00 per party then each Party shall be assessed a minimum of $20.00. The amount of revenue expected to be received through the foregoing minimum assessments shall be deducted from that portion of the final budget to be assessed to the Parties and the balance shall be assessed to the Parties having Allowed Pumping Allocation, such balance being divided among them proportionately in accordance with their respective Allowed Pumping Allocation.

Payment of the assessment provided for herein, subject to adjustment by the Court as provided, shall be made by each such party prior to beginning of the Administrative Year to which the assessment relates, or within 40 days after the mailing of the tentative budget, whichever is later. If such payment by any Party is not made on or before said date, the Administrative Body shall add a penalty of 5% thereof to such party's statement. Payment required of any Party hereunder

may be enforced by execution issued out of the Court, or as may be provided by order hereinafter made by the Court, or by other proceedings by the Watermaster or by any Party on the Watermaster's behalf.

Any money unexpended at the end of any Administrative Year shall be applied to the budget of the next succeeding Administrative Year. The Administrative Body shall maintain no reserves.

Notwithstanding the above, no part of the budget of the Administrative Body shall be assessed to WRD or to any Party who has not extracted water from Central Basin for a period of two successive Administrative Years prior to the Administrative Year in which the tentative budget should be mailed by the Administrative Body under the provisions of this subparagraph (4).

(5) Rules.

The Administrative Body may adopt, and amend from time to time, rules consistent with this Judgment as may be reasonably necessary to carry out duties under the provisions of this Judgment within its particular area of responsibility. The Body shall adopt its first set of rules and procedures within three (3) months following entry of this Third Amended Judgment. The rules shall be effective on such date after the mailing thereof to the Parties as is specified by the Body, but not sooner than thirty (30) days after such mailing.

B. The Central Basin Water Rights Panel.

The Central Basin Water Rights Panel of the Central Basin Watermaster ("Water Rights Panel") shall consist of seven (7) members, each of which is a Party. The term of each member of the Panel, with the exception of the seat held by the Small Water Producers Group, as provided herein, shall be limited to four years. The Court will make the initial appointments to the Central Basin Water Rights Panel upon motion by Parties consistent with the categories set forth below at or about the time of entry of this Third Amended Judgment, and shall establish a procedure for the staggered terms of such members. Thereafter, elections of members of the Panel shall be held as provided herein. One (1) such member of the Water Rights Panel shall be

elected by vote of the Small Water Producers Group conducted in accordance with its own procedures, provided such Group, as of the date of the election, consists of at least five (5) members who are Water Purveyors. One (1) such member of the Water Rights Panel shall be elected by vote of Parties with Allowed Pumping Allocation of less than 5,000 acre-feet who are not members of the Small Water Producers Group or, if the Small Water Producers Group does not then qualify following a continuous six-month period of non-qualification as provided herein, then two (2) such members shall be so selected. One (1) such member of the Water Rights Panel shall be elected by vote of Parties with Allowed Pumping Allocation of at least 5,000 acre-feet but less than 10,000 acre-feet. Three (3) such members of the Water Rights Panel shall be elected by vote of Parties with Allowed Pumping Allocation of 10,000 acre-feet or greater. One (1) such member of the Water Rights Panel shall be elected by a vote of all holders of Allowed Pumping Allocations, with each such holder being entitled to one vote, such member to be elected by a plurality of the votes cast, following a nomination procedure to be established in the Water Rights Panel's rules. In the event of a tie, the seventh member shall be determined as may be provided in the Water Rights Panel's rules, or otherwise by the court. Except as otherwise provided in this Section, each such rights holder shall have the right to cast a total number of votes equal to the number of acre-feet of its Allowed Pumping Allocation (rounded to the next highest whole number). With the exception of voting for the seventh member, Parties shall be entitled to vote only for candidates within the category(ies) that represent that Party's Allowed Pumping Allocation. For example, parties who are members of the Small Water Producers Group are entitled to vote only for the Small Water Producer Group member and the seventh member of the Water Rights Panel, and so on. Parties are not permitted to split votes. The results of such election shall be reported to the Court for confirmation of each member's appointment to the Water Rights Panel of Watermaster. The elected members of the Water Rights Panel shall be those candidates receiving the highest vote total in their respective categories. The Water Rights Panel shall hold its first meeting within thirty (30) days of the date this Third Amended Judgment becomes final. The Water Rights Panel shall develop rules for its operation consistent with this Judgment. The Water Rights Panel shall take action, including the

election of its Chair, by majority vote of its members. Election of the Chair shall occur every two years, with no Party serving as Chair for consecutive terms. Members of the Water Rights Panel shall serve without compensation. All references to Annual Pumping Allocation, as used herein, are as determined by the last published Watermaster report.

(1) The Water Rights Panel shall have the following duties and responsibilities:

(a) Enforcement of Adjudicated Rights. As against the other bodies of Watermaster, the Water Rights Panel shall have exclusive authority to move the Court to take such action as may be necessary to enforce the terms of the Judgment with regard to the extraction of Allowed Pumping Allocation and the maintenance of adjudicated groundwater extraction rights as provided in this Judgment.

(b) Requirement of Measuring Devices. The Water Rights Panel shall require all parties owning or operating any facilities for the extraction of groundwater from Central Basin to install and maintain at all times in good working order at such party's own expense, appropriate measuring devices at such times and as often as may be reasonable under the circumstances and to calibrate or test such devices.

(c) Inspections by Watermaster. The Water Rights Panel may make inspections of groundwater production facilities, including aquifer storage and recovery facilities, and measuring devices at such times and as often as may be reasonable under the circumstances and to calibrate or test such devices.

(d) Reports. Annually, the Water Rights Panel, in cooperation with the Administrative Body, shall report to the Court, concerning any or all of the following:

(i) Groundwater extractions

(ii) Exchange Pool operation

(iii) Status of the Regional Disadvantaged Community Incentive Program, if approved by the Court

(iv) Violations of this Judgment and corrective action taken or sought

(v) Change of ownership of Total Water Rights

(vi) Assessments made by the Water Rights Panel and any costs incurred

(vii) Whether the Water Rights Panel has become aware of the development of a Material Physical Harm, or imminent threat of the development of a Material Physical Harm, as required pursuant to Section IV(B) of this Judgment

(viii) Recommendations, if any.

As provided in Section II.A(3), the Water Rights Panel may adopt the annual report prepared by the Administrative Body, and submit the same to the Court, or the Water Rights Panel may prepare, adopt and submit to the Court a separate report. The Chair of the Water Rights Panel shall be responsible for reporting to the Court concerning adjudicated water rights issues in the Basin.

(2) Assessment. The Water Rights Panel shall assess holders of water rights within the Central Basin an annual amount not to exceed $1.00 per acre-foot of Allowed Pumping Allocation, by majority vote of the members of the Water Rights Panel. The body may assess a higher amount, subject to being overruled by Majority Protest. The assessment is intended to cover any costs associated with reporting responsibilities, any Judgment enforcement action, and the review of storage projects as a component of the "Storage Panel" as provided below. It is anticipated that this body will rely on the Administrative Body's staff for the functions related to the Administrative Body's responsibilities, but the

Water Rights Panel may engage its own staff if required in its reasonable judgment. Assessments will constitute a lien on the water right assessed, enforceable as provided in this Judgment.

(3) Rules. The Water Rights Panel may adopt and amend from time to time, at an open meeting of that Panel, rules consistent with this Judgment as may be reasonably necessary to carry out duties under the provisions of this Judgment within its particular area of responsibility. The Panel shall adopt its first set of rules and procedures within three (3) months following entry of this Third Amended Judgment. The rules shall be effective on such date after the mailing thereof to the Parties as is specified by the Panel, but not sooner than thirty (30) days after such mailing.

C. The Storage Panel.

The Storage Panel of the Central Basin Watermaster ("Storage Panel") shall be a bicameral body consisting of (i) the Water Rights Panel and (ii) the Board of Directors of WRD. Action by the Storage Panel shall require separate action by a majority of each of its constituent bodies. The Storage Panel shall have the duties and responsibilities specified with regard to the Provisions for the Storage and Extraction of Stored Groundwater as set forth in Part IV and the other provisions of this Judgment.

D. Use of Facilities and Data Collected by Other Governmental Agencies.

Where practicable, the three bodies constituting the Central Basin Watermaster should not duplicate the collection of data relative to conditions of the Central Basin which is then being collected by one or more governmental agencies, but where necessary each such body may collect supplemental data. Where it appears more economical to do so, the Watermaster and its constituent bodies are directed to use such facilities of other governmental agencies as are available to it under either no cost or cost agreements with respect to the receipt of reports, billings to parties, mailings to parties, and similar matters.

E. Appeal from Watermaster Decisions.

Appeals concerning the budget proposed by the Administrative Body shall be governed by Section II(A)(4) of this Judgment. Appeals concerning decisions by the Storage Panel shall be governed by Section IV(P) of this Judgment. With respect to all other objections by a Party to any action or decision by the Watermaster, such objections will be governed by this Section II(E). Any party interested therein who objects to any rule, determination, order or finding made by the Watermaster or any constituent body thereof, may object thereto in writing delivered to the Administrative Body within 30 days after the date the Watermaster, or any constituent body thereof, mails written notice of the making of such rule, determination, order or finding. Within 30 days after such delivery the Watermaster, or the affected constituent body thereof, shall consider said objection and shall amend or affirm his rule, determination, order or finding and shall give notice thereof to all parties. Any such party may file with the Court within 60 days from the date of said notice any objection to such rule, determination, order or finding of the Watermaster, or any constituent body thereof, and bring the same on for hearing before the Court at such time as the Court may direct, after first having served said objection upon all other parties. The Court may affirm, modify, amend or overrule any such rule, determination, order or finding of the Watermaster or its affected constituent body. Any objection under this paragraph shall not stay the rule, determination, order or finding of the Watermaster. However, the Court, by *ex parte* order, may provide for a stay thereof on application of any interested party on or after the date that any such party delivers to the Watermaster any written objection.

F. Effect of Non-Compliance by Watermaster With Time Provisions.

Failure of the Watermaster to perform any duty, power or responsibility set forth in this Judgment within the time limitation herein set forth shall not deprive the Watermaster or its applicable constituent body of authority to subsequently discharge such duty, power or responsibility, except to the extent that any such failure by the Watermaster may have rendered some otherwise required act by a party impossible.

G. Limitations on Administrative Body.

WRD shall not acquire Central Basin water rights, nor lease Central Basin water or water rights to or from any Party or third party. However, the foregoing shall (i) not be interpreted to restrict WRD's ability or authority to acquire water from any source for purposes of Artificial or Natural Replenishment or for water quality activities, and (ii) not restrict WRD's authority under California Water Code Section 60000 et seq. to develop reclaimed, recycled or remediated water for groundwater replenishment activities.

H. Regional Disadvantaged Communities Incentive Program.

The Water Rights Panel, acting through the General Manager of WRD, shall develop a Regional Disadvantaged Communities Incentive Program, pursuant to which a portion of the Community Storage Pool is reserved for the benefit of Disadvantaged Communities within the Central Basin. Nothing in this Judgment, nor the establishment of such a program, shall diminish the rights otherwise granted to Parties under this Judgment, including but not limited to the right to place water in storage in the Community Storage Pool. The Water Rights Panel shall meet within thirty (30) days of its formation to identify and consider potential third-party independent consultants who may be retained to design the program, including those recommended by the General Manager of WRD. The Water Rights Panel shall select a consultant within thirty (30) days thereafter. In the event the General Manager of WRD objects to the selected consultant, in writing, then the Water Rights Panel and the General Manager of WRD shall exchange a list of no more than two (2) consultants each for further consideration. If the Water Rights Panel and the General Manager of WRD are unable to agree to a consultant within an additional thirty (30) days, then the Chair of the Water Rights Panel shall file a request with the Court for an order appointing a consultant. Upon selection of a third-party independent consultant, whether through the Water Rights Panel process or the court process identified herein, the consultant shall design a detailed program and deliver it to the Water Rights Panel within ninety (90) days of the consultant's retention. All costs associated with design of the program shall be paid for out of the Water Rights

Panel's assessment, as provided in Section II.B(2). The Water Rights Panel shall present the program to the Court for its review and approval within one year of entry of this Third Amended Judgment. If approved by the Court, the Water Rights Panel, acting through the General Manager of WRD, shall be responsible for administration of the Regional Disadvantaged Communities Incentive Program, including insuring that any funds generated through the program benefit Disadvantaged Communities. Any Storage Project established pursuant to this Program shall have priority to use up to 23,000 acre-feet of Available Storage within the Community Storage Pool, as further provided in Section IV.E(2). Watermaster shall report to the Court concerning such program as a part of its annual report.

III. PROVISIONS FOR PHYSICAL SOLUTION TO MEET THE WATER REQUIREMENTS IN CENTRAL BASIN.

In order to provide flexibility to the injunction set forth in Part I of the Judgment, and to assist in a physical solution to meet water requirements in Central Basin, the injunction so set forth is subject to the following provisions.

A. Carryover of Portion of Allowed Pumping Allocation.

(1) Amount of Carryover.

Each party adjudged to have a Total Water Right or water rights and who, during a particular Administrative Year, does not extract from Central Basin a total quantity equal to such party's Allowed Pumping Allocation for the particular Administrative Year, less any allocated subscriptions by such party to the Exchange Pool, or plus any allocated requests by such party for purchase of Exchange Pool water, is permitted to carry over (the "One Year Carryover") from such Administrative Year the right to extract from Central Basin in the next succeeding Administrative Year so much of said total quantity as it did not extract in the particular Administrative Year, not to exceed (i) the Applicable Percentage of such party's Allowed Pumping Allocation for the particular Administrative

Year, or 20 acre-feet, whichever of said percentage or 20 acre-feet is the larger, less (ii) the total quantity of water then held in that party's combined Individual and Community Storage accounts, as hereinafter defined, but in no event less than 20% of the party's Allowed Pumping Allocation for the particular Administrative Year. For purposes of this Section, the "Applicable Percentage" shall be as follows for the years indicated:

For the Administrative Year in which this Third Amended Judgment becomes final:	30%
For the next Administrative Year:	40%
For the next Administrative Year:	50%
For the next Administrative Year and years following:	60%

(2) Conversion of Carryover to Stored Water.

A party having Carryover may, from time to time, elect to convert all or part of such party's Carryover to Stored Water as authorized herein ("Carryover Conversion") upon payment of the Replenishment Assessment to WRD. Such Stored Water shall be assigned to that party's Individual Storage Allocation, if available, and otherwise to the Community Storage Pool.

(3) Declared Water Emergency.

The Board of Directors of WRD may, from time to time, declare a water emergency upon a determination that conditions within the Central Basin relating to natural and imported water supplies are such that, without implementation of the Declared Water Emergency provisions of this subsection, the water resources of the Central Basin risk degradation. In making such declaration, the Board of Directors shall consider any information and requests provided by water producers, purveyors and other affected entities and shall, for that purpose, hold a public hearing in advance of such declaration. A Declared Water Emergency

shall extend to the end of the Administrative Year during which such resolution is adopted, unless sooner ended by similar resolution.

(4) Drought Carryover.

Following the declaration of a Declared Water Emergency and until the Declared Water Emergency ends either by expiration or by resolution of the Board of Directors of WRD, each party adjudged to have a Total Water Right or water rights and who, during a particular Administrative Year, does not extract from Central Basin a total quantity equal to such party's Allowed Pumping Allocation for the particular Administrative Year, less any allocated subscriptions by such party to the Exchange Pool, or plus any allocated requests by such party for purchase of Exchange Pool water, is permitted to carry over (the "Drought Carryover") from such Administrative Year the right to extract from Central Basin so much of said total quantity as it did not extract during the period of the Declared Water Emergency, to the extent such quantity exceeds the One Year Carryover, not to exceed an additional 35% of such party's Allowed Pumping Allocation, or additional 35 acre feet, whichever of said 35% or 35 acre feet is the larger, less the amount of such party's Stored Water. Carryover amounts shall first be allocated to the One Year Carryover and any remaining carryover amount for that year shall be allocated to the Drought Carryover.

(5) Accumulated Drought Carryover.

No further amounts shall be added to the Drought Carryover following the end of the Declared Water Emergency, provided however that in the event another Declared Water Emergency is declared, additional Drought Carryover may be added, to the extent such additional Drought Carryover would not cause the total Drought Carryover to exceed the limits set forth above. The Drought Carryover shall be supplemental to and shall not affect any previous drought carryover acquired by a party pursuant to previous order of the court.

B. When Over-Extractions May be Permitted.

(1) Underestimation of Requirements for Water.

Any party hereto without Stored Water, having an Allowed Pumping Allocation, and not in violation of any provision of this Judgment may extract in an Administrative Year an additional quantity of water not to exceed: (a) 20% of such party's Allowed Pumping Allocation or 20 acre feet, whichever is greater, and (b) any amount in addition thereto which may be approved in advance by the Water Rights Panel of Watermaster.

(2) Reductions in Allowed Pumping Allocations in Succeeding Years to Compensate for Permissible Overextractions.

Any such party's Allowed Pumping Allocation for the following Administrative Year shall be reduced by the amount over-extracted pursuant to paragraph 1 above, provided that if the Water Rights Panel determines that such reduction in the party's Allowed Pumping Allocation in one Administrative Year will impose upon such a party an unreasonable hardship, the said reduction in said party's Allowed Pumping Allocation shall be prorated over a period of five (5) Administrative Years succeeding that in which the excessive extractions by the party occurred. Application for such relief to the Water Rights Panel must be made not later than the 40th day after the end of the Administrative Year in which such excessive pumping occurred. The Water Rights Panel shall grant such relief if such over-extraction, or any portion thereof, occurred during a period of Declared Water Emergency.

(3) Reductions in Allowed Pumping Allocations for the Next Succeeding Administrative Year to Compensate for Overpumping.

Whenever, pursuant to Section III(B)(1), a party over-extracts in excess of such party's Allowed Pumping Allocation plus that party's available One-Year Carryover and any Stored Water held by that party, and such excess has not been approved in advance by the Water Rights Panel, then such party's Allowed Pumping Allocation for the following Administrative Year shall be reduced by an

amount equivalent to its total over-extractions in the particular Administrative Year in which it occurred.

(4) Reports of Certain Over-extractions to the Court.

Whenever a party over-extracts in excess of 20% of such party's Allowed Pumping Allocation for the particular Administrative Year plus that party's available One-Year Carryover and any Stored Water held by that party, without having obtained prior approval of the Water Rights Panel, such shall constitute a violation of the Judgment and the Water Rights Panel shall make a written report to the Court for such action as the Court may deem necessary. Such party shall be subject to such injunctive and other processes and action as the Court might otherwise take with regard to any other violation of such Judgment.

(5) Effect of Over-extractions on Rights.

Any party who over-extracts from Central Basin in any Administrative Year shall not acquire any additional rights by reason of such over-extractions; nor shall any required reductions in extractions during any subsequent years reduce the Total Water Right or water rights of any party to the extent said over-extractions are in compliance with paragraph 1 above.

(6) Pumping Under Agreement With Plaintiff During Periods of Emergency.

Plaintiff WRD overlies Central Basin and engages in activities of replenishing the groundwaters thereof. Plaintiff by resolution has appropriated for use during emergencies the quantity of 17,000 acre feet of imported and reclaimed water replenished by it into Central Basin, and pursuant to such resolution Plaintiff reserves the right to use or cause the use of such quantity during such emergency periods for the benefit of Water Purveyors.

(a) Notwithstanding any other provision of this Judgment, parties who are Water Purveyors (including successors in interest) are authorized to enter into agreements with Plaintiff for extraction of a

portion of Plaintiff's 17,000 acre-feet of appropriated water, in excess of their respective Allowed Pumping Allocations for the particular Administrative Year when the following conditions are met:

(i) Plaintiff is in receipt of a resolution of the Board of Directors of the Metropolitan Water District of Southern California ("MWD") that there is an actual or immediately threatened temporary shortage of MWD's imported water supply compared to MWD's needs, or a temporary inability to deliver MWD's imported water supply throughout its area, which will be alleviated by overpumping from Central Basin.

(ii) The Board of Directors of both Plaintiff and Central Basin Municipal Water District by resolutions concur in the resolution of MWD's Board of Directors, and the Board of Directors of Plaintiff finds in its resolution that the average minimum elevation of water surface among those wells in the Montebello Forebay of the Central Basin designated as Los Angeles County Flood Control District Wells Nos. 1601T, 1564P, 1615P, and 1626L, is at least 43.7 feet above sea level. This computation shall be based upon the most recent "static readings" taken, which shall have been taken not more than four weeks prior. Should any of the wells designated above become destroyed or otherwise be in a condition so that readings cannot be made, or should the owner prevent their use for such readings, the Board of Directors of the Plaintiff may, upon appropriate engineering recommendation, substitute such other well or wells as it

may deem appropriate.

(iii) In said resolution, Plaintiff's Board of Directors sets a public hearing, and notice of the time, place and date thereof (which may be continued from time to time without further notice) is given by First Class Mail to the current designees of the Parties, filed and served in accordance with Section VI(C) of this Judgment. Said notice shall be mailed at least five (5) days before the scheduled hearing date.

(iv) At said public hearing, parties (including successors in interest) are given full opportunity to be heard, and at the conclusion thereof the Board of Directors of Plaintiff by resolution decides to proceed with agreements under this Section III(B)(6).

(b) All such agreements shall be subject to the following requirements, and such others as Plaintiff's Board of Directors shall require:

(i) They shall be of uniform content except as to quantity involved, and any special provisions considered necessary or desirable with respect to local hydrological conditions or good hydrologic practice.

(ii) They shall be offered to all Water Purveyors, excepting those which Plaintiff's Board of Directors determines should not overpump because such overpumping would occur in undesirable proximity to a sea water barrier project designed to forestall sea water intrusion, or within or in undesirable proximity to an area within Central Basin wherein groundwater levels are at an

elevation where overpumping is under all the circumstances then undesirable.

(iii) The maximum terms for the agreements shall be four (4) months, which agreements shall commence on the same date and end on the same date (and which may be executed at any time within the four-month period), unless an extension thereof is authorized by the Court, under Part V of this Judgment.

(iv) They shall contain provisions requiring that the Water Purveyor executing the agreement pay to the Plaintiff a price in addition to the applicable replenishment assessment determined on the following formula. The normal price per acre-foot of Central Basin Municipal Water District's (CBMWD) treated domestic and municipal water, as "normal" price of such category of water is defined in Section III(C)(10) (price to be paid for Exchange Pool Water) as of the beginning of the contract term less the deductions set forth in said paragraph 10 for the Administrative Year in which the contract term commences. The agreement shall provide for adjustments in the first of said components for any proportional period of the contract term during which the CBMWD said normal price is changed, and if the agreement straddles two administrative years, the said deductions shall be adjusted for any proportionate period of the contract term in which the amount thereof or of either subcomponent changes for purposes of said paragraph 10. Any price for a partial acre-foot shall be computed pro rata. Payments shall be due and

payable on the principle that over extractions under the agreement are of the last water pumped in the Administrative Year, and shall be payable as the agreement shall provide.

(v) They shall contain provisions that: (1) All of such agreements (but not less than all) shall be subject to termination by Plaintiff if, in the Judgment of Plaintiff's Board of Directors, the conditions or threatened conditions upon which they were based have abated to the extent over extractions are no longer considered necessary; and (2) that any individual agreement or agreements may be terminated if the Plaintiff's Board of Directors finds that adverse hydrologic circumstances have developed as a result of over extractions by any Water Purveyor(s) which have executed said agreements, or for any other reason that Plaintiff's Board of Directors finds good and sufficient.

(c) Other matters applicable to such agreements and overpumping thereunder are as follows, without need for express provisions in the agreements;

(i) The quantity of overpumping permitted shall be additional to that which the Water Purveyor could otherwise overpump under this Judgment.

(ii) The total quantity of permitted overpumping under all said agreements during said four months shall not exceed seventeen thousand (17,000) acre feet, but the individual Water Purveyor shall not be responsible or affected by any violation of this requirement. That total is additional to over extractions otherwise permitted under

this Judgment.

(iii) Only one four month period may be utilized by Plaintiff in entering into such agreements, as to any one emergency or continuation thereof declared by MWD's Board of Directors under Section III(B)(6)(a).

(iv) If any party claims it is being damaged or threatened with damage by the over extractions by any party to such an agreement, the first party or the Water Rights Panel may seek appropriate action of the Court for termination of any such agreement upon notice of hearing to the party complaining, to the party to said agreement, to the plaintiff, and to any parties who have filed a request for special notice. Any termination shall not affect the obligation of the party to make payments under the agreement for over extractions which did occur thereunder.

(v) Plaintiff shall maintain separate accounting of the proceeds from payments made pursuant to agreements entered into under this Part. Said fund shall be utilized solely for purposes of replenishment in replacement of waters in Central Basin and West Basin. Plaintiff shall as soon as practicable cause replenishment in Central Basin by the amounts to be overproduced pursuant to this Paragraph 6, whether through spreading, injection, or in lieu agreements.

(vi) Over extractions pursuant to the agreements shall not be subject to the "make up" provisions of the Judgment as amended, provided that if any party fails to make payments as required by the agreement, Plaintiff may

require such "make up" under Section III(B)(3) of this Judgment.

(vii) A Water Purveyor under any such agreement may, and is encouraged to enter into appropriate arrangements with customers who have water rights in Central Basin under or pursuant to this Judgment whereby the Water Purveyor will be assisted in meeting the objectives of the agreement.

(7) Exemption for Extractors of Contaminated Groundwater.

Any party herein may petition WRD for a Non-consumptive Water Use Permit as part of a project to remedy or ameliorate groundwater contamination. If the petition is granted as set forth in this paragraph, the petitioner may extract the groundwater as permitted hereinafter, without the production counting against the petitioner's production rights.

(a) If the Board of WRD determines by Resolution that there is a problem of groundwater contamination that a proposed program will remedy or ameliorate, an operator may make extractions of groundwater to remedy or ameliorate that problem without the production counting against the petitioner's production rights if the water is not applied to beneficial surface use, its extractions are made in compliance with all the terms and conditions of the Board Resolution, and the Board has determined in the Resolution either of the following:

(i) The groundwater to be extracted is unusable and cannot be economically treated or blended for use with other water.

(ii) The proposed program involves extraction of usable water in the same quantity as will be returned to the

underground without degradation of quality.

(b) The Resolution may provide those terms and conditions the Board deems appropriate, including, but not limited to, restrictions on the quantity of the extractions to be so exempted, limitations on time, periodic reviews, requirement of submission of test results from a Board-approved laboratory, and any other relevant terms or conditions.

(c) Upon written notice to the operator involved, the Board may rescind or modify its Resolution. The rescission or modification of the Resolution shall apply to groundwater extractions occurring more than ten (10) days after the rescission or modification. Notice of rescission or modification shall be either mailed first class mail, postage prepaid, at least two weeks prior to the meeting of the Board at which the rescission or modification will be made to the address of record of the operator or personally delivered two weeks prior to the meeting.

(d) The Board's decision to grant, deny, modify or revoke a permit or to interrupt or stop a permitted project may be appealed to this court within thirty days of the notice thereof to the applicant and upon thirty days' notice to the designees of all parties herein.

(e) WRD shall monitor and periodically inspect the project for compliance with the terms and conditions for any permit issued pursuant to these provisions.

(f) No party shall recover costs from any other party herein in connection with determinations made with respect to this Part.

(8) "Call" on Carryover Converted to Stored Water.

Where any Party has elected, as permitted by Section III(A)(2), to convert Carryover to Stored Water, any other Party which has not, within the previous ten (10) years, been granted approval to extract Carryover Conversion under this

Section III(B)(8) more than five (5) times, may apply to the Storage Panel for the right to extract all or a portion of that Carryover Conversion in the year such Conversion occurs. The Storage Panel shall grant such request, providing there is no Material Physical Harm, if it determines that leased groundwater to meet the applicant's needs within the Basin cannot be obtained for less than forty-five percent (45%) of MWD's Imported Water rate for delivery of untreated water to the Central Basin spreading facilities (which rate is presently MWD's "Full Service Untreated Volumetric Cost, Tier 1"), and that the applicant will fully extract its Allowed Pumping Allocation, Carryover, and Stored Water, if any, in addition to its permitted overextraction under Section III(B)(1), prior to accessing such Carryover Conversion.

Upon such approval, the applicant may thereafter extract such water as provided herein. A Party so extracting groundwater shall fully restore such extracted water (either through under-extraction of its rights or through importing water) during the five-year period following the Year in which the extraction under this Section occurs. Otherwise, the extracting Party shall pay to the Watermaster an amount equal to 100% of MWD's Imported Water rate for purchase and delivery of untreated water to the Central Basin spreading facilities (which rate is presently MWD's "Full Service Untreated Volumetric Cost, Tier 1") whether or not such water is available that year, for the year during which is the fifth anniversary of the year during which such Carryover Conversion extraction occurs, multiplied by the amount of Carryover Conversion so extracted and not restored during such five-year period. Payment shall be made within thirty (30) days of demand by Watermaster. No Replenishment Assessment shall be due on Carryover Conversion so extracted. However, the Party must deposit with the Watermaster an amount equal to the Replenishment Assessment that would otherwise be imposed by WRD upon such extraction. If the party restores the water within the 5-year repayment period, then the Watermaster shall

promptly return the deposit to the Party, without interest. If the Party does not restore the water within the 5-year repayment period, the deposit shall be credited towards the Party's obligation to pay 100% of MWD's Imported Water rate as required herein.

Should there be multiple requests to so extract Carryover Conversion in the same year, the Storage Panel shall allocate such extraction right such that each requesting party may extract a pro rata portion of the available Carryover Conversion for that year. No party may extract in excess of 2,500 acre feet of groundwater pursuant to this Section III(B)(8) in a single Year. Amounts paid to Watermaster hereunder shall be used by WRD solely for purchase of water for replenishment in the Basin. Watermaster, through the Storage Panel, shall give reasonable notice to the Parties of any application to so extract Carryover Conversion in such manner as the Storage Panel shall determine, including, without limitation, notice by electronic mail or by website posting, at least ten (10) days prior to consideration of any such application.

C. Exchange Pool Provisions.

(1) Definitions.

For purposes of these Exchange Pool provisions, the following words and terms have the following meanings:

(a) "Exchange Pool" is the arrangement hereinafter set forth whereby certain of the parties, ("Exchangees") may, notwithstanding the other provisions of the Judgment, extract additional water from Central Basin to meet their needs, and certain other of the parties ("Exchangors"), reduce their extractions below their Allowed Pumping Allocations in order to permit such additional extractions by others.

(b) "Exchangor" is one who offers, voluntarily or otherwise, pursuant to subsequent provisions, to reduce its extractions below its Allowed Pumping Allocation in order to permit such additional

extractions by others.

(c) "Exchangee" is one who requests permission to extract additional water from Central Basin.

(d) "Undue hardship" means unusual and severe economic or operational hardship, other than that arising (i) by reason of any differential in quality that might exist between water extracted from Central Basin and water available for importation or (ii) by reason of any difference in cost to a party in subscribing to the Exchange Pool and reducing its extractions of water from Central Basin in an equivalent amount as opposed to extracting any such quantity itself.

(2) Parties Who May Purchase Water Through the Exchange Pool.

Any party not having existing facilities for the taking of imported water as of the beginning of any Administrative Year, and any party having such facilities as of the beginning of any Administrative Year who is unable, without undue hardship, to obtain, take, and put to beneficial use, through its distribution system or systems existing as of the beginning of the particular Administrative Year, imported water in a quantity which, when added to its Allowed Pumping Allocation for that particular Administrative Year, will meet its estimated needs for that particular Administrative Year, may purchase water from the Exchange Pool, subject to the limitations contained in this Section III(C) (Subpart "C" hereinafter).

(3) Procedure for Purchasing Exchange Pool Water.

Not later than the 40th day following the commencement of each Administrative Year, each such party desiring to purchase water from the Exchange Pool shall file with the Watermaster a request to so purchase, setting forth the amount of water in acre feet that such party estimates that it will require during the then current Administrative Year in excess of the total of:

(a) Its Allowed Pumping Allocation for that particular

Administrative Year; and

(b) The imported water, if any, which it estimates it will be able, without undue hardship, to obtain, take and put to beneficial use, through its distribution system or systems existing as of the beginning of that particular Administrative Year.

Any party who as of the beginning of any Administrative Year has existing facilities for the taking of imported water and who makes a request to purchase from the Exchange Pool must provide with such request substantiating data and other proof which, together with any further data and other proof requested by the Water Rights Panel, establishes that such party is unable without undue hardship, to obtain, take and put to beneficial use through its said distribution system or systems a sufficient quantity of imported water which, when added to its said Allowed Pumping Allocation for the particular Administrative Year, will meet its estimated needs. As to any such party, the Water Rights Panel shall make a determination whether the party has so established such inability, which determination shall be subject to review by the court under the procedure set forth in Part II of this Judgment. Any party making a request to purchase from the Exchange Pool shall either furnish such substantiating data and other proof, or a statement that such party had no existing facilities for the taking of imported water as of the beginning of that Administrative Year, and in either event a statement of the basis for the quantity requested to be purchased.

(4) Subscriptions to Exchange Pool.

(a) Required Subscription. Each party having existing facilities for the taking of imported water as of the beginning of any Administrative Year hereby subscribed to the Exchange Pool for purposes of meeting Category (a) requests thereon, as more particularly defined in paragraph 5 of this Subpart C, twenty percent

(20%) of its Allowed Pumping Allocation, or the quantity of imported water which it is able, without undue hardship, to obtain, take and put to beneficial use through its distribution system or systems existing as of the beginning of the particular Administrative Year in addition to such party's own estimated needs for imported water during that Administrative Year, whichever is the lesser. A party's subscription under this subparagraph (a) and subparagraph (b) of this paragraph 4 is sometimes hereinafter referred to as a "required subscription."

(b) Report to Watermaster Water Rights Panel by Parties with Connections and Unable to Subscribe 20%. Any party having existing facilities for the taking of imported water and estimating that it will be unable, without undue hardship, in that Administrative Year to obtain, take and put to beneficial use through its distribution system or systems existing as of the beginning of that Administrative Year, sufficient imported water to further reduce its extractions from the Central Basin by twenty percent (20%) of its Allowed Pumping Allocation for purposes of providing water to the Exchange Pool must furnish not later than the 40th day following the commencement of such Administrative Year substantiating data and other proof which, together with any further data and other proof requested by the Water Rights Panel, establishes said inability or such party shall be deemed to have subscribed twenty percent (20%) of its Allowed Pumping Allocation for the purpose of providing water to the Exchange Pool. As to any such party so contending such inability, the Water Rights Panel shall make a determination whether the party has so established such inability, which determination shall be subject to review by the Court under the procedure set forth in Part II of this Judgment.

(c) Voluntary Subscriptions. Any party, whether or not having

facilities for the taking of imported water, who desires to subscribe to the Exchange Pool a quantity or further quantity of its Allowed Pumping Allocation, may so notify the Water Rights Panel in writing of the quantity of such offer on or prior to the 40th day following the commencement of the particular Administrative Year. Such subscriptions are referred to hereinafter as "voluntary subscriptions." Any Exchangor who desires that any part of its otherwise required subscription not needed to fill Category (a) requests shall be available for Category (b) requests may so notify the Water Rights Panel in writing on or prior to said 40th day. If all of that Exchangor's otherwise required subscription is not needed in order to fill Category (a) requests, the remainder of such required subscription not so used, or such part thereof as such Exchangor may designate, shall be deemed to be a voluntary subscription.

(5) Limitations on Purchases of Exchange Pool Water and Allocation of Requests to Purchase Exchange Pool Water Among Exchangors.

(a) Categories of Requests. Two categories of Exchange Pool requests are established as follows:

(i) Category (a) requests. The quantity requested by each Exchangee, whether or not that Exchangee has an Allowed Pumping Allocation, which quantity is not in excess of 150% of its Allowed Pumping Allocation, if any, or 100 acre feet, whichever is greater. Requests or portions thereof within the above criteria are sometimes hereinafter referred to as "Category (a) requests."

(ii) Category (b) requests. The quantity requested by each Exchangee having an Allowed Pumping Allocation to the extent the request is in excess of 150% of that Allowed

Pumping Allocation or 100 acre feet, whichever is greater, and the quantity requested by each Exchangee having no Allowed Pumping Allocation to the extent the request is in excess of 100 acre feet. Portions of requests within the above criteria are sometimes hereinafter referred to as "Category (b) requests."

(b) Filling of Category (a) Requests. All Exchange Pool subscriptions, required and voluntary, shall be available to fill Category (a) requests. Category (a) requests shall be filled first from voluntary subscriptions, and if voluntary subscriptions should be insufficient to fill all Category (a) requests required subscriptions shall be then utilized to fill Category (a) requests. All Category (a) requests shall be first filled before any Category (b) requests are filled.

(c) Filling of Category (b) Requests. To the extent that voluntary subscriptions have not been utilized in filling Category (a) requests, Category (b) requests shall be filled only out of any remaining voluntary subscriptions. Required subscriptions will then be utilized for the filling of any remaining Category (b) requests.

(d) Allocation of Requests to Subscriptions When Available Subscriptions Exceed Requests. In the event the quantity of subscriptions available for any category of requests exceeds those requests in that category, or exceeds the remainder of those requests in that category, such requests shall be filled out of such subscriptions proportionately in relation to the quantity of each subscription.

(e) Allocation of Subscriptions to Category (b) Requests in the Event of Shortage of Subscriptions. In the event available subscriptions are insufficient to meet Category (b) requests, available subscriptions shall be allocated to each request in the proportion that

the particular request bears to the total requests of the particular category.

(6) Additional Voluntary Subscriptions.

If subscriptions available to meet the requests of Exchangees are insufficient to meet all requests, additional voluntary subscriptions may be solicited and received from parties by the Water Rights Panel. Such additional subscriptions shall be allocated first to Category (a) requests to the extent unfilled, and next to Category (b) requests to the extent unfilled. All allocations are to be otherwise in the same manner as earlier provided in paragraph 5 (a) through 5 (e) inclusive.

(7) Effect if Category (a) Requests Exceed Available Subscriptions, Both Required and Voluntary.

In the event that the quantity of subscriptions available to fill Category (a) requests is less than the total quantity of such requests, the Exchangees may, nonetheless, extract the full amount of their Category (a) requests otherwise approved by the Water Rights Panel as if sufficient subscriptions were available. The amounts received by the Water Rights Panel on account of that portion of the approved requests in excess of the total quantities available from Exchangors shall be paid by the Water Rights Panel to WRD in trust for the purpose of purchasing imported water and spreading the same in Central Basin for replenishment thereof. Thereafter WRD may, at any time, withdraw said funds or any part thereof so credited in trust for the aforesaid purpose, or may by the 40th day of any Administrative Year utilize all or any portion of said funds for the purchase of water available from subscriptions by Exchangors in the event the total quantity of such subscriptions exceeds the total quantity of approved requests by parties to purchase Exchange Pool water. To the extent that there is such an excess of available subscriptions over requests and to the extent that the existing credit in favor of WRD is sufficient to purchase such excess quantity at

the price established for Exchange Pool purchases during that Administrative Year, the money shall be paid to the Exchangors in the same manner as if another party had made such purchase as an Exchangee. WRD shall not extract any such Exchange Pool water so purchased.

(8) Additional Pumping by Exchangees Pursuant to Exchange Pool Provisions.

An Exchangee may extract from Central Basin in addition to its Allowed Pumping Allocation for a particular Administrative Year that quantity of water which it has requested to purchase from the Exchange Pool during that Administrative Year and which has been allocated to it pursuant to the provisions of paragraphs 5, 6 and 7. The first pumping by an Exchangee in any Administrative Year shall be deemed to be pumping of the party's allocation of Exchange Pool water.

(9) Reduction in Pumping by Exchangors.

Each Exchangor shall in each Administrative Year reduce its extractions of water from Central Basin below its Allowed Pumping Allocation for the particular year in a quantity equal to the quantity of Exchange Pool requests allocated to it pursuant to the provisions of paragraphs 4, 5, 6 and 7 of this Subpart C.

(10) Price to be Paid for Exchange Pool Water.

The price to be paid by Exchangees and to be paid to Exchangors per acre foot for required and voluntary subscriptions of Exchangors utilized to fill requests on the Exchange Pool by Exchangees shall be the dollar amount computed as follows by the Water Rights Panel for each Administrative Year. The "normal" price as of the beginning of the Administrative Year charged by Central Basin Municipal Water District (CBMWD) for treated MWD (Metropolitan Water District of Southern California) water used for domestic and municipal purposes shall be determined, and if on that date there are any changes

scheduled during that Administrative Year in CBMWD's "normal" price for such category of water, the weighted daily "normal" CBMWD price shall be determined and used in lieu of the beginning such price; and there shall be deducted from such beginning or weighted price, as the case may be, the "incremental cost of pumping water in Central Basin" at the beginning of the Administrative Year and any then current rate or rates, of assessments levied on the pumping of groundwater in Central Basin by Plaintiff District and any other governmental agency. The "normal" price charged by CBMWD shall be the highest price of CBMWD for normal service excluding any surcharge or higher rate for emergency deliveries or otherwise failing to comply with CBMWD rates and regulations relating to earlier deliveries. The "incremental cost of pumping water in Central Basin" as of the beginning of the Administrative Year shall be deemed to be the Southern California Edison Company Schedule No. PA-1 rate per kilowatt-hour, including all adjustments and all uniform authorized additions to the basic rate, multiplied by 560 kilowatt-hours per acre-foot, rounded to the nearest dollar (which number of kilowatt-hours has been determined to represent the average energy consumption to pump an acre-foot of water in Central Basin). In applying said PA-1 rate the charge per kilowatt-hour under the schedule shall be employed and if there are any rate blocks then the last rate block shall be employed. Should a change occur in Edison schedule designations, the Water Rights Panel shall employ that applicable to motors used for pumping water by municipal utilities.

(11) Carry-over of Exchange Pool Purchases by Exchangees.

An Exchangee who does not extract from Central Basin in a particular Administrative Year a quantity of water equal to the total of (a) its Allowed Pumping Allocation for that particular Administrative Year, reduced by any authorized amount of carryover into the next succeeding Administrative Year pursuant to the provisions of Section III(A) of this Judgment, and (b) the quantity

that it purchased from the Exchange Pool for that particular Administrative Year, may carry over into the next succeeding Administrative Year the right to extract from Central Basin a quantity equal to the difference between said total and the quantity actually extracted in that Administrative Year, but not exceeding the quantity purchased from the Exchange Pool for that Administrative Year. Any such carryover shall be in addition to that provided in said Section III(A).

If the "Basinwide Average Exchange Pool Price" in the next succeeding Administrative Year exceeds the "Exchange Pool Price" in the previous Administrative Year any such Exchangee exercising such carryover rights hereinabove provided shall pay to the Watermaster, forthwith upon the determination of the "Exchange Pool Price" in said succeeding Administrative Year, and as a condition to such carryover rights, an additional amount determined by multiplying the number of acre feet of carryover by the difference in "Exchange Pool Price" as between the two Administrative Years. Such additional payment shall be miscellaneous income to the Watermaster which shall be applied by it against that share of the Watermaster's Administrative Body's budget to be paid by the parties to this Agreement for the second Administrative Year succeeding that in which the Exchange Pool water was so purchased. For purposes of this paragraph, the term Basinwide Average Exchange Pool Price means the average price per acre foot paid for Exchange Pool water produced within the Central Basin during the year for which such determination is to be made, taking into account all Exchange Pool transactions consummated during that year.

(12) Notification by Watermaster to Exchangors and Exchangees of Exchange Pool Requests and Allocations Thereof and Price of Exchange Pool Water.

Not later than the 65th day after the commencement of each Administrative Year, the Administrative Body of Watermaster shall determine

and notify all Exchangors and Exchangees of the total of the allocated requests for Exchange Pool water and shall provide a schedule divided into categories of requests showing the quantity allocated to each Exchangee and a schedule of the allocation of the total Exchange Pool requirements among the Exchangors. Such notification shall also advise Exchangors and Exchangees of the prices to be paid to Exchangors for subscriptions utilized and the Exchange Pool Price for that Administrative Year as determined by the Water Rights Panel. The determinations of the Watermaster in this regard shall be subject to review by the Court in accordance with the procedure set forth in Part II of this Judgment.

(13) Payment by Exchangees.

Each Exchangee shall, on or prior to last day of the third month of each Administrative Year, pay to the Watermaster one-quarter of said price per acre-foot multiplied by the number of acre feet of such party's approved request and shall, on or before the last day of each of the next succeeding three months, pay a like sum to the Watermaster. Such amounts must be paid by each Exchangee regardless of whether or not it in fact extracts or uses any of the water it has requested to purchase from the Exchange Pool.

(14) Payments to Exchangors.

As soon as possible after receipt of moneys from Exchangees, the Watermaster shall remit to the Exchangors their pro rata portions of the amount so received in accordance with the provisions of paragraph 10 above.

(15) Delinquent Payments.

Any amounts not paid on or prior to any due date above shall carry interest at the rate of 1% per month or any part of a month. Any amounts required to be so paid may be enforced by the equitable powers of the Court, including, but not limited to, the injunctive process of the Court. In addition thereto, the Watermaster, as Trustee for the Exchangors and acting through the Water Rights Panel, may enforce such payment by any appropriate legal action, and shall be

entitled to recover as additional damages reasonable attorneys' fees incurred in connection therewith. If any Exchangee shall fail to make any payments required of it on or before 30 days after the last payment is due, including any accrued interest, said party shall thenceforward not be entitled to purchase water from the Exchange Pool in any succeeding Administrative Year except upon order of the Court, upon such conditions as the Court may impose.

IV. PROVISIONS FOR THE STORAGE OF WATER AND THE EXTRACTION OF STORED WATER.

A. Adjudication of Available Dewatered Space, Storage Capacity and Storage Apportionment.

There exists within the Basin a substantial amount of available space which has not been optimally utilized for basin management and for storage of native and imported waters. The Court finds and determines that (i) there is 330,000 acre feet of Available Dewatered Space in the Basin; (ii) use of this Available Dewatered Space will increase reasonable and beneficial use of the Basin by permitting the more efficient procurement and management of Replenishment Water, conjunctive use, and for direct and in-lieu recharge, thereby increasing the prudent storage and recovery of Stored Water for later use by parties to this Judgment, conservation of water and reliability of the water supply available to all Parties; and (iii) use of the Available Dewatered Space pursuant to the terms and conditions of this Judgment will not result in Material Physical Harm.

B. Avoidance of Material Physical Harm.

It is essential that the use of the Available Dewatered Space be undertaken for the greatest public benefit pursuant to uniform, certain, and transparent regulation that encourages the conservation of water and reliability of the water supply, avoids Material Physical Harm, and promotes the reasonable and beneficial use of water. Accordingly, in the event Watermaster becomes aware of the development of a Material Physical Harm, or imminent threat of the development of a Material Physical Harm, relating to the

use of the Available Dewatered Space, Watermaster shall, within thirty (30) days thereafter, notice a hearing before the Court and concurrently file a report with the Court, served on all parties, which shall explain the relevant facts then known to Watermaster relating to the Material Physical Harm, or imminent threat thereof, including without limitation, the location of the occurrence, the source or cause, existing and potential physical impacts or consequences of the identified or threatened material Physical Harm, and any recommendations to remediate the identified or threatened Material Physical Harm.

C. Apportionment of Available Dewatered Space.

To fairly balance the needs of the divergent interests of parties having water rights in the Basin, on the one hand, and the replenishment functions of WRD on the other hand, and in consideration of the shared desire and public purpose of removing impediments to the voluntary conservation, storage, exchange and transfer of water, all of the Available Dewatered Space is hereby adjudicated and apportioned into complimentary classifications of Stored Water and a Basin Operating Reserve as set forth in this Part IV. The apportionment contemplates flexible administration of storage capacity where use is apportioned among competing needs, while allowing all Available Dewatered Space to be used from time to time on a "space available" basis, subject to the priorities specified in this Judgment, and as further defined in Section IV(I) of this Judgment. The Court further finds and determines that, of the Available Dewatered Space, there is 220,000 acre-feet of storage capacity in the Central Basin which is presently available ("Adjudicated Storage Capacity"). The use of Adjudicated Storage Capacity as provided in this Judgment will not adversely affect the efficient operation of the Basin or the recharge of water necessary for the production of the parties' respective Allowed Pumping Allocations. The apportionment of Adjudicated Storage Capacity as provided herein will allow for flexible administration of groundwater storage within the Basin. The Adjudicated Storage Capacity is hereby assigned to Individual Storage Allocations and Community Storage as provided herein, provided however that if all

space in a particular classification is fully occupied then, on a "space available" basis, to available space within the other classifications of Adjudicated Storage Capacity and, only then, to available space within Basin Operating Reserve.

The Court further finds and determines that, out of the Available Dewatered Space, there is 110,000 acre feet that should be set aside for use by WRD as a Basin Operating Reserve, provided in Section IV(L), and subject to temporary occupancy by Stored Water as permitted hereunder.

No storage of water shall occur in the Basin except in conformity with this Judgment.

D. Individual Storage Allocation.

Each Party having an adjudicated groundwater extraction right hereunder shall have a priority right to store water in an Individual Storage Account, through conversion of Carryover to Stored Water as provided herein, or by any means authorized by this Judgment, up to a maximum of 50% of such party's Allowed Pumping Allocation. The cumulative quantity of Adjudicated Storage Capacity subject to individual storage allocation is 108,750 acre-feet. In recognition of prior importation of water which was introduced into the Basin as Stored Water, and which has not yet been extracted, the Court finds and determines that, as of the date of this Order, the following Parties have occupied a portion of their respective Individual Storage Allocations and have all associated rights therein, as follows:

City of Long Beach:	13,076.8 acre-feet
City of Lakewood:	500 acre-feet
City of Downey:	500 acre-feet
City of Cerritos	500 acre-feet

E. Community Storage; Regional Disadvantaged Communities Incentive Program.

In addition to Individual Storage Allocation, a Party that has fully occupied its Individual Storage allocation may, on a first in time, first in right basis (subject to the

limits expressed below) place water into storage in the "Community Storage Pool." The cumulative quantity of Adjudicated Storage Capacity allocated to Community Storage shall be 111,250 acre-feet. So long as there is available capacity in the Community Storage Pool, any Party may store water in the Community Storage Pool through conversion of Carryover to Stored Water as provided herein, or by any other means authorized by this Judgment, provided such Party has first fully occupied that party's available Individual Storage Allocation.

(1) Parties to this Judgment which, as of January 1, 2013, held Allowed Pumping Allocation of not greater than 5,000 acre-feet shall have a first priority right to occupy, in the aggregate, up to 10,000 acre-feet of storage space within the Central Basin Community Storage Pool, on the basis of first in time, first in right.

(2) Water stored pursuant to the Regional Disadvantaged Communities Incentive Program shall have a second priority right to occupy up to 23,000 acre-feet within the Community Storage Pool, on such terms as shall be determined by the Court.

(3) Any further storage in excess of the maximum quantity of Community Storage will be on a "space-available" interim basis. From time to time, and on a "space-available" basis, the total quantity of water available for storage is permitted to exceed Adjudicated Storage Capacity for the Community Storage Pool on an interim basis. This interim storage may occur if storage capacity exists as a result of unused Adjudicated Storage Capacity within other classifications, or available space exists in the Basin Operating Reserve. Such interim storage, however, is subject to priority rights to such Dewatered Space as provided in this Judgment. A party that seeks to convert the water temporarily held in interim storage to a more firm right, may contract for the use of another party's Individual Storage Allocation, or may add such water to the Community Storage Pool once space therein becomes available.

(4) After a party occupies available storage capacity within the Community Storage Pool and then withdraws water from the Community Storage Pool, the storing party will be allowed a period of twenty-four (24) months to refill the evacuated storage before the capacity will be determined excess and available for use by other parties. Once the Basin's Community Storage Pool has been filled for the first time, a party may exercise its twenty-four (24) month refill priority only once, and then only provided there is then capacity available to permit that party to refill the vacated space. Except to the extent Community Storage space may be subject to such priority right to re-fill, all space therein shall be occupied on a first in time, first in right basis.

(5) A party that has occupied storage in the Community Storage Pool for ten (10) consecutive years shall be deemed to extract its Stored Water first in subsequent years (notwithstanding the order of water production set forth in Section I(B)(3)) until its entire Community Storage account has been extracted, but thereafter may again make use of Community Storage on the same terms available to other parties on a first in time, first in right, space-available basis.

(6) Any quantity of water held in the Community Storage Pool for a term greater than ten (10) consecutive years shall be assessed an annual water loss equal to 5% of the lowest quantity of water held within the party's Community Storage Pool account at any time during the immediately preceding ten-year period. The lowest quantity means the smallest amount of water held by the Party in the Community Storage Pool during any of the preceding ten (10) years, with a new loss calculation being undertaken every year. Water subject to the loss assessment will be deemed dedicated to the Basin Operating Reserve in furtherance of the physical solution without compensation. Water lost to the Basin shall constitute water replenished into the Central Basin for the benefit of all parties

F. Limit on Storage.

Irrespective of the category of storage utilized, each party to this Judgment may not cumulatively have in storage at any time Stored Water totaling more than two hundred percent (200%) of that party's Allowed Pumping Allocation. Subject to the foregoing, the right to produce Stored Water may be freely transferred to another party to this Judgment, or as otherwise permitted herein.

G. Extractions of Stored Water; Exemption from Replenishment Assessment.

The Court finds and declares that the extraction of Stored Water as permitted hereunder does not constitute "production of groundwater" within the meaning of Water Code Section 60317 and that no Replenishment Assessment shall be levied on the extraction of Stored Water. WRD has stipulated to the same. This determination reflects the practical application of certain provisions of this Judgment concerning storage of water, including, without limitation, understanding the following: (1) payment of the Replenishment Assessment is required upon the conversion of Carryover Water into storage, and; (2) developed water introduced into the Basin for storage by or on behalf of a Party through spreading or injection need not be replenished by WRD and should not be subject to the Replenishment Assessment.

H. Storage Procedure.

The Administrative Body shall (i) prescribe forms and procedures for the orderly reporting of Stored Water, (ii) maintain records of all water stored in the Basin, and (iii) undertake monitoring and modeling of Stored Water as may be reasonably required. As to any Storage Projects that will require review and approval by the Storage Panel, the Administrative Body shall provide appropriate applications, and shall work with project applicants to complete the application documents for presentation to the Storage Panel. The Administrative Body shall be responsible for conducting any groundwater modeling necessary to evaluate a proposed Storage Project. The proponent of a proposed project will bear all costs associated with the review of the application for approval of the project and all costs associated with its implementation. Nothing in this Judgment shall alter the applicant(s) duty to comply with CEQA or to meet other legal requirements as to any

proposed Storage Project. Within thirty (30) days after final submission of the storage application documents, the Administrative Body shall provide notice of the storage application (either by electronic mail or U.S. postal mail), together with a copy of the application documents, to all parties possessing an Allowed Pumping Allocation, and to any other person requesting notice thereof. Following notice, any necessary hearings before the Storage Panel shall be conducted as provided in Section IV(O) of this Judgment.

I. Loss of Stored Water/Relative Priority.

To balance the need to protect priority uses of storage and to encourage the full utilization of Adjudicated Storage Capacity and Basin Operating Reserve where it can be accommodated without interference with priority uses, and except as otherwise provided in this Judgment, no water held in any authorized storage account will be deemed lost from that storage account unless the cumulative quantity of water held as Stored Water plus the quantity of water held within the Basin Operating Reserve exceeds 330,000 acre-feet. Where all Adjudicated Storage Capacity and Basin Operating Reserve has been occupied, the first Stored Water to be deemed lost shall be the last water stored as Community Storage. Upon receipt of a bona fide request by another use entitled to priority hereunder, Watermaster shall issue a notice requiring the other parties to evacuate their Stored Water. Any Stored Water that is not evacuated shall be deemed dedicated to the Basin Operating Reserve in furtherance of the physical solution without compensation and accounted for accordingly.

J. Limits on Extraction.

Anything in this Judgment to the contrary notwithstanding, no party shall extract greater than 140% of the sum of (i) the party's Allowed Pumping Allocation and (ii) the party's leased water, except upon prior approval by the Water Rights Panel. For this purpose, a party's total extraction right for a particular year shall include that party's Allowed Pumping Allocation and any contractual right through lease or other means to utilize the adjudicated rights of another party. Where such proposed extraction would

occur within the Central Basin Pressure Area as defined by Watermaster consistent with historical records, the Water Rights Panel shall submit such request for review by the Board of WRD. The Water Rights Panel shall not approve any request for over-extraction within the Pressure Area without a written finding by the Board of WRD that such over-extraction will not cause Material Physical Harm. The role of the Board of WRD in this process shall not be read to expand or restrict WRD's statutory authority. Consideration shall be on an expedited basis.

K. Increased Extractions in the Central Basin for Certain Water Purveyors.

(1) This Court also maintains continuing jurisdiction over the West Coast Basin, which bounds the Central Basin to the west.

(2) Certain Water Purveyors are parties to both this Amended Judgment and the judgment governing the West Coast Basin and serve communities overlying both the Central Basin and the West Coast Basin.

(3) Certain Water Purveyors may exceed their Allowed Pumping Allocation in any Administrative Year, subject to all of the following conditions:

(a) The Water Purveyor is one of the following eligible Parties:

(i) City of Los Angeles

(ii) Golden State Water Company

(iii) California Water Service Company.

(b) Increased extractions pursuant to this Section shall not exceed 5,000 acre-feet per Water Purveyor for the particular Administrative Year.

(c) Increased extractions pursuant to this Section shall not exceed the Water Purveyor's unused "Adjudicated Rights" in the West Coast Basin.

(d) Increased extractions pursuant to this Section shall not result in Material Physical Harm.

(4) Notwithstanding the foregoing, nothing herein permits extraction

of water within the Central Basin in excess of 140% of Allowed Pumping Allocation for the particular Administrative Year, except as otherwise permitted under this Judgment.

(5) Replenishment of any water extracted from the Central Basin pursuant to this Section shall occur exclusively in the Central Basin.

(6) The benefits of this Section are made available only to the certain Water Purveyors that serve communities overlying the Central Basin and communities overlying the West Basin, in recognition of the management of water resources by those Water Purveyors to serve such overlying communities. It is not made, nor is it related to, a determination of an underflow between the basins, a cost or benefit allocation, or any other factor relating to the allocation of the Replenishment Assessment.

L. Special Provisions for Temporary Storage within Community Storage Pool.

The Central Basin Municipal Water District ("CBMWD") shall take such action as may be necessary to reduce its Allowed Pumping Allocation to five (5) acre-feet or fewer by December 31, 2018, and has agreed, by stipulation, not to acquire any additional Central Basin water rights. Upon application by CBMWD, the Storage Panel may, after making each of the findings required in this subsection, approve storage of water by CBMWD within the Community Storage Pool subject to the stated conditions. The Storage Panel may only authorize such storage after finding each of the following to be true as of the date of such approval:

(1) CBMWD (a) then owns five (5) acre-feet or fewer of Allowed Pumping Allocation, and (b) has not produced water utilizing any extraction rights it holds within the Basin but has only engaged in the sale or leasing of those rights to others.

(2) There is available space for Storage within the Community Storage

Pool.

(3) CBMWD has identified a source of imported water that may be brought into the Basin and stored underground.

(4) The water identified for storage (a) is unlikely to be acquired by other parties through surface delivery for use within the Basin, and (b) was offered to WRD to purchase for replenishment purposes at the same price that CBMWD otherwise sells imported water to WRD and WRD declined to purchase said water, within a reasonable period of time.

(5) There will be no Material Physical Harm associated with the introduction of the water into storage, or its extraction, in the manner approved by the Storage Panel.

The condition expressed in Section IV(L)(1)(a) above shall not be operative until January 1, 2019, or upon reduction of CBMWD's Allowed Pumping Allocation to five (5) acre-feet or fewer, whichever first occurs. CBMWD may not extract the Stored Water, and may instead only transfer that Stored Water to a party having extraction rights, or to WRD for replenishment purposes only. Such Stored Water not so transferred within three (3) years following its storage may be purchased by WRD, at its option, for replenishment purposes only, at a price not exceeding the actual cost incurred by CBMWD in importing and storing the water in the first instance, plus a reasonable administrative charge for overhead not exceeding five percent (5%) of the price paid by CBMWD for the water with no other fees or markups imposed by CBMWD. Except as otherwise permitted in this Section, any such Stored Water held by CBMWD for a term greater than three (3) years shall be assessed an annual water loss equal to 10% of the amount of such Stored Water at the end of each year. Water subject to the loss

assessment will be deemed dedicated to the Basin Operating Reserve in furtherance of the physical solution without further compensation. The Storage Panel shall grant CBMWD one or more extensions of such term, not exceeding total extensions of three (3) additional years, following public hearing, if the Storage Panel determines that the Stored Water has been actively marketed by CBMWD for transfer to Parties on reasonable terms in the previous year. The Storage Panel may impose such additional reasonable conditions as it determines to be appropriate. Any review by the Storage Panel hereunder shall only occur at a public hearing held following at least 15 days' (but not more than 30 days') mailed notice to all Parties to this Judgment, at which hearing an opportunity for public comment shall be afforded in advance of any such decision. However, the Storage Panel may consider an application on shorter notice under exigent circumstances, including the potential loss of the water proposed to be stored if action is not taken sooner. CBMWD shall have the right to appeal any action or inaction by the Storage Panel to this court. The storage and extraction of Stored Water hereunder shall otherwise be subject to all other provisions of this Judgment. The court finds and declares that this subsection constitutes a "court order issued by a court having jurisdiction over the adjudication of groundwater extraction rights within the groundwater basin where storage is sought" within the meaning of Water Code §71610(b)(2)(B). Nothing in this provision impedes CBMWD's ability to store water pursuant to a contract with an adjudicated groundwater extraction rights holder as permitted by Water Code § 71610(b)(2)(A) and otherwise in accordance with this Judgment.

M. Basin Operating Reserve.

It is in the public interest and in furtherance of the physical solution for WRD to prudently exercise its statutory discretion to purchase, spread, and inject Replenishment Water, to provide for in-lieu replenishment, and otherwise to fulfill its replenishment function within the Basin as provided in Water Code Section 60000 et. seq. Hydrologic,

regulatory and economic conditions now prevailing within the State require that WRD be authorized to exercise reasonable discretion and have flexibility in the accomplishment of its replenishment function. Accordingly, WRD may pre-purchase or defer the purchase of Replenishment Water, and may otherwise purchase and manage available sources of Replenishment Water under the most favorable climatic and economic conditions as it may determine reasonable and prudent under the circumstances. It is the intent of the parties to preserve space for such replenishment activities, including capture of natural inflows during wet years, recapture of water when possible, and artificial replenishment when water is available at discounted rate, for the benefit of the Basin and the parties to the Judgment. The Basin Operating Reserve is intended to allow WRD to meet its replenishment needs to make APA available for extraction by all water rights holders. Accordingly, WRD shall have a priority right to occupy up to 110,000 acre-feet of the Available Dewatered Space as the "Basin Operating Reserve" for the acquisition and replenishment of water, or to ensure space remains available in the Basin to capture natural inflows during wet years for the benefit of the parties to the Judgment, to offset over-production. The priority right is not intended to allow WRD to sell or lease stored water, storage, or water rights. To the extent WRD does not require the use of all of such Basin Operating Reserve, that portion of the Basin Operating Reserve that is not then being used shall be available to other Parties to store water on a temporary and space-available basis. No Party may use any portion of the Basin Operating Reserve for space-available storage unless that Party has already maximized its allowed Storage pursuant to its Individual Storage Allocation and all available Community Storage is already in use. WRD's failure to use any portion of its Basin Operating Reserve shall not cause forfeiture or create a limitation of its right to make use of the designated space in the future. WRD's first priority right to this category of space shall be absolute. To the extent that there is a conflict between WRD and a third party regarding the availability of and desire to use any portion of the space available for replenishment up to the maximum limits set forth in this section, the interests of WRD will prevail. If a party other than

WRD is using the Basin Operating Reserve space on a "space available" basis and a conflict develops between WRD and the storing party, the storing party will, upon notice from WRD, evacuate the Stored Water within ninety (90) days thereafter. In such event, temporary occupancy within the Basin Operating Reserve shall be first in time, first in right, and the last Party to store water shall be required to evacuate first until adequate space shall be made available within the Basin Operating Reserve to meet WRD's needs. The storing party or parties assume all risks of waste, spill and loss regardless of the hardship. Stored Water that is not evacuated following WRD's notice of intent to occupy the Basin Operating Reserve will be deemed dedicated to the Basin Operating Reserve in furtherance of the physical solution without compensation and accounted for accordingly. Nothing herein shall permit WRD to limit or encumber, by contract or otherwise, its right to use the Basin Operating Reserve for Replenishment purposes for any reason, or to make space therein available to any person by any means. Notwithstanding the foregoing, to the extent excess space is available, water evacuated from the Basin Operating Reserve as provided in this Section shall be deemed added to available space within the Individual Storage Allocations and Community Storage Pool, subject to the priority rights otherwise provided in this Judgment.

N. Water Augmentation.

The parties, in coordination with WRD, may undertake projects that add to the long-term reliable yield of the Basin. Innovations and improvements in practices that increase the conservation and maximization of the reasonable and beneficial use of water should be promoted. To the extent that Parties to the Judgment, in coordination with WRD, implement a project that provides additional long-term reliable water supply to the Central Basin, the annual extraction rights in the Central Basin will be increased commensurately in an amount to be determined by the Storage Panel to reflect the actual yield enhancement associated with the project. Augmented supplies of water resulting from such a project may be extracted or stored as permitted in this Judgment in the same manner as other water. Participation in any Water Rights Augmentation Project shall be

voluntary. A party may elect to treat a proposed project as a Water Augmentation Project (for the purpose of seeking an increase in that party's Allowed Pumping Allocation) or may elect to treat such a project as a Storage Project under the other provisions of this Judgment. The terms of participation in any Water Augmentation Project will be at the full discretion of the participating parties. All Water Augmentation Projects will be approved by the Storage Panel.

(1) Participating Parties.

Parties who propose a Water Augmentation Project ("Project Leads") may do so in their absolute discretion, upon such terms as they may determine. All other parties to this Judgment will be offered an opportunity to participate in the Water Augmentation Project on condition that they share proportionally in common costs and benefits, and assume the obligation to bear exclusively the cost of any improvements that are required to accommodate their individual or particular needs. Notice shall be provided which generally describes the project and the opportunity to participate with sufficient time for deliberation and action by any of these parties who could potentially participate. Disputes over the adequacy of notice shall be referred to the Storage Panel, and then to the Court under its continuing jurisdiction. Parties who elect to participate ("Project Participants") may do so provided they agree to offer customary written and legally binding assurances that they will bear their proportionate costs attributable to the Water Rights Augmentation Project, or provide other valuable consideration deemed sufficient by the Project Leads and the Project Participants.

(2) Determination of Additional Extraction Rights.

The amount of additional groundwater extraction as a result of a Water Augmentation project will be determined by the Storage Panel, subject to review by the Court. The determination will be based upon substantial evidence which supports the finding that the Water Augmentation project will increase the long-term sustainable yield of the respective Basin by an amount at least equal to the

proposed increase in extraction rights.

(3) Increase in Extraction Rights.

A party that elects to participate and pays that party's full pro-rata share of costs associated with any Water Augmentation Project and/or reaches an agreement with other participants based upon other valuable consideration acceptable to the Project Leads and Project Participants, will receive a commensurate increase in extraction rights. Non-participating parties will not receive an increase or a decrease in extraction rights. Any party that elects not to participate will not be required to pay any of the costs attributable to the particular Water Augmentation Project, whether directly or indirectly as a component of the WRD Replenishment Assessment.

(4) Nominal Fluctuations.

Because water made available for Water Rights Augmentation will be produced annually, fluctuations in groundwater levels will be temporary, nominal and managed within the Basin Operating Reserve.

(5) Availability of New Water.

The amount of additional groundwater extraction established as a result of a Water Augmentation Project shall be equal to the quantity of new water in the Basin that is attributable to that Water Augmentation Project. No extraction shall occur and no extraction right shall be established until new water has been actually introduced into the Basin as a result of the Project. Any approval for a Water Augmentation Project shall include provisions (a) requiring regular monitoring to determine the actual amount of such new water made available, (b) requiring make-up water or equivalent payment therefor to the extent that actual water supply augmentation does not meet projections, and (c) adjusting extraction rights attributable to the Water Augmentation Project to match the actual water created. The right to extract augmented water from the Basin resulting from a party's participation in a Water Augmentation Project shall be accounted for

separately and shall not be added to a party's Allowed Pumping Allocation. No Replenishment Assessment shall be levied against the extraction of augmented water.

(6) Limitation.

Notwithstanding the foregoing, WRD will not obtain any water rights or extraction rights under this Judgment by virtue of its participation in a Water Augmentation Project. If WRD participates in a Water Rights Augmentation Project through funding or other investments, its allocation of new water from the project shall be used to offset its replenishment responsibilities.

O. Limits on Watermaster Review.

It shall not be necessary for Watermaster, or any constituent body thereof, to review or approve any of the following before the affected Party may proceed: (i) exercise of adjudicated water rights consistent with this Judgment, except for extraction above 140% of a Party's extraction right as set out in Section IV(J) of this Judgment; (ii) replenishment of the Basin with Replenishment Water by WRD consistent with Water Code Section 60000 et seq., including replenishment of water produced by water rights holders through the exercise of adjudicated water rights; (iii) WRD's operations within the Basin Operating Reserve; (iv) Carryover Conversion or other means of the filling of the Individual Storage Accounts and the Community Storage Pool, as provided in this Judgment, as long as existing water production, spreading, or injection facilities are used; and (v) individual transfers of the right to produce Stored Water as permitted in Section IV(F). All other Storage Projects and all Water Augmentation Projects shall be subject to review and approval as provided herein, including (i) material variances to substantive criteria governing projects exempt from the review and approval process, (ii) modifications to previously approved Storage Projects and agreements, (iii) a party's proposal for Carryover Conversion in quantities greater than the express apportionment of Adjudicated Storage Capacity on a non-priority, space-available, interim basis, and (iv) Storage, by means other than Carryover Conversion, when new production,

spreading, or injection facilities are proposed to be utilized.

P. Hearing Process For Watermaster Review.

The following procedures shall be followed by Watermaster where Watermaster review of storage or extraction of Stored Water is required or permitted under this Judgment:

(1) No later than thirty (30) days after notice has been issued for the storage application, the matter shall be set for hearings before the Storage Panel. A staff report shall be submitted by WRD staff in conjunction with the completed storage application documents and the Water Rights Panel may prepare an independent staff report, if it elects to do so.

(2) The Board of WRD and the Water Rights Panel (sitting jointly as the Storage Panel) shall conduct a joint hearing concerning the storage application.

(3) All Watermaster meetings shall be conducted in the manner prescribed by the applicable Rules and Regulations. The Rules shall provide that all meetings of Watermaster shall be open to water rights holders and that reasonable notice shall be given of all meetings.

(4) The Board of WRD and the Water Rights Panel shall each adopt written findings explaining its decision on the proposed Storage Project, although if both entities reach the same decision on the Storage Project, they shall work together to adopt a uniform set of findings.

(5) Unless both the Board of WRD and the Water Rights Panel approve the Storage Project, the Storage Project application shall be deemed denied (a "Project Denial"). If both the Board of WRD and the Water Rights Panel approve the Storage Project, the Storage Project shall be deemed approved (a "Project Approval").

Q. Trial Court Review

(1) The applicant may seek the Storage Panel's reconsideration of a

Project Denial. However, there shall be no process for mandatory reconsideration or mediation of a Project Approval or a Project Denial either before the Administrative Body, or before the Water Rights Panel.

(2) Any Party may file an appeal from a Project Approval or Project Denial with this Court, as further described in Section II(F).

(3) In order to (a) promote the full presentation of all relevant evidence before the Storage Panel in connection with its consideration of any proposed Storage Project, (b) achieve an expeditious resolution of any appeal to the Court, and (c) accord the appropriate amount of deference to the expertise of the Storage Panel, the appeal before the Court shall be based solely on the administrative record, subject only to the limited exception in California Code of Civil Procedure section 1094.5(e).

(4) If both the WRD Board and the Water Rights Panel each vote to deny or approve a proposed Storage Project, it shall be an action by the Storage Panel and that decision shall be accorded by the Court deference according to the substantial evidence test. If one of the reviewing bodies votes to approve the proposed Storage Project and the other reviewing body votes to deny the proposed storage project, then the Court's review shall be *de novo*, although still restricted to the administrative record. In the case of any *de novo* Trial Court review, the findings made by the respective Watermaster bodies shall not be accorded any weight independent of the evidence supporting them.

R. Space Available Storage, Relative Priority, and Dedication of "Spilled" Water.

To balance the need to protect priority uses of storage and to encourage the full utilization of Available Dewatered Space within the Adjudicated Storage Capacity and the Basin Operating Reserve, any Party may make interim, temporary use of then currently unused Available Dewatered Space within any category of Adjudicated Storage Capacity, and then if all Adjudicated Storage Capacity is being fully used for Stored

Water within the Basin Operating Reserve ("Space-Available Storage"), subject to the following criteria:

(1) Any Party may engage in Space-Available Storage without prior approval from Watermaster provided that the storing Party or Parties shall assume all risks of waste, spill, and loss regardless of the hardship. Whenever the Storage Panel determines that a Party is making use of excess Available Dewatered Space for Space-Available Storage, the Storage Panel shall issue written notice to the Party informing them of the risk of spill and loss.

(2) Whenever the Available Dewatered Space is needed to accommodate the priority use within a respective category of Adjudicated Storage Capacity, or WRD seeks to make use of its priority right to the Basin Operating Reserve to fulfill its replenishment function, the Storage Panel shall issue a notice to evacuate the respective category of Adjudicated Storage Capacity or Basin Operating Reserve, as applicable, within the time-periods set forth within this Amended Judgment. To the extent the Stored Water is not timely evacuated such Stored Water will be placed into any other excess Available Dewatered Space, first within the Adjudicated Storage Capacity, if available, and then if all Adjudicated Storage Capacity is being fully used for Stored Water within the Basin Operating Reserve. If no excess Available Dewatered Space is available within the Basin Operating Reserve, then the Stored Water shall be deemed spilled and will be deemed dedicated to the Basin Operating Reserve in furtherance of the physical solution without compensation and accounted for accordingly. A Party that seeks to convert the Stored Water temporarily held in interim storage as Space-Available Storage to a more firm right, may in its discretion, contract for the use of another Party's Individual Storage Allocation, or may add such water to the Community Storage Pool once space therein becomes available.

(3) No Stored Water will be deemed abandoned unless the cumulative

quantity of water held as Stored Water plus the quantity of water held in the Basin Operating Reserve exceeds 330,000 (three hundred and thirty thousand) acre-feet in the Central Basin.

V. CONTINUING JURISDICTION OF THE COURT.

The Court hereby reserves continuing jurisdiction and upon application of any interested party, or upon its own motion, may review and redetermine the following matters and any matters incident thereto:

A. Its determination of the permissible level of extractions from Central Basin in relation to achieving a balanced basin and an economic utilization of Central Basin for groundwater storage, taking into account any then anticipated artificial replenishment of Central Basin by governmental agencies for the purpose of alleviating what would otherwise be annual overdrafts upon Central Basin and all other relevant factors.

B. Whether in accordance with applicable law any party has lost all or any portion of his rights to extract groundwater from Central Basin and, if so, to ratably adjust the Allowed Pumping Allocations of the other parties and ratably thereto any remaining Allowed Pumping Allocation of such party.

C. To remove any Watermaster or constituent body appointed from time to time and appoint a new Watermaster; and to review and revise the duties, powers and responsibilities of the Watermaster or its constituent bodies and to make such other and further provisions and orders of the Court that may be necessary or desirable for the adequate administration and enforcement of the Judgment.

D. To revise the price to be paid by Exchangees and to Exchangors for Exchange Pool purchases and subscriptions.

E. In case of emergency or necessity, to permit extractions from Central Basin for such periods as the Court may determine: (i) ratably in excess of the Allowed Pumping Allocations of the parties; or (ii) on a non-ratable basis by certain parties if

either compensation or other equitable adjustment for the benefit of the other parties is provided. Such overextractions may be permitted not only for emergency and necessity arising within Central Basin area, but to assist the remainder of the areas within The Metropolitan Water District of Southern California in the event of temporary shortage or threatened temporary shortage of its imported water supply, or temporary inability to deliver the same throughout its area, but only if the court is reasonably satisfied that no party will be irreparably damaged thereby. Increased energy cost for pumping shall not be deemed irreparable damage. Provided, however, that the provisions of this subparagraph will apply only if the temporary shortage, threatened temporary shortage, or temporary inability to deliver was either not reasonably avoidable by the Metropolitan Water District, or if reasonably avoidable, good reason existed for not taking the steps necessary to avoid it.

F. To review actions of the Watermaster.

G. To assist the remainder of the areas within The Metropolitan Water District of Southern California within the parameter set forth in subparagraph (e) above.

H. To provide for such other matters as are not contemplated by the Judgment and which might occur in the future, and which if not provided for would defeat any or all of the purposes of this Judgment to assure a balanced Central Basin subject to the requirements of Central Basin Area for water required for its needs, growth and development.

The exercise of such continuing jurisdiction shall be after 30 days' notice to the parties, with the exception of the exercise of such continuing jurisdiction in relation to subparagraphs E and G above, which may be *ex parte*, in which event the matter shall be forthwith reviewed either upon the Court's own motion or the motion of any party upon which 30 days' notice shall be so given. Within ten (10) days of obtaining any *ex parte* order, the party so obtaining the same shall mail notice thereof to the other parties. If any other party desires Court review thereof, the party obtaining the *ex parte* order shall bear the reasonable expenses of mailing notice of the proceedings, or may in lieu thereof undertake the mailing. Any contrary or

modified decision upon such review shall not prejudice any party who relied on said *ex parte* order.

VI. GENERAL PROVISIONS.

A. Judgment Constitutes Inter Se Adjudication.

This Judgment constitutes an inter se adjudication of the respective rights of all parties, except as may be otherwise specifically indicated in the listing of the water rights of the parties of this Judgment, or in Appendix "2" hereof. All parties to this Judgment retain all rights not specifically determined herein, including any right, by common law or otherwise, to seek compensation for damages arising out of any act or omission of any person. This Judgment constitutes a "court order" within the meaning of Water Code Section 71610(B)(2)(b).

B. Assignment, Transfer, Etc., of Rights.

Subject to the other provision of this Judgment, and any rules and regulations of the Watermaster requiring reports relative thereto, nothing herein contained shall be deemed to prevent any party hereto from assigning, transferring, licensing or leasing all or any portion of such water rights as it may have with the same force and effect as would otherwise be permissible under applicable rules of law as exist from time to time.

C. Service Upon and Delivery to Parties of Various Papers.

Service of the Judgment on those parties who have executed that certain Stipulation and Agreement for Judgment or who have filed a notice of election to be bound by the Exchange Pool provisions shall be made by first class mail, postage prepaid, addressed to the designee and at the address designated for that purpose in the executed and filed Counterpart of the Stipulation and Agreement for Judgment or in the executed and filed "Notice of Election to be Bound by Exchange Pool Provisions," as the case may be, or in any substitute designation filed with the Court.

Each party who has not heretofore made such a designation shall, within 30 days after the Judgment shall have been served upon that party, file with the Court, with proof

of service of a copy upon the Watermaster, a written designation of the person to whom and the address at which all future notices, determinations, requests, demands, objections, reports and other papers and processes to be served upon that party or delivered to that party are to be so served or delivered.

A later substitute designation filed and served in the same manner by any party shall be effective from the date of filing as to the then future notices, determinations, requests, demands, objections, reports and other papers and processes to be served upon or delivered to that party.

Delivery to or service upon any party by the Watermaster, by any other party, or by the Court, or any item required to be served upon or delivered to a party under or pursuant to the Judgment may be by deposit in the mail, first class, postage prepaid, addressed to the designee and at the address in the latest designation filed by that party.

D. Judgment Does Not Affect Rights, Powers, Etc., of Plaintiff District.

Nothing herein constitutes a determination or adjudication which shall foreclose Plaintiff District from exercising such rights, powers, privileges and prerogatives as it may now have or may hereafter have by reason of provisions of law.

E. Continuation of Order under Interim Agreement.

The order of Court made pursuant to the "Stipulation and Interim Agreement and Petition for Order" shall remain in effect through the Administrative Year in which this Judgment shall become final (subject to the reserved jurisdiction of the Court).

F. Effect of Extractions by Exchangees; Reductions in Extractions.

With regard to Exchange Pool purchases, the first extractions by each Exchangee shall be deemed the extractions of the quantities of water which that party is entitled to extract pursuant to his allocation from the Exchange Pool for that Administrative Year. Each Exchangee shall be deemed to have pumped his Exchange Pool request so allocated for and on behalf of each Exchangor in proportion to each Exchangor's subscription to the Exchange Pool which is utilized to meet Exchange Pool requests. No Exchangor shall ever be deemed to have relinquished or lost any of its rights determined in this

Judgment by reason of allocated subscriptions to the Exchange Pool. Each Exchangee shall be responsible as between Exchangors and that Exchangee, for any tax or assessment upon the production of groundwater levied for replenishment purposes by WRD or by any other governmental agency with respect to water extracted by such Exchangee by reason of Exchange Pool allocations and purchases. No Exchangor or Exchangee shall acquire any additional rights, with respect to any party to this action, to extract waters from Central Basin pursuant to Water Code Section 1005.1 by reason of the obligations pursuant to and the operation of the Exchange Pool.

G. Judgment Binding on Successors, Etc.

This Judgment and all provisions thereof are applicable to and binding upon not only the parties to this action, but as well to their respective heirs, executors, administrators, successors, assigns, lessees, licensees and to the agents, employees and attorneys in fact of any such persons.

H. Costs.

No party shall recover its costs herein as against any other party.

I. Intervention of Successors in Interest and New Parties.

Any person who is not a party (including but not limited to successors or parties who are bound by this Judgment) and who proposes to produce water from the Basin, store water in the Basin, or exercise water rights of a predecessor may seek to become a party to this Judgment through a Stipulation in Intervention entered into with the Plaintiff. Plaintiff may execute said Stipulation on behalf of the other parties herein, but such Stipulation shall not preclude a party from opposing such intervention at the time of the court hearing thereon. Said Stipulation for Intervention must thereupon be filed with the Court, which will consider an order confirming said intervention following thirty (30) days' notice to the parties. Thereafter, if approved by the Court, such intervenor shall be a party bound by this Judgment and entitled to the rights and privileges accorded under the physical solution herein.

J. Effect of this Amended Judgment on Orders Filed Herein.

This Third Amended Judgment shall not abrogate such rights of additional carryover of unused water rights as may otherwise exist pursuant to orders herein filed June 2, 1977 and September 29, 1977.

THE CLERK WILL ENTER THIS THIRD AMENDED JUDGMENT FORTHWITH.

DATED: _____

_____
Judge of the Superior Court

APPENDIX J

EMERGENCY WATER CONSERVATION PLAN

RESOLUTION NO. 5592

A RESOLUTION OF THE CITY COUNCIL
OF THE CITY OF SANTA FE SPRINGS REVISING
RESOLUTION NO. 5570
AN EMERGENCY WATER CONSERVATION PLAN

WHEREAS, there exists a shortage of water supply due to insufficient rainfall during the past several years; and

WHEREAS, Section 23-3 of the City Code empowers the City to ration or apportion water by reason of a shortage of water supply; and

WHEREAS, the State Water Code provides that the City may declare a water shortage emergency condition to prevail upon making certain findings; and

WHEREAS, the Rules and Regulations set forth below will be implemented only upon the making by the City Council of the findings required by the State Water Code,

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF SANTA FE SPRINGS DOES RESOLVE AS FOLLOWS:

Section 1: An Emergency Water Conservation Plan is hereby established, as follows:

PART 1 - DEFINITIONS - WORDS, TERMS AND PHRASES

ACTIVE OR OPEN ACCOUNT: An account for which a customer has signed and is being billed for water service.

APPLICANT: Any person requesting potable, fire, or reclaimed water service, service installation, main extensions, or any other service performed by the Department or its authorized agent.

BASE: The amount of potable water used during the corresponding billing period of the previous year.

BILLING PERIOD: The time interval between two consecutive meter readings which are taken for billing purposes.

BILLING UNIT: 100 cubic feet of water, equivalent to 748 gallons.

BLIND SERVICE: An existing water service connection on which the meter has not been set or has been removed.

COST: The actual cost to the Department, including all labor, material, supplies, equipment and miscellaneous items, together with any applicable indirect and general charges, plus administrative overhead, in accordance with the accounting practices of the Department.

CUSTOMER: A person in whose name service is rendered as evidenced by the signature on the application, contract or agreement for service, or, in the absence of assigned instrument, by the receipt and payment of bills for such service regularly issued in such person's name regardless of the identity of the actual user of such service.

DEPARTMENT: The Public Works Department of the City of Santa Fe Springs.

FIRE SERVICE CONNECTION: A facility for the delivery of water to a permanent location to supply a customer-owned fire sprinkler system.

FLOW RESTRICTING DEVICE OR FLOW RESTRICTOR: Fitting inserted into the service connection to reduce flow capacity.

HISTORIC BASE PERIOD: The twelve-month period preceding the month a water shortage emergency is declared. The Department may adjust the Base Period to compensate for previous documented conservation efforts.

INACTIVE OR CLOSED ACCOUNT: An account which is not signed for and has no current customer. The account remains in the billing system, and can be reactivated upon application.

MAIN: A water pipeline located in streets, highways, public ways, thoroughfares, or private rights-of-way, and used to serve the general public.

PERSON: Any individual, partnership, corporation, agency or other organization operating as a single entity.

POTABLE SERVICE CONNECTION: A facility for the delivery of potable water to a permanent location for domestic, commercial or industrial use, including water for fire protection purposes.

POTABLE WATER: Water suitable for drinking and other general water supply purposes.

PREMISES: Integrated land areas, including improvements thereon, undivided by public thoroughfares or water distribution mains of the Department and where all parts thereof are operated under the same management and for the same purpose.

QUANTITATIVE CHARGE: That portion of the charge for water service for the amount of water registered on the water meter(s) serving the premises.

RECLAIMED WATER: Treated wastewater suitable for landscape irrigation in accordance with the California Administrative Code, Title 22.

RECLAIMED WATER SERVICE CONNECTION: A facility for the delivery of reclaimed water to a permanent location.

SERVICE CHARGE: That portion of the charge for water service which is a fixed amount related to the size of the service.

SERVICE CONNECTION CHARGE: The charge payable by the applicant for the installation of a potable, fire, reclaimed, or temporary service connection.

SERVICE RECONNECTION OR RESTORATION: Reestablishment of water service after discontinuance of service for any reason.

TEMPORARY SERVICE: Water service for construction work or other uses as deemed feasible by the Department, such that service is required for only a limited time.

WATER SERVICE: The availability of potable or reclaimed water to a premises through the facilities of the Department and any water supplied through such facilities.

WATER SERVICE LATERAL: The pipe and appurtenances necessary to conduct water from the distribution main to and through the meter, or to the shut-off valve on an unmetered service connection where connection is made with facilities of the customer.

WATER SUPPLY SYSTEM: The works and auxiliaries for collection, storage, treatment and distribution of water from the source of supply to the point of connection with the customer's facilities.

PART 2 - EMERGENCY WATER CONSERVATION PLAN

A. SCOPE: There is hereby established a City of Santa Fe Springs Emergency Water Conservation Plan.

B. PURPOSE: Upon declaration by the City Council, after a noticed Public Hearing, that a water shortage emergency exists, this plan shall be implemented to provide a vehicle to protect public peace, health and safety by significantly and equitably reducing the consumption of potable water over an extended period. The plan shall remain in effect until the Council declares the water shortage emergency has ended.

C. APPLICATION: The provisions of the Conservation Plan shall apply to all customers and property receiving potable water from the City wherever situated, and shall also apply to all property and facilities owned, maintained, operated or under the jurisdiction of the various officers, boards, departments, or agencies of the City.

D. AUTHORIZATION: The various officers, boards, departments, and agencies of the City are hereby authorized and directed to immediately implement the applicable provisions of the Conservation Plan upon the effective date of the first implementation of Phase I or any Phase subsequent thereto.

E. WATER CONSERVATION PHASES: No customer of the City shall make, cause, use or permit the use of water from the City for residential, commercial, industrial, agricultural, governmental or any other purpose in a manner contrary to any provision of, or in an amount in excess of that use permitted by, the conservation phase then in effect pursuant to action taken by the City Council in accordance herewith. The City Council shall determine which phase is necessary to accomplish water conservation requirements, based on the severity of the water shortage emergency.

(1) Phase I. The following requirements apply to all customers during Phase I:

(a) There shall be no hose washing of walkways, driveways, or parking areas except as needed for sanitary or safety purposes.

(b) Water shall not be used to clean, fill or maintain levels in decorative fountains, unless a recirculating system is used.

(c) Restaurants or other public places where food is served or offered for sale, shall not serve drinking water to any customer, unless expressly requested.

(d) All water leaks shall be promptly repaired.

(e) Lawns and landscape areas shall not be watered between the hours of 10:00 a.m. and 4:00 p.m.

(2) Phases II through V.

(a) Prohibited Uses Applicable to All Customers. During Phases II through V, no customer of water shall use water contrary to the provisions of subsection (1).

(b) Maximum Percentage of Base Period Water Use Permitted. During Phases II through V, no customer or user of water shall use or permit the use of water from the City in an amount in excess of the following maximum percentages of the corresponding billing period of the historic base period:

	MAXIMUM ALLOWABLE PERCENTAGES OF BASE PERIOD			
CUSTOMER GROUP	PHASE II	PHASE III	PHASE IV	PHASE V
HOSPITALS	100	100	95	90
CONVALESCENT HOMES	100	100	95	90
SCHOOLS	100	100	100	90
HOTELS AND MOTELS	90	90	90	85
OIL FIELD INJECTORS	80	75	70	65
ALL OTHERS	90	90	90	80

3. Exception. The prohibited uses of water provided for by subsection (a) of this section are not applicable to that use of water necessary for public health and safety or for essential governmental services such as police, fire, and other similar emergency services.

4. Exemptions. Single family residential customers shall not be required to reduce consumption below 20 billing units per month during Phase II; or below 19 billing units per month during Phase III; or below 17 billing units per month during Phase IV; or below 16 billing units per month during Phase V.

F. PHASE IMPLEMENTATION: The City Council shall implement or change any phase of this plan by resolution which shall be published in a local newspaper of general circulation. Phase I shall take effect upon such publication. Phases II through V shall take effect with the first billing period after adoption of a Resolution implementing said phases.

G. FAILURE TO COMPLY

1. For the first failure to comply with the plan, the Department shall notify the customer of the fact of such failure to comply for Phase I. Said notice may be included on or with the water bill.

2. For failure to comply with Phases II through IV of the plan, a surcharge of 10% of the total water bill shall be charged in addition to the regular water charges.

3. For failure to comply with Phase V of the plan, in addition to the regular rate, a minimum over usage charge of $1.25 per 100 cubic feet for water used over the target quantity shall be charged.

4. For the second and all subsequent failures to comply with Phase V of the plan, a surcharge for the period of non-compliance shall be imposed as follows:

Second Violation (all customers)	$1.25/100 cft over target quantity
Third Violation	$2.00/100 cft over target quantity
Fourth Violation	$4.00/100 cft over target quantity
All subsequent violations	$10.00/100 cft over target quantity

*Note: Above surcharges are in addition to the regular water rates.

5. For a third or subsequent failure to comply with the plan, the Department may install, for a period of not less than 48 hours and until the customer satisfies the Department that failure to comply will not continue, a flow restricting device in the customer's water service connection at the premises. Said device shall restrict flow to one (1) gallon per minute capacity for services up to one and one-half (1-1/2) inch size, and comparatively sized restrictors for larger services. The surcharge and the charge for installing and removing the flow restricting device shall be paid prior to removal and costs shall be determined by the Department based upon estimated costs to install and remove the device.

6. Any customer tampering with or removing a flow restriction device will have water service discontinued for a period of not less than 24 hours and until the customer satisfies the Department that failure to comply will not continue.

H. NOTICES

1. Except as otherwise provided in this section, any notice required by this Conservation Plan to be given to a customer for failure to comply with the provisions hereof may be given to the customer personally, on the customer's water bill, or by regular mail addressed to the billing address of the customer. Said notice, in addition to setting forth the fact of the customer's failure to comply with the applicable provision or provisions of the Conservation Plan and any proposed action to be taken by the Department for such failure to comply, shall inform the customer of his right to file for an exemption or a hearing before the City Manager and the procedure to be followed to obtain such hearing.

2. If water service to a customer is to be discontinued for any period of time in accordance with the provisions of this Conservation Plan, notice thereof shall be given by the Department to the customer in the following manner:

(a) By personal service thereof on said customer; or

(b) If said customer be absent from his place of residence and from his known place of business, by leaving a copy thereof with some responsible person at either place and sending a copy thereof by regular mail addressed to said customer at his billing address; or

(c) If such place of residence and business cannot be ascertained, or such responsible person cannot be found there, then by (1) affixing a copy thereof in a conspicuous place on the property where the failure to comply is occurring, (2) delivering a copy thereof to a person there residing, if such person can be found, and (3) sending a copy thereof by regular mail addressed to said customer at his billing address.

I. RELIEF FROM COMPLIANCE

1. Administrative Hearing. A customer notified of failure to comply with this plan shall have the right to a hearing by the City Manager or his designee, provided that a written request for hearing is filed by the customer within 15 days after receipt of notice of failure to comply. The hearing shall be held within 15 days after receipt of the request therefor. In determining whether relief shall be granted, the City Manager shall take into consideration all relevant factors including, but not necessarily limited to the following:

(a) Whether any additional reduction in water consumption will result in unemployment;

(b) Whether additional members have been added to the household;

(c) Whether any additional landscaped property has been added to the property subsequent to the Historic Base Period;

(d) Changes in vacancy factors in multi-family housing;

(e) Increased number of employees in commercial, industrial and governmental offices;

(f) Water uses during new construction and increased production requiring increased process water;

(g) Adjustments to water use caused by emergency health or safety hazards;

(h) First filling of a permit-constructed swimming pool;

(i) Water use necessary for reasons related to family illness or health;

(j) Previous water conservation measures which affect the base figures.

A written decision shall be given to the customer personally or by mail, and shall be final except for judicial review.

2. Exemptions. Customers may apply for exemptions to this resolution. The City Manager or his designee may grant exemptions taking into consideration factors outlined in Section I, 1 a-j herein. If exemptions are granted, customers shall pay applicable drought overuse charges, but will not be subject to violations. Phase I requirements will remain in force (Part 2, Section E-1).

3. Exemption Application Fees. Applicants for exemptions shall pay a fee as follows: Residential $5.00 - All others $25.00. Fees shall be submitted with each application.

4. Reservation of Rights. The rights of the City hereunder shall be cumulative to any other right of the City to discontinue service. All monies collected by the City pursuant to any of the provisions of this Conservation Plan shall be deposited in the Water Revenue Fund as reimbursement for the City's costs and expenses of administering and enforcing this Conservation Plan.

J. GENERAL PROVISIONS

1. Reduction in Water Supplied. If any customer fails to comply with any provision of this Conservation Plan, the City may reduce the amount of water provided to that customer to the level which that customer would be using if he were complying with the provisions of this Conservation Plan. The provisions of this subsection shall be applied in lieu of, or in addition to, any of the other provisions of this Conservation Plan, in the discretion of the City, and shall be applied without regard to the status or nature of the customer.

2. Public Health and Safety Not to be Affected. Nothing contained in this Conservation Plan shall be construed to require the City to curtail the supply of water to any customer when, in the discretion of the Department or City Manager, such water is required by that customer to maintain an adequate level of public health and safety.

K. SEVERABILITY: If any section, subsection, clause or phrase in this Conservation Plan or the application thereof to any person or circumstances is for any reason held invalid, the validity of the remainder of the Conservation Plan or the application of such provision to other persons or circumstances shall not be affected thereby. The City Council declares that it would have passed this Conservation Plan and each section, subsection, sentence, clause, or phrase thereof irrespective of the fact that one or more sections, subsections, sentences, clauses, or phrases or the application thereof to any person or circumstances be held invalid.

L. CHARGES: The City shall impose the charges set forth herein.

Section 2: The City Clerk shall certify to the adoption of this Resolution.

APPROVED and ADOPTED this 12th day of September, 1991.

MAYOR PRO TEM

ATTEST:

CITY CLERK

APPENDIX K

SANTA FE SPRINGS' HAZARD MITIGATION PLAN

City of Santa Fe Springs

Natural Hazards Mitigation Plan

Adopted: October 11, 2004

Prepared under contract with:

Emergency Planning Consultants
San Diego, California
Carolyn J. Harshman, President
Revised on October 12, 2006

Special Recognition

The Disaster Management Area Coordinators (DMAC) of Los Angeles County prepared planning guidance that was utilized by the City of Santa Fe Springs in preparing this Natural Hazards Mitigation Plan. The City extends special recognition to Mike Martinet for his editing contributions to the Hazard-Specific Sections. The DMAC planning guidance was based on the FEMA-approved Mitigation Plan from Clackamas County, Oregon. The City is grateful to DMAC and the Clackamas County Natural Hazards Mitigation Committee for their contributions to this project.

Special Thanks & Acknowledgments
Multi-Jurisdictional Planning Team:
- City of Santa Fe Springs
- City of Whittier
- Whittier City School District
- Whittier Union High School District
- East Whittier City School District
- Little Lake School District
- Office of Disaster Management, Area E: Fan Abel, Coordinator
- South Whittier School District
- Los Nietos School District

Mapping
In addition to Internet-sourced maps, the City of Santa Fe Springs provided all of the maps included in this plan.

Consulting Services
Project Management and Planning Services for this project were provided under contract by Emergency Planning Consultants.

- Project Management Services: Carolyn J. Harshman, President
- Planning Services: Carolyn J. Harshman, President
  Daniel Robeson, Jr., Associate
  Eric Acacio, Assistant
  Timothy Harshman, Intern

List of Natural Hazards Mitigation Plan Tables, Maps, and Photos

#	Type of Table, Map, or Photo	Section of the Plan
Map 1-1	Base Map of City of Santa Fe Springs	Section 1: Introduction
Attachment1	"Ranking Your Hazards" Worksheet	Section 1: Introduction
Map 3-3	City of Santa Fe Springs Evacuation Routes	Section 3: Community Profile
Table 4-1	Federal Criteria for Risk Assessment	Section 4: Risk Assessment
Map 4-1	City of Santa Fe Springs Critical and Essential Facilities	Section 4: Risk Assessment
Table 4-2	City of Santa Fe Springs Critical Facilities	Section 4: Risk Assessment
Table 4-2	City of Santa Fe Springs Essential Facilities	Section 4: Risk Assessment
Table 5-1	Earthquake Events In Southern California	Section 5: Earthquake
Figure 5-1	Causes and Characteristics of Earthquakes in Southern California	Section 5: Earthquake
Map 5-1	Seismic Zones in California	Section 5: Earthquake
Map 5-2	Major Fault Systems of the Los Angeles Basin	Section 5: Earthquake
Map 5-3	Liquefaction and EQ-Induced Landslide Areas – Whittier Quadrangle	Section 5: Earthquake
Table 5-2	Partial List of the Over 200 California Laws on Earthquake Safety	Section 5: Earthquake
Attachment 2	Earthquake Probable Events	Section 5: Earthquake
Table 6-1	Major Floods of the Los Angeles River	Section 6: Flood
Table 6-2	Tropical Storms of Southern California	Section 6: Flood
Map 6-1	Floodplains in the City of Santa Fe Springs	Section 6: Flood
Map 6-2	Santa Fe Springs Dam Failure Inundation	Section 6: Flood
Table 6-3:	Dam Failures in Southern California	Section 6: Flood
Photo 6-1	Baldwin Hills Dam	Section 6: Flood

Note: The maps in this plan were provided by the City of Santa Fe Springs or from public Internet-sourced maps. Care was taken in the creation of these maps, but they are provided "as is". The City cannot accept any responsibility for any errors, omissions or positional accuracy, and therefore, there are no warranties that accompany these products (the maps). Although information from land surveys may have been used in the creation of these products, in no way does this product represent or constitute a land survey. Users are cautioned to field verify information on this product before making any decisions.

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Part I: Mitigation Actions

City of Santa Fe Springs, adopted October 11, 2004
City of Santa Fe Springs Resolution No. 9017, adopt modifications October 12, 2006
Executive Summary
Attachment 1: Mitigation Actions Matrix
Section 1: Introduction
Attachment 1: Ranking Your Hazards
Section 2: Plan Maintenance Section

Part II: Hazard Analysis

Section 3: Community Profile
Section 4: Risk Assessment
Section 5: Earthquake
Section 6: Flooding

Part III: Resources

Appendix A: Plan Resource Directory
Appendix B: Public Participation
Appendix C: Benefit/Cost Analysis
Appendix D: List of Acronyms
Appendix E: Glossary

RESOLUTION NO. 9017

A RESOLUTION OF THE CITY OF
SANTA FE SPRINGS TO ADOPT MODIFICATIONS
TO THE CITY'S NATURAL HAZARDS
MITIGATION PLAN

WHEREAS, the federal Disaster Management Act of 2000 (DMA 2000), which amended the Robert T. Stafford Disaster Relief and Emergency Services Act, requires every local, county and state government to have an approved Natural Hazards Mitigation Plan ("Plan") by November 1, 2004 in order to be eligible for pre- and post-disaster grants and funding; and

WHEREAS, Santa Fe Springs' Plan focuses on potential impacts of earthquakes and floods and includes an assessment of these natural hazards, a plan to mitigate them, and methods of monitoring, evaluating, and updating the Plan at least every five years.

WHEREAS, the Federal Emergency Management Agency (FEMA) and the State Office of Emergency Services (OES) have reviewed the City's Natural Hazards Mitigation Plan and is requesting minor modification to the existing plan.

THE CITY COUNCIL OF THE CITY OF SANTA FE SPRINGS DOES RESOLVE AS FOLLOWS:

SECTION 1. The Natural Hazards Mitigation Plan is hereby amended.

SECTION 2. Authorization is granted to the City Manager to amend and update the Plan.

SECTION 3. The City Clerk shall certify to the passage and adoption hereof.

APPROVED AND ADOPTED this 12th day of October 2006.

JOSEPH D. SERRANO, Mayor

ATTEST:

BARBARA EARL
City Clerk

City of Santa Fe Springs
11710 Telegraph Road • CA • 90670-3679 • (562) 868-0511 • Fax (562) 868-7112 • www.santafesprings.org

State of California)
County of Los Angeles)ss
City of Santa Fe Springs)

I, Barbara Earl, City Clerk of the City of Santa Fe Springs, do hereby certify that the attached document is a true and exact copy of Resolution No. 9017 adopted by the City Council on October 12, 2006.

Dated this 16th day of October, 2006

Barbara Earl
City Clerk

(Seal)

Joseph D. Serrano, Sr., Mayor • Ronald S. Kernes, Mayor Pro Tem
City Council
Louie González • Betty Putnam • Gustavo R. Velasco
City Manager
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Executive Summary: Hazard Mitigation Action Plan

The City of Santa Fe Springs Natural Hazards Mitigation Plan includes resources and information to assist City residents, public and private sector organizations, and others interested in participating in planning for natural hazards. The mitigation plan provides a list of activities that may assist the City of Santa Fe Springs in reducing risk and preventing loss from future natural hazard events. The action items address multi-hazard issues, as well as activities for earthquakes and flooding.

How is the Plan Organized?

The Mitigation Plan contains a Mitigation Action Matrix, background on the purpose and methodology used to develop the mitigation plan, a plan maintenance section, a profile of City of Santa Fe Springs, sections on two natural hazards that might occur within the City, and a number of appendices. All of the sections are described in detail below.

Who Participated in Developing the Plan?

The City of Santa Fe Springs Natural Hazards Mitigation Action Plan is the result of a collaborative planning effort between City of Santa Fe Springs, City of Whittier, Whittier City School District, Whittier Union High School District, East Whittier City School District, Little Lake City School District, citizens, public agencies, non-profit organizations, the private sector, and regional and state organizations. Public participation played a key role in development of goals and action items. A Multi-Jurisdictional Planning Team guided the process of developing the plan.

The Multi-Jurisdictional Planning Team was comprised of representatives from:

City of Santa Fe Springs – Fernando Tarin, Director of Police Services
City of Santa Fe Springs – Neal Welland, Fire Chief
City of Santa Fe Springs – Bryan Collins, Administrative Public Safety Officer
City of Santa Fe Springs – Cuong Nguyen, Associate Planner
City of Santa Fe Springs - Julie Herrera, Public Relations Specialist
City of Santa Fe Springs – Tony Olmos, Principal Civil Engineer
City of Whittier - Ann-Marie Hayashi, Emergency Services Assistant
City of Whittier – Nancy Mendez, Assistant City Manager
City of Whittier – David Muchizuki, Director of Public Works
City of Whittier – Don Dooley, Planning Services Manager
East Whittier City School District – Steve Ritter, Assistant Superintendent

East Whittier City School District – Lee Bean, Director of Facilities, Maintenance and Operations
Whittier City School District – Bob Mazzeo, Director of Business Projects
Little Lake City School District – Maureen Evans, Asst. Superintendent – Business Services
Whittier Union High School District – Paul Muschetto, Associate Superintendent
Emergency Planning Consultants – Carolyn J. Harshman, President

In addition, the City of Santa Fe Springs established a Working Group that assist with the development of the Plan and shared local expertise to ensure its comprehensiveness.

The Santa Fe Springs Working Group was comprised of the following individuals:

City of Santa Fe Springs – Fernando Tarin, Director of Police Services
City of Santa Fe Springs – Neal Welland, Fire Chief
City of Santa Fe Springs – Don Jensen, Director of Public Works
City of Santa Fe Springs – Paul Ashworth, Assistant Director of Planning and Development
City of Santa Fe Springs – Bryan Collins, Administrative Public Safety Officer
City of Santa Fe Springs – Cuong Nguyen, Associate Planner
City of Santa Fe Springs – Julie Herrera, Public Relations Specialist

What is the Plan Mission?
The mission of the Natural Hazards Mitigation Plan is to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural hazards. This can be achieved by increasing public awareness, documenting the resources for risk reduction and loss-prevention, and identifying activities to guide the City towards becoming a Disaster Resistant Community.

What are the Plan Goals?
The plan goals describe the overall direction that City of Santa Fe Springs agencies, organizations, and citizens can take to work toward mitigating risk from natural hazards. The goals are stepping-stones between the broad direction of the mission statement and the specific recommendations outlined in the mitigation Action Matrix (Attachment 1).

Protect Life and Property

Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to losses from natural hazards.

Reduce losses and repetitive damages for chronic hazard events while promoting insurance coverage for catastrophic hazards.

Improve hazard assessment information to make recommendations for discouraging new development in high hazard areas and encouraging preventative

measures for existing development in areas vulnerable to natural hazards.

Public Awareness

Develop and implement education and outreach programs to increase public awareness of the risks associated with natural hazards.

Provide information on tools; partnership opportunities, and funding resources to assist in implementing mitigation activities.

Natural Systems

Balance natural resource management, and land use planning with natural hazard mitigation to protect life, property, and the environment.

Preserve, rehabilitate, and enhance natural systems to serve natural hazard mitigation functions.

Partnerships and Implementation

Strengthen communication and coordinate participation among and within public agencies, citizens, non-profit organizations, business, and industry to gain a vested interest in implementation.

Encourage leadership within public and private sector organizations to prioritize and implement local and regional hazard mitigation activities.

Emergency Services

Establish policy to ensure mitigation projects for critical facilities, services, and infrastructure.

Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, business, and industry.

Coordinate and integrate natural hazard mitigation activities, where appropriate, with emergency operations plans and procedures.

How are the Action Items Organized?

The action items are a listing of activities in which City agencies and citizens can be engaged to reduce risk. Each action item includes the assigned coordination organization and an estimate of the timeline for implementation (See Attachment 1: Mitigation Actions Matrix).

The action items are organized within the Mitigation Actions Matrix, which lists all of the multi-hazard and hazard-specific action items. The action items are prioritized by category: the highest priority items are categorized as multi-hazard, next priority are the earthquake items and lastly, the flooding items. Data collection and research and the public participation process resulted in the development of these action items (see

Appendix B: Public Participation). The Matrix includes the following information for each action item:

Coordinating Organization. The coordinating organization is the public agency with regulatory responsibility to address natural hazards, or that is willing and able to organize resources, find appropriate funding, or oversee activity implementation, monitoring, and evaluation. Coordinating organizations may include local, county, or regional agencies that are capable of or responsible for implementing activities and programs.

Timeline. Action items include both short and long-term activities. Each action item includes an estimate of the timeline for implementation.

Plan Goals Addressed. The plan goals addressed by each action item are included as a way to monitor and evaluate how well the mitigation plan is achieving its goals once implementation begins. The plan goals are organized into the following five areas:

Protect Life and Property
Public Awareness
Natural Systems
Partnerships and Implementation
Emergency Services

How Will the Plan be Implemented, Monitored, and Evaluated?

The Plan Maintenance Section of this document details the formal process that will ensure that the City of Santa Fe Springs Natural Hazards Mitigation Plan remains an active and relevant document. The plan maintenance process includes a schedule for monitoring and evaluating the Plan annually and producing a plan revision every five years. This section describes how the City will integrate public participation throughout the plan maintenance process. Finally, this section includes an explanation of how the City of Santa Fe Springs government intends to incorporate the mitigation strategies outlined in this Plan into existing planning mechanisms such as the City's General Plan, Capital Improvement Plans, and Building & Safety Codes.

Plan Adoption

Adoption of the Natural Hazard Mitigation Plan by the local jurisdiction's governing body is one of the prime requirements for approval of the Plan. Once the Plan is completed, the City Council will be responsible for adopting the City of Santa Fe Springs Natural Hazards Mitigation Plan. The local agency governing body has the responsibility and authority to promote sound public policy regarding natural hazards. The City Council will be requested to grant authority to the City Manager to amend and update the Plan as it is revised to meet changes in the natural hazard risks and exposures in the community. The approved Natural Hazard Mitigation Plan will be significant to the

future growth and development of the community.

Coordinating Body

A City of Santa Fe Springs Hazard Mitigation Working Group will be responsible for coordinating implementation of Plan action items and undertaking the formal review process. The City Manager will assign representatives from City agencies, including, but not limited to, the current Hazard Mitigation Planning Team members representing the City of Santa Fe Springs.

Convener

The City Council will adopt the Natural Hazards Mitigation Plan, and the Hazard Mitigation Working Group will take responsibility for plan implementation. The Director of Police Services will serve as a convener to facilitate the Hazard Mitigation Working Group meetings, and will assign tasks such as updating and presenting the Plan to the members of the committee. Plan implementation and evaluation will be a shared responsibility among all of the Hazard Mitigation Advisory Committee

Implementation through Existing Programs

The City of Santa Fe Springs addresses statewide planning goals and legislative requirements through its General Plan, Capital Improvement Plans, and City Building & Safety Codes. The Natural Hazards Mitigation Plan provides a series of recommendations that are closely related to the goals and objectives of these existing planning programs. City of Santa Fe Springs will have the opportunity to implement recommended mitigation action items through existing programs and procedures.

Economic Analysis of Mitigation Projects

The Federal Emergency Management Agency's (FEMA) approaches to identify costs and benefits associated with natural hazard mitigation strategies or projects fall into two general categories: benefit/cost analysis and cost-effectiveness analysis. Conducting benefit/cost analysis for a mitigation activity can assist communities in determining whether a project is worth undertaking now, in order to avoid disaster-related damages later. Cost-effectiveness analysis evaluates how best to spend a given amount of money to achieve a specific goal. Determining the economic feasibility of mitigating natural hazards can provide decision makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects.

Formal Review Process

The City of Santa Fe Springs Natural Hazards Mitigation Plan will be evaluated on an annual basis to determine the effectiveness of programs, and to reflect changes in land development or programs that may affect mitigation priorities. The evaluation process includes a firm schedule and timeline, and identifies the local agencies and organizations

participating in plan evaluation. The convener will be responsible for contacting the Hazard Mitigation Advisory Committee members and organizing the annual meeting. Group members will be responsible for monitoring and evaluating the progress of the mitigation strategies in the Plan.

Continued Public Involvement

The City of Santa Fe Springs is dedicated to involving the public directly in the continual review and updates of the Hazard Mitigation Plan. Copies of the plan will be catalogued and made available at City Hall, Planning & Development Department, Police Services, and at all City operated public libraries. The existence and location of these copies will be publicized in various community newsletters. The plan also includes the address and the phone number of the City's Planning and Development Department, responsible for keeping track of public comments on the Plan. In addition, copies of the Plan and any proposed changes will be posted on the City's website. This site will also contain an email address and phone number to which people can direct their comments and concerns.

City of Santa Fe Springs
Mitigation Actions Matrix

Natural Hazard	Action Item	Coordinating Organization	Timeline	Plan Goals Addressed				
				Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services
Multi-Hazard Action Items								
MH #1-1	Establish a formal role for the City Natural Hazards Mitigation Committee to develop a sustainable process for implementing, monitoring, and evaluating City wide mitigation activities.	Hazard Mitigation Working Group	Ongoing				X	
MH #1-2	Identify, improve, and sustain collaborative programs focusing on the real estate and insurance industries, public and private sector organizations, and individuals to avoid activity that increases risk to natural hazards.	Hazard Mitigation Working Group, Chamber of Commerce	Ongoing	X	X	X	X	X
MH #1-3	Develop inventories of at-risk buildings and infrastructure and prioritize mitigation projects.	Hazard Mitigation Working Group	1-5 years	X			X	X

City of Santa Fe Springs
Mitigation Actions Matrix

Natural Hazard	Action Item	Coordinating Organization	Timeline	Plan Goals Addressed				
				Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services
MH #1-4	Strengthen emergency services preparedness and response by linking emergency services with natural hazard mitigation programs, and enhancing public education on a regional scale.	Hazard Mitigation Working Group, Fire, Police, Public Works, Planning	Ongoing	X	X	X	X	X
MH #1-5	Develop, enhance, and implement education programs aimed at mitigating natural hazards, and reducing the risk to citizens, public agencies, private property owners, businesses, and schools.	Hazard Mitigation Working Group, Chamber of Commerce	Ongoing	X	X	X	X	X
MH #1-6	Integrate the goals and action items from the City of Santa Fe Springs Natural Hazard Mitigation Plan into existing regulatory documents and programs, where appropriate.	Hazard Mitigation Working Group	1-5 years	X			X	X

City of Santa Fe Springs
Mitigation Actions Matrix

Natural Hazard	Action Item	Coordinating Organization	Timeline	Plan Goals Addressed				
				Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services
MH #1-7	Coordinate and integrate natural hazard mitigation activities, where appropriate, with emergency operations plans and procedures.	Hazard Mitigation Working Group, Police Service Department	1-5 years	X				X
MH #1-8	Recommend revisions to requirements for development within the floodplain, where appropriate.	Hazard Mitigation Working Group, Building Department, Planning Department	1-5 years	X				X
MH #1-9	Develop public and private partnerships to foster natural hazard mitigation program coordination and collaboration in the City of Santa Fe Springs.	Hazard Mitigation Working Group	1-5 years	X	X		X	X
MH #1-10	Enhance data and mapping for Floodplain information within the City, and identify and map flood-prone areas outside of designated floodplains.	Hazard Mitigation Working Group, Technology Committee	5-10 years	X				

City of Santa Fe Springs
Mitigation Actions Matrix

Natural Hazard	Action Item	Coordinating Organization	Timeline	Plan Goals Addressed				
				Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services
MH #1-11	Establish clear roles for participants, meeting regularly to pursue and evaluate implementation of mitigation strategies.	Hazard Mitigation Working Group	1-5 years	X			X	X
MH #1-12	Encourage the development of unifying organizations to ensure communication and dissemination of natural hazard mitigation information.	Hazard Mitigation Working Group	1-5 years				X	X
MH #1-13	Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, business, and industry.	Hazard Mitigation Working Group, Police Service Department	1-5 years	X	X		X	X
MH #1-14	Retrofit of highway bridges/tunnels.	Hazard Mitigation Working Group, Public Works Department	10-15 years	X				X
MH #1-15	Equip existing buildings so they can be used as shelters.	Hazard Mitigation Working Group, Police Services	Ongoing	X			X	X

City of Santa Fe Springs
Mitigation Actions Matrix

Natural Hazard	Action Item	Coordinating Organization	Timeline	Plan Goals Addressed				
				Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services
		Department						
MH #1-16	Install and improve back-up power in critical facilities.	Hazard Mitigation Working Group	Ongoing	X				X
MH #1-17	Develop updates for the Natural Hazards Mitigation Action Plan based on new information.	Hazard Mitigation Working Group	Ongoing	X	X		X	X
MH #1-18	Integrate new earthquake hazard mapping data for the City of Santa Fe Springs and identify potential at-risk areas.	Police Services, Planning Department, Public Works Department	X	X				X
MH #1-19	Identify which types of repairs and/or reconstruction, if any, would be exempt from local codes, particularly zoning and land development codes.	Police Services, Planning Department, Public Works Department	As needed	X				X
MH #1-20	Determine which structures and/or facilities that will not be allowed to be repaired/reconstructed.	Hazard Mitigation Working Group, Planning Department, and Building Department	6-10 years	X	X		X	X

City of Santa Fe Springs
Mitigation Actions Matrix

Natural Hazard	Action Item	Coordinating Organization	Timeline	Plan Goals Addressed				
				Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services
MH #1-21	Purchase a complete GIS/GPS setup and provide training on said setup to all pertinent community personnel.	Hazard Mitigation Working Group, Technical Committee	1-5 years	X				X
MH #1-22	Provide technical assistance to help the community develop disaster management operations capabilities.	Hazard Mitigation Working Group, Police Services Department	Ongoing	X	X		X	X
MH #1-23	Conduct interim planning to locate, set up, and manage temporary sites where business and government functions can continue their operations during recovery.	Hazard Mitigation Working Group	1-5 years	X			X	X
MH #1-24	Conduct site plan review to determine new constructions, repair and reconstruction of damaged structures.	Hazard Mitigation Working Group, Planning Department, and Public Works Department	1-5 years	X				
MH #1-25	Identify and pursue funding opportunities to develop and implement local mitigation activities.	Hazard Mitigation Working Group, Fire, Police, Public Works, Planning	1-10 years	X			X	

City of Santa Fe Springs
Mitigation Actions Matrix

Natural Hazard	Action Item	Coordinating Organization	Timeline	Plan Goals Addressed				
				Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services
MH #1-26	Record and maintain all tax parcel information and floodplain locations in a GIS system in order to build the community's capability to generate maps when needed.	Hazard Mitigation Working Group, Technology Committee	1-5 years				X	
MH #1-27	Provide technical assistance to help the community develop disaster management operations capabilities.	Hazard Mitigation Working Group, Police Services Department	Ongoing	X	X		X	X
MH #1-28	Record and maintain all tax parcel information and floodplain locations in a GIS system in order to build the community's capability to generate maps when needed.	Hazard Mitigation Working Group, Technology Committee	1-5 years	X				X
MH #1-29	Engage the private sector to contribute to disaster preparedness and loss reduction at the local level.	Hazard Mitigation Working Group, City Managers Office	1-5 years				X	
MH #1-30	Promote public education to increase awareness of hazards and opportunities for mitigation.	Public Relations, Police Services, Fire Department	Ongoing	X			X	

City of Santa Fe Springs
Mitigation Actions Matrix

Natural Hazard	Action Item	Coordinating Organization	Timeline	Plan Goals Addressed				
				Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services
MH #1-31	Encourage interested individuals to participate in hazard mitigation planning and training activities.	Public Relations, Police Services, Fire Department	Ongoing	X	X		X	
MH #1-32	Promote business mitigation awareness to increase knowledge of public facilities managers.	Public Relations, Police Services, Fire Department	Ongoing	X	X		X	
MH #1-33	Monitor and publicize the effectiveness of mitigation initiatives implemented in the community.	Public Relations, Police Services, Fire Department	1-5 years	X	X			
MH #1-34	Educate the public about procedures for reporting human-caused incidents.	Public Relations, Police Services, Fire Department	Ongoing	X	X		X	
MH #1-35	Educate the public about emergency sheltering and evacuation procedures.	Public Relations, Police Services, Fire Department	Ongoing	X	X		X	
MH #1-36	Manually disperse information about the community's 'state of emergency' ordinance and the relevant emergency response	Public Relations, Police Services, Fire Department	Ongoing	X	X		X	

City of Santa Fe Springs
Mitigation Actions Matrix

Natural Hazard	Action Item	Coordinating Organization	Timeline	Plan Goals Addressed				
				Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services
	actions the public can take.							
MH #1-37	Create displays for children's programs that teach safety. Examples of information to be used would be similar to that on the FEMA for Kids CD, the Sparky Fire Safety Program, and/or the American Red Cross's Masters of Disasters program. These displays can be used in conjunction with "Safetyville", the library's children's section, etc.	Public Relations, Police Services, Fire Department	1-5 years	X	X		X	
MH #1-38	The American Red Cross will hold a variety of courses, including: CPR, Basic First Aid, Introduction to Disaster Services, Mass Care, Shelter Operations, babysitting, Healthcare Provider, pet first-aid and others at the Red Cross Office and at other locations throughout the	Public Relations, Police Services, Fire Department	Ongoing	X	X		X	

City of Santa Fe Springs
Mitigation Actions Matrix

Natural Hazard	Action Item	Coordinating Organization	Timeline	Plan Goals Addressed				
				Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services
	City.							
MH #1-39	Ensure that the Red Cross disaster courses are held on a frequent basis.	Police Services, Fire Department, Chamber of Commerce	Ongoing	X	X		X	
MH #1-40	Provide business continuity workshops for business owners to learn the importance of disaster mitigation and how to create an emergency operations plan for their businesses.	Police Services, Fire Department, Chamber of Commerce	Ongoing	X	X		X	X
MH #1-41	Work with the American Red Cross, Board of Education, fire departments and churches towards upgrading all shelter resources.	Police Services, Fire Department, Chamber of Commerce	Ongoing	X	X		X	
MH #1-42	Identify and prioritize needs for additional shelter supplies to include but not limited to additional cots, blankets and shelter kits.	Police Services, Fire Department, Chamber of Commerce	Ongoing	X	X		X	

City of Santa Fe Springs
Mitigation Actions Matrix

Natural Hazard	Action Item	Coordinating Organization	Timeline	Plan Goals Addressed				
				Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services
MH #1-43	Develop and promote a communications plan to recruit and train more volunteers for sheltering assistance.	Police Services, Fire Department, Chamber of Commerce	Ongoing	X	X		X	
MH #1-44	Conduct annual tabletop disaster exercises with local law enforcement, emergency managers, town and City officials, the LEPC and other disaster response agencies.	Police Services, Fire Department, Chamber of Commerce	Ongoing	X	X		X	X
MH #1-45	Identify opportunities for partnering with citizens, private contractors, and other jurisdictions to increase availability of equipment and manpower for efficiency of response efforts.	Hazard Mitigation Working Group, Fire, Police, Public Works, Planning	1-5 years	X	X		X	X

City of Santa Fe Springs
Mitigation Actions Matrix

Natural Hazard	Action Item	Coordinating Organization	Timeline	Plan Goals Addressed				
				Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services
MH #1-46	Work with Community Planning Organizations (CPO's) and other neighborhood groups to establish community response teams.	Hazard Mitigation Working Group, Fire, Police, Public Works, Planning	1-5 years	X			X	
MH #1-47	Familiarize public officials of requirements regarding public assistance for disaster response.	Hazard Mitigation Working Group, City Managers Office	Ongoing		X		X	
Earthquake Action Items								
EQ #2-1	Integrate new earthquake hazard mapping data for Santa Fe Springs and identify potential risk areas.	Hazard Mitigation Working Group, Technology Committee	Ongoing	X			X	X
EQ #2-2	Develop and incorporate earthquake evacuation routes into appropriate planning documents	Hazard Mitigation Working Group, Fire, Police, Public Works, Planning	1-5 years					X
EQ #2-3	Identify funding sources for structural and nonstructural retrofitting of structures that are identified as seismically vulnerable.	Hazard Mitigation Working Group	Ongoing	X	X		X	X

City of Santa Fe Springs
Mitigation Actions Matrix

Natural Hazard	Action Item	Coordinating Organization	Timeline	Plan Goals Addressed				
				Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services
EQ #2-4	Encourage seismic strength evaluations of critical facilities in Santa Fe Springs to identify vulnerabilities for mitigation of schools and universities, public infrastructure, and critical facilities to meet current seismic standards.	Hazard Mitigation Working Group, Chamber of Commerce, School District	1-5 years	X	X		X	X
EQ #2-5	Encourage reduction of nonstructural and structural earthquake hazards in homes, schools, businesses, and government offices.	Hazard Mitigation Working Group, Chamber of Commerce, Public Works, Planning, School District	Ongoing	X	X		X	X
Flood Action Items								
FLD #3-1	Analyze each repetitive flood property within Santa Fe Springs and identify feasible mitigation options.	Hazard Mitigation Working Group, Public Works, Planning	1-5 years	X			X	X
FLD #3-2	Recommend revisions to requirements for development within the floodplain, where appropriate.	Hazard Mitigation Working Group, Public Works, Planning	1-5 years	X			X	X

City of Santa Fe Springs
Mitigation Actions Matrix

Natural Hazard	Action Item	Coordinating Organization	Timeline	Plan Goals Addressed				
				Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services
FLD #3-3	Develop better flood warning systems.	Hazard Mitigation Working Group, Public Works, Fire, Police, Los Angeles Flood Control District	1-5 years	X	X		X	X
FLD #3-4	Enhance data and mapping for floodplain information within Santa Fe Springs and identify and map flood-prone areas outside of designated floodplains.	Hazard Mitigation Working Group, Public Works, Planning, Technology Committee, Housing and Urban Development	1-5 years	X	X		X	X

Section 1: Introduction

Throughout its history, the residents of City of Santa Fe Springs have dealt with the various natural hazards affecting the area. Photos, journal entries, and newspapers show that the residents of the area dealt with earthquakes and flooding.

The Hazard Mitigation Planning Team considered a range of natural hazards facing the region including: Earthquakes, Tsunamis, Flooding, Drought, Windstorms, Earth Movement, Liquefaction, Dam Failure, and Wildfire. The "Ranking Your Hazards" handout (Attachment 1, page 1-12) guide the team in prioritizing the natural hazards with the highest probability of significantly impacting the City of Santa Fe Springs.

At its meeting of April 5, 2004, the Planning Team agreed that any hazards receiving a Team average score of "3" or higher would be included in the Hazard Mitigation Plan. Utilizing that ranking technique, the Team identified Earthquakes and Flooding as the most prominent hazard facing the community.

Although there were fewer people in the area, the natural hazards adversely affected the lives of those who depended on the land and climate conditions for food and welfare. As the population of the City continues to increase, the exposure to natural hazards creates an even higher risk than previously experienced.

The City of Santa Fe Springs is the 20th most populous City in Los Angeles County, and offers the benefits of living in a Mediterranean-type of climate. The City is characterized by the unique and attractive landscape that makes the area so popular. However, the potential impacts of natural hazards associated with the terrain make the environment and population vulnerable to natural disasters.

The City is subject to earthquakes and flooding. It is impossible to predict exactly when these disasters will occur, or the extent to which they will affect the City. However, with careful planning and collaboration among public agencies, private sector organizations, and citizens within the community, it is possible to minimize the losses that can result from these natural disasters.

In 1987, the Whittier Narrows Earthquake caused 8 fatalities and approximately $358 million in property damage to nearby City of Whittier. The City of Santa Fe Springs had no fatalities and minimal damage, approximately $55,000 in property damage. The initial earthquake on October 1, 1978 had a magnitude that was first reported to be 6.1, but was later downgraded to 5.9. A major aftershock causing more damage occurred 3 days later on October 4, 1978, with a magnitude of 5.5. Los Angeles County reports estimate the both earthquakes damaged over 9,100 residential and business structures throughout the county.

Although the City of Santa Fe Springs has experienced earthquakes in the past, the City has never proclaimed a local disaster.

The City of Santa Fe Springs most recently experienced destruction due to flooding in 1995, impacting various areas city-wide. Storms caused flooding in various parts of the City and in addition to storm damage; there were large volumes of debris. The City of Santa Fe Springs did not seek state or federal funding for damages to public facilities.

Why Develop a Mitigation Plan?

As the cost of damage from natural disasters continues to increase, the community realizes the importance of identifying effective ways to reduce vulnerability to disasters. Natural hazard mitigation plans assist communities in reducing risk from natural hazards by identifying resources, information, and strategies for risk reduction, while helping to guide and coordinate mitigation activities throughout the City.

The plan provides a set of action items to reduce risk from natural hazards through education and outreach programs and to foster the development of partnerships, and implementation of preventative activities such as land use programs that restrict and control development in high risk areas subject to damage from natural hazards.

The resources and information within the Mitigation Plan:

(1) establish a basis for coordination and collaboration among agencies and the public in City of Santa Fe Springs;
(2) identify and prioritize future mitigation projects; and
(3) assist in meeting the requirements of federal assistance programs.

The mitigation plan works in conjunction with other City plans, including the City's General Plan and Multi-Hazard Functional Plan.

Whom Does the Mitigation Plan Affect?

The Natural Hazards Mitigation Plan affects the entire city. Map 1-1 shows major roads in the City of Santa Fe Springs. This plan provides a framework for planning for natural hazards. The resources and background information in the plan is applicable City-wide, and the goals and recommendations can lay groundwork for other local mitigation plans and partnerships.

Map 1-1: Base Map of City of Santa Fe Springs
(Source: General Plan)



Natural Hazard Land Use Policy in California

Planning for natural hazards should be an integral element of any city's land use planning program. All California cities and counties have General Plans and the implementing ordinances that are required to comply with the statewide planning regulations.

The continuing challenge faced by local officials and state government is to keep the network of local plans effective in responding to the changing conditions and needs of California's diverse communities, particularly in light of the very active seismic region in which we live.

This is particularly true in the case of planning for natural hazards where communities must balance development pressures with detailed information on the nature and extent of hazards.

The planning for natural hazards calls for local plans to include inventories, policies, and ordinances to guide the development in hazard areas. These inventories should include the compendium of hazards facing the community, the built environment at risk, the personal property that may be damaged by hazard events and most of all, the people who live in the shadow of these hazards.

Support for Natural Hazard Mitigation

All mitigation is local, and the primary responsibility for development and implementation of risk reduction strategies and policies lies with local jurisdictions. Local jurisdictions, however, are not alone. Partners and resources exist at the regional, state and federal levels. Numerous California state agencies have a role in natural hazards and natural hazard mitigation. Some of the key agencies include:

- The Governor's Office of Emergency Services (OES) is responsible for disaster mitigation, preparedness, response, recovery, and the administration of federal funds after a major disaster declaration.

- The Southern California Earthquake Center (SCEC) gathers information about earthquakes, integrates this information on earthquake phenomena, and communicates this to end-users and the general public to increase earthquake awareness, reduce economic losses, and save lives.

- The California Division of Forestry (CDF) is responsible for all aspects of wild-land fire protection on private and state land and administers forest practices regulations, including landslide mitigation, on non-federal lands.

- The California Division of Mines and Geology (DMG) is responsible for geologic hazard characterization, public education, the development of partnerships aimed at reducing risk, and exceptions (based on science-based refinement of tsunami inundation zone delineation) to state mandated tsunami zone restrictions.

- The California Division of Water Resources (DWR) plans, designs, constructs, operates, and maintains the State Water Project; regulates dams; provides flood protection and assists in emergency management. It also educates the public and serves local water needs by providing technical assistance.

Plan Methodology

Information in the Mitigation Plan is based on research from a variety of sources. Staff from the City of Santa Fe Springs conducted data research and analysis, facilitated steering committee meetings and public workshops, and developed the final mitigation plan. The research methods and various contributions to the plan include:

Input from the Planning Team:

The Multi-Jurisdictional Planning Team convened four times to guide development of the Mitigation Plan. The Team played an integral role in developing the mission, goals, and action items for the Mitigation Plan. The Team consisted of representatives of six local government entities, including:

City of Santa Fe Springs
City of Whittier
East Whittier City School District
Little Lake City School District
Whittier Union High School District
Whittier City School District

Stakeholder Reviews:
City Staff distributed copies of the Mitigation Plan draft or notices inviting comments on the Plan Draft to 38 agencies and/or specialists from organizations interested in natural hazards planning. The data and support gained from the review process was very valuable to the overall planning effort. A complete listing of all stakeholders (reviewers) is located in Appendix B: Public Participation.

State and federal guidelines and requirements for mitigation plans:

Following are the Federal requirements for approval of a Natural Hazard Mitigation Plan:

- Open public involvement, with public meetings that introduce the process and project requirements.
- The public must be afforded opportunities for involvement in: identifying and assessing risk, drafting a plan, and public involvement in approval stages of the plan.
- Community cooperation, with opportunity for other local government agencies, the business community, educational institutions, and non-profits to participate in the process.
- Incorporation of local documents, including the local General Plan, the Zoning Ordinance, the Building Codes, and other pertinent documents

The following components must be part of the planning process:

- Complete documentation of the planning process
- A detailed risk assessment on hazard exposures in the community
- A comprehensive mitigation strategy, which describes the goals & objectives, including proposed strategies, programs & actions to avoid long-term vulnerabilities.
- A plan maintenance process, which describes the method and schedule of monitoring, evaluating and updating the plan and integration of the Natural Hazards Mitigation Plan into other planning mechanisms.
- Formal adoption by the City Council.
- Plan Review by both State OES and FEMA

These requirements are spelled out in greater detail in the following plan sections and supporting documentation.

Public participation opportunities were created through use of local media, the City's website, distribution of a natural hazards questionnaire, and the City Council public hearing. In addition, the makeup of a multi-jurisdictional planning team insured a constant exchange of data and input from outside organizations.

Through its consultant, Emergency Planning Consultants, the City had access to numerous existing mitigation plans from around the country, as well as current FEMA hazard mitigation planning standards (386 series) and the State of California Natural Hazards Mitigation Plan Guidance.

Other reference materials consisted of county and city mitigation plans, including:

Clackamas County (Oregon) Natural Hazards Mitigation Plan
Six County (Utah) Association of Governments
Upper Arkansas Area Risk Assessment and Hazard Mitigation Plan
Urbandale-Polk County, Iowa Plan
Hamilton County, Ohio Plan
Natural Hazard Planning Guidebook from Butler County, Ohio

Hazard specific research: City of Santa Fe Springs staff collected data and compiled research on two hazards: earthquakes and flooding. Research materials came from the City General Plan, the City's Threat Assessment contained in the Multi-Hazard Functional Plan, and state agencies including OES and CDF. The City of Santa Fe Springs staff conducted research by referencing historical local newspapers, interviewing long time residents, long time City employees and locating information in historical documents.

The City of Santa Fe Springs staff identified current mitigation activities, resources and programs, and potential action items from research materials and stakeholder interviews.

Public Input:

The City of Santa Fe Springs encouraged public participation and input in the Natural Hazards Mitigation Plan by posting its activities in the media and on the internet. In addition, the City distributed 175 natural hazards questionnaires at the following locations: City Hall, Police Services, and the Library. Citizens were encouraged to review the Plan Draft and participate in the City Council public meetings which was held on October 11, 2004, and October 12, 2006. In addition, the Santa Fe Springs Chamber of Commerce Business Emergency Preparedness Network and the City's Safe Neighborhood Team reviewed the Plan Draft at their October 2004 and October 2006 meetings.

Following is a summary of the public comments gathered during the City Council meeting.

The comments that were communicated at the Council meeting were all positive. Several of those in attendance stated that they had read the "draft" of the NHMP, and that they had obtained a great deal of valuable information. Everyone agreed that this plan would be a useful tool in the mitigation of damage that would be caused if either an earthquake or a flood occurred in the City of Santa Fe Springs.

The Santa Fe Springs City Council unanimously adopted the Santa Fe Springs Hazard Mitigation Plan at its October 11, 2004 and October 12, 2006 public meeting by adopting Resolution No. 9017. The resources and information cited in the mitigation plan provide a strong local perspective and help identify strategies and activities to make City of Santa Fe Springs more disaster resistant. When the City's General Plan is next updated, the Natural Hazard Mitigation Plan will be integrated in the General Plan Safety Element.

How Is the Plan Used?

Each section of the mitigation plan provides information and resources to assist people in understanding the City and the hazard-related issues facing citizens, businesses, and the environment. Combined, the sections of the plan work together to create a document that guides the mission to reduce risk and prevent loss from future natural hazard events.

The structure of the plan enables people to use a section of interest to them. It also allows City government to review and update sections when new data becomes available. The ability to update individual sections of the mitigation plan places less of a financial burden on the City. Decision-makers can allocate funding and staff resources to selected pieces in need of review, thereby avoiding a full update, which can be costly and time-consuming. New data can be easily incorporated, resulting in a natural hazards mitigation plan that evolves and remains current and relevant to the City of Santa Fe Springs.

The mitigation plan is organized into three parts. Part I contains an executive summary,

Mitigation Actions Matrix, introduction, and plan maintenance section. Part II contains a City profile, risk assessment, and hazard-specific sections. Part III contains resource materials. Each section of the plan is described below.

Part I: Mitigation Action Plan

Executive Summary:
The Mitigation Action Plan provides an overview of the mitigation plan mission, goals, and action items.

Attachment 1: Mitigation Actions Matrix
The Matrix identifies the priorities, action description, responsible organization, and timeline for each mitigation action item.

Section 1: Introduction

The Introduction describes the background and purpose of developing the mitigation plan for the City of Santa Fe Springs.

Section 2: Plan Maintenance Section

This section provides information on plan implementation, monitoring and evaluation.

Part II: Hazard Analysis

Section 3: Community Profile

This section presents the history, geography, demographics, and socioeconomics of the City of Santa Fe Springs. It serves as a tool to provide an historical perspective of natural hazards in the City.

Section 4: Risk Assessment

This section provides information on hazard identification, vulnerability and risk associated with natural hazards in the City of Santa Fe Springs.

Sections 5-6: Hazard Specific Sections

Hazard-Specific Sections on the two chronic hazards is addressed in this plan. Chronic hazards occur with some regularity and may be predicted through historic evidence and scientific methods. The chronic hazards addressed in the plan include:

Section 5: Earthquake
Section 6: Flooding

Each of the hazard-specific sections includes information on the history, hazard causes and characteristics, hazard assessment, and local, state, and national resources.

Part III: Resources

The plan appendices are designed to provide users of the City of Santa Fe Springs Natural Hazards Mitigation Plan with additional information to assist them in understanding the contents of the mitigation plan, and potential resources to assist them with implementation.

Appendix A: Plan Resource Directory

The resource directory includes City, regional, state, and national resources and programs that may be of technical and/or financial assistance to the City of Santa Fe Springs during plan implementation.

Appendix B: Public Participation

This appendix includes specific information on the various public processes used during development of the plan.

Appendix C: Benefit/Cost Analysis

This section describes FEMA's requirements for benefit/cost analysis in natural hazards mitigation, as well as various approaches for conducting economic analysis of proposed mitigation activities.

Appendix D: List of Acronyms

This section provides a list of acronyms for City, regional, state, and federal agencies and organizations that may be referred to within the City of Santa Fe Springs Natural Hazards Mitigation Plan.

Appendix E: Glossary

This section provides a glossary of terms used throughout the plan.

Attachment 1

Ranking Your Hazards

It is important to keep in mind that your rankings should be based on a hazard event that would overwhelm your jurisdiction's ability to respond effectively.

For each hazard listed assign a score. Place a number in the appropriate box.

Hazard Scoring	
1	An event of that magnitude is not likely to occur
2	There is a slight chance that an event of that magnitude will occur
3	It is possible that an event of that magnitude will occur
4	An event of that magnitude has occurred here in the past and is likely to occur again
5	There is a high probability that an event of that magnitude will occur

Identify any additional hazards for the jurisdiction at the end of the list labeled as "Other Hazard."

Hazard	*Score*
Flooding	
Wildfire	
Earthquakes	
Windstorm	
Earth Movement (Landslide/Debris Flow)	
Tsunami	
Other Hazard _____	
Other Hazard _____	
Other Hazard _____	
Other Hazard _____	
Other Hazard _____	
Other Hazard _____	
Other Hazard _____	

Section 2:

Plan Maintenance

The Plan Maintenance Section of this document details the formal process that will ensure that the Natural Hazards Mitigation Plan remains an active and relevant document. The plan maintenance process includes a schedule for monitoring and evaluating the Plan annually and producing a plan revision every five years. This section describes how the City will integrate public participation throughout the plan maintenance process. Finally, this Section includes an explanation of how the City of Santa Fe Springs government intends to incorporate the mitigation strategies outlined in this Plan into existing planning mechanisms such as the City's General Plan, Capital Improvement Plans, and Building and Safety Codes.

The City's Natural Hazards Mitigation Plan will be integrated into the General Plan Safety Element the next time the General Plan is updated.

Monitoring and Implementing the Plan

Plan Adoption

The City Council adopted the Natural Hazard Mitigation Plan on October 11, 2004. The Natural Hazard Mitigation Plan was amended on October 12, 2006. A copy of Resolution No. 9017 is included in Appendix B. As the City's governing body, the City Council has the authority to promote sound public policy regarding natural hazards. The adopted plan has been submitted to the State Hazard Mitigation Officer at the Governor's Office of Emergency Services. The Governor's Office of Emergency Services will then submit the plan to the Federal Emergency Management Agency (FEMA) for review. This review will address the federal criteria outlined in FEMA Interim Final Rule 44 CFR Part 201. Upon acceptance by FEMA, the City of Santa Fe Springs will gain eligibility for Hazard Mitigation Grant Program funds.

Coordinating Body

The City's Hazard Mitigation Advisory Committee will be responsible for coordinating implementation of plan action items and undertaking the formal review process. The City Council (or other authority) will assign representatives from City agencies, including, but not limited to, the current Hazard Mitigation Planning Team members. The City has formed a Hazard Mitigation Advisory Committee that consists of members from City of Santa Fe Springs Working Group noted in the Executive Summary.

In order to make this Committee as broad and useful as possible, the City Manager will engage other relevant organizations and agencies in hazard mitigation. Other potential additions to the Hazard Mitigation Advisory Committee could include:

- An elected Official
- Chamber of Commerce representative

- Planning Commission – Chairperson
- Joint Powers Insurance Authority
- Additional City staff
- Local School District representatives

The Hazard Mitigation Advisory Committee will meet no less than bi-annually. Meeting dates will be scheduled once the final Hazard Mitigation Advisory Committee has been established. These meetings will provide an opportunity to discuss the progress of the action items and maintain the partnerships that are essential for the sustainability of the mitigation plan.

Convener

The City Council will adopt the Natural Hazards Mitigation Plan, and the Hazard Mitigation Advisory Committee will take responsibility for plan implementation. The City Manager (or designee Director of Police Services) will serve as a convener to facilitate the Hazard Mitigation Advisory Committee meetings, and will assign tasks such as updating and presenting the Plan to the members of the Committee. Plan implementation and evaluation will be a shared responsibility among all of the Hazard Mitigation Advisory Committee members.

Implementation through Existing Programs

The City addresses statewide planning goals and legislative requirements through its General Plan, Capital Improvement Plans, and City Building and Safety Codes. The Natural Hazards Mitigation Plan provides a series of recommendations - many of which are closely related to the goals and objectives of existing planning programs. The City will have the opportunity to implement recommended mitigation action items through existing programs and procedures.

The City's Building & Safety Division is responsible for administering the Building & Safety Codes. In addition, the Hazard Mitigation Advisory Committee will work with other agencies at the state level to review, develop and ensure Building & Safety Codes that are adequate to mitigate or present damage by natural hazards. This is to ensure that life-safety criteria are met for new construction.

The goals and action items in the mitigation plan may be achieved through activities recommended in the City's Capital Improvement Plans (CIP). Various City departments develop CIP plans, and review them on an annual basis. Upon annual review of the CIPs, the Hazard Mitigation Advisory Committee will work with the City departments to identify action items in the Natural Hazards Mitigation Plan consistent with CIP planning goals and integrate them where appropriate.

Within six months of formal adoption of the Mitigation Plan, the recommendations listed above will be incorporated into the process of existing planning mechanisms at the City level. The meetings of the Hazard Mitigation Advisory Committee will provide an

opportunity for Committee members to report back on the progress made on the integration of mitigation planning elements into the City's planning documents and procedures.

Economic Analysis of Mitigation Projects

At the Hazard Mitigation Advisory Committee's first implementation meeting, the STAPLEE Tool (Plan Maintenance – Attachment1) or some other prioritizing tool will be utilized to prioritize the action items identified in the Mitigation Actions Matrix (Executive Summary – Attachment 1). In addition, appropriate funding sources will be identified for the "top ten" priority action items.

FEMA's approaches to identify the costs and benefits associated with natural hazard mitigation strategies, measures, or projects fall into two general categories: benefit/cost analysis and cost-effectiveness analysis. Conducting benefit/cost analysis for a mitigation activity can assist communities in determining whether a project is worth undertaking now, in order to avoid disaster-related damages later. Cost-effectiveness analysis evaluates how best to spend a given amount of money to achieve a specific goal. Determining the economic feasibility of mitigating natural hazards can provide decision-makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects.

The City of Santa Fe Springs utilized a practical and reasonable economic perspective when formulating the City's mitigation actions. A more thorough cost-benefit analysis would be done at the time of any federal grant application. The Hazard Mitigation Advisory Committee would use a FEMA-approved benefit/cost analysis approach to identify and prioritize mitigation action item. For other projects and funding sources, the Hazard Mitigation Advisory Committee will use other approaches to understand the costs and benefits of each action item and develop a prioritized list. For more information regarding economic analysis of mitigation action items, please see Appendix C: Benefit/Cost Analysis.

Evaluating and Updating the Plan

Formal Review Process

The Natural Hazards Mitigation Plan will be evaluated on an annual basis to determine the effectiveness of programs, and to reflect changes in land development or programs that may affect mitigation priorities. The evaluation process includes a firm schedule and timeline, and identifies the local agencies and organizations participating in plan evaluation. The convener or designee will be responsible for contacting the Hazard Mitigation Advisory Committee members and organizing the annual meeting.

Committee members will be responsible for monitoring and evaluating the progress of the mitigation strategies in the Plan.

The Committee will review the goals and action items to determine their relevance to changing situations in the City, as well as changes in State or Federal policy, and to ensure they are addressing current and expected conditions. The Committee will also review the Risk Assessment portion of the Plan to determine if this information should be updated or modified, given any new available data. The coordinating organizations responsible for the various action items will report on the status of their projects, the success of various implementation processes, difficulties encountered, success of coordination efforts, and which strategies should be revised.

The convener will assign the duty of updating the plan to one or more of the committee members. The designated Committee members will have three months to make appropriate changes to the Plan before submitting it to the Committee members, and presenting it to the City Manager (or other authority). The Hazard Mitigation Advisory Committee will also notify all holders of the final version of the City's Plan when changes have been made. Every five years the updated Plan will be submitted to the State Hazard Mitigation Officer and the Federal Emergency Management Agency for review.

Continued Public Involvement

The City is dedicated to involving the public directly in review and updates of the Natural Hazards Mitigation Plan. The Hazard Mitigation Advisory Committee members are responsible for the annual review and update of the plan.

The public will also have the opportunity to provide feedback about the Plan. Copies of the Plan will be catalogued and kept at all of the appropriate agencies in the City, and City Library, as well as on the City's website. The existence and location of these copies will be publicized annually in the city newsletter which reaches every household in the City, published in the Chamber of Commerce Newsletter and will also be published in the local newspaper. The plan also includes the address and the phone number of the City's Department of Planning and Development, which is responsible for keeping track of public comments on the Plan.

In addition, copies of the Plan and any proposed changes will be posted on the City's website one time per year. This site will also contain an email address and phone number to which people can direct their comments and concerns.

A public meeting will also be held after each annual evaluation or as deemed necessary by the Hazard Mitigation Advisory Committee. The meetings will provide the public a forum for which they can express its concerns, opinions, or ideas about the Plan. The City Public Relations Specialist will be responsible for using City resources to publicize the annual public meetings and maintain public involvement through the public access cable channel, website and local newspapers.

Section 3: Community Profile

Why Plan for Natural Hazards in the City of Santa Fe Springs?

Natural hazards impact citizens, property, the environment, and the economy of the City of Santa Fe Springs. Earthquakes and flooding, the hazards prioritized by the Planning Team as being the natural hazards with the highest probability of significantly impacting the City of Santa Fe Springs, have exposed City residents and businesses to the financial and emotional costs of recovering after natural disasters. The risk associated with natural hazards increases as more people move to areas affected by natural hazards.

Even in those communities that are essentially "built-out" i.e., have little or no vacant land remaining for development population density continues to increase when low density housing is replaced with medium and high density development projects.

The inevitability of natural hazards, and the growing population and activity within the City create an urgent need to develop strategies, coordinate resources, and increase public awareness to reduce risk and prevent loss from future natural hazard events. Identifying the risks posed by natural hazards, and developing strategies to reduce the impact of a hazard event can assist in protecting life and property of citizens and communities. Local residents and businesses can work together with the City to create a natural hazards mitigation plan that addresses the potential impacts of hazard events.

Geography and the Environment

Santa Fe Springs has an area of 8.7 square miles and is located in southeastern Los Angeles County. The City of Santa Fe Springs borders Whittier on the north, Pico Rivera and Downey on the west, La Mirada on the east, and Norwalk and Cerritos on the south.

Elevations in the City range from a high of 166 feet to a low of 67 feet. The City is located west of the Puente Hills which frame a lowland plain that slopes gently to the south and southwest to the Pacific Ocean which is approximately 14 miles away.

Community Profile

The City of Santa Fe Springs is largely and industrial City rich in history. The City of Santa Fe Springs was first settled in the early 1800s and the City itself was incorporated in 1957. The City of Santa Fe Springs residential population of approximately 18,000 is located on the west end of the City.

According to the City's General Plan, the City is served by Interstate Routes 5 and 605, and the major arterial highways are Alondra Boulevard, Rosecrans Avenue, Slauson Avenue, Valley View Avenue, Pioneer Boulevard, Orr and Day Road, Bloomfield Ave/Santa Fe Springs Road, Telegraph Road, Imperial Highway, Norwalk Boulevard, Florence Avenue, Washington Boulevard, and Carmenita Avenue.

The Union Pacific, Burlington Northern/Santa Fe, and Metrolink Railways serve the City with tracks running from the Northwest to the Southeast and from the North to the Southwest. Passenger transportation is provided by Amtrak.

Major Rivers

The nearest major river is the San Gabriel River. This river has a potential impact on the City. The San Gabriel River runs north to south and is located on the west side of the city. There is also a Northfork Coyote Creek that runs north to south and is located along the east side of the city. The Milan Creek runs east to west and connects to the Northfolk Coyote Creek between Foster Road and Rosecrans Avenue.

Climate

Temperatures in the City range from 40 degrees in the winter months to 95 degrees in the summer months. However the temperatures can vary over a wide range, particularly when the Santa Ana winds blow, bringing higher temperatures and very low humidity.

Rainfall in the city averages 14.6 inches of rain per year. However the term "average rainfall" can be misleading in that during the month of January the City averages 3.53 inches of rain and .01 inches in July.

Furthermore, actual rainfall in Southern California tends to fall in large amounts during sporadic and often heavy storms rather than consistently over storms at somewhat regular intervals. In short rainfall in Southern California might be characterized as feast or famine within a single year. Because the metropolitan basin is largely built out, water originating in higher elevation communities can have a sudden impact on adjoining communities that have a lower elevation.

Minerals and Soils

The characteristics of the minerals and soils present in the City of Santa Fe Springs indicate the potential types of hazards that may occur. Rock hardness and soil characteristics can determine whether or not an area will be prone to geologic hazards such as earthquakes, liquefaction and landslides.

As described in the City's General Plan, the soil characteristics are essentially the same as the entire Los Angeles Basin. The geologic units of Santa Fe Springs and much of the surrounding area include both bedrock and surficial deposits. The bedrock units include siltstones and sandstones. The surficial deposits include colluvium/alluvium and landslide debris and are generally composed of poorly consolidated sediments. These factors generally create moderate to high soil strength characteristics with some levels of expansiveness.

Other Significant Geologic Features

The City of Santa Fe Springs, like most of the Los Angeles Basin, lies over the area of one or more known earthquake faults, and potentially many more unknown faults, particularly so-called lateral or blind thrust faults.

The City's General Plan identifies the following faults as active or potentially active: Whittier/Elsinore Faults, Norwalk Fault, Newport/Inglewood Fault, Sierra Madre Fault System, Puente Hills Fault, and the San Andres Fault.

The Los Angeles Basin has a history of powerful and relatively frequent earthquakes, dating back to the powerful 8.0+ San Andreas earthquake of 1857 which did substantial damage to the relatively few buildings that existed at the time. Paleoseismological research indicates that large (8.0+) earthquakes occur on the San Andreas fault at intervals between 45 and 332 years with an average interval of 140 years[1]. Other lesser faults have also caused very damaging earthquakes since 1857. Notable earthquakes include the Long Beach earthquake of 1933, the San Fernando Earthquake of 1971, the 1987 Whittier Earthquake and the 1994 Northridge Earthquake.

In addition, many areas in the Los Angeles Basin have sandy soils that are subject to liquefaction. The City of Santa Fe Springs is relatively free of liquefaction hazards as shown on USGS Seismic Hazard Maps in Section 5: Earthquake.

Population and Demographics

Santa Fe Springs has a population of 17,438 in an area of 8.7 square miles. The population of the City has steadily increased from the mid 1800's through 2000, and increased approximately 11% from 1990 to 2000 according to the 2000 Census.

The increase of people living in Santa Fe Springs creates more community exposure, and changes how agencies prepare for and respond to natural hazards. For example, narrower streets are more difficult for emergency vehicles to navigate, the higher ratio of residents to emergency responders affects response times, and homes located closer together increase the chances of fires spreading.

The City of Santa Fe Springs is experiencing a great deal of in-fill building, which is increasing the population density, creating greater service loads on the built infrastructure including roads, water supply, sewer services and storm drains.

Natural hazards do not discriminate, but the impacts in terms of vulnerability and the ability to recover vary greatly among the population. According to Peggy Stahl of the Federal Emergency Management Agency (FEMA) Preparedness, Training, and Exercise Directorate, 80% of the disaster burden falls on the public, and within that number, a

[1] Peacock, Simon M., http://aamc.geo.lsa.umich.edu/eduQuakes/EQpredLab/EQprediction.peacock.html

disproportionate burden is placed upon special needs groups: women, children, minorities, and the poor.[2]
According the 2000 Census figures, the demographic make up of the City is as follows:

Caucasian	19.2%
Hispanic	71.4%
African American	3.9%
Asian	3.9%
Native American	1.4%
Native Hawaiian and other Pacific Islander	.2%

The ethnic and cultural diversity suggests a need to address multi-cultural needs and services.

Although the percentage of poverty in City of Santa Fe Springs (12.5%) is about 90% that of the state's (13.7%), 13.9% of the people living in poverty in Santa Fe Springs are under 18 years old, and 7.6% are over 65. Vulnerable populations, including seniors, disabled citizens, women, and children, as well as those people living in poverty, may be disproportionately impacted by natural hazards.

Examining the reach of hazard mitigation policies to special needs populations may assist in increasing access to services and programs. FEMA's Office of Equal Rights addresses this need by suggesting that agencies and organizations planning for natural disasters identify special needs populations, make recovery centers more accessible, and review practices and procedures to remedy any discrimination in relief application or assistance.

The cost of natural hazards recovery can place an unequal financial responsibility on the general population when only a small proportion may benefit from governmental funds used to rebuild private structures. Discussions about natural hazards that include local citizen groups, insurance companies, and other public and private sector organizations can help ensure that all members of the population are a part of the decision-making processes.

Land and Development

Development in Southern California from the earliest days was a cycle of boom and bust. The Second World War however dramatically changed that cycle. Military personnel and defense workers came to Southern California to fill the logistical needs created by the war effort. The available housing was rapidly exhausted and existing commercial centers proved inadequate for the influx of people. Immediately after the war, construction began on the freeway system, and the face of Southern California was forever changed. Home developments and shopping centers sprung up everywhere and within a few decades the central basin of Los Angeles County was virtually built out. This pushed

[2] www.fema.gov

new development further and further away from the urban center.

The City of Santa Fe Springs General Plan addresses the use and development of private land, including residential and commercial areas. This plan is one of the City's most important tools in addressing environmental challenges including transportation and air quality, growth management, conservation of natural resources, clean water and open spaces.

The environment of most of Los Angeles County cities is nearly identical with that of their immediate neighbors and the transition from one incorporated municipality to another is seamless to most people. Seamless too are the exposures to the natural hazards that affect all of Southern California.

Housing and Community Development

In the City of Santa Fe Springs the demand for housing outstrips the available supply, and the recent low interest rates have further fueled a pent up demand for housing. The 2000 Census data identifies the following information about housing in Santa Fe Springs. Currently there are 4,933 housing units in the City of Santa Fe Springs. There are 3,092 single family homes (63% of available housing units) currently available. Multiple unit homes account for 29% of the total existing housing units (1,423). There are 3,040 owner occupied units in the City and 1,794 renter occupied units. Approximately 36% of the units are being rented in Santa Fe Springs and 62% of the units are owned. The average change in home prices increased from $156,589 in 1990 to $169,400 in 2000.

Employment and Industry

According to the 2000 Census, management (22.9%), sales and office occupations (30%), as well as production, transportation, and material moving (25.6%) are Santa Fe Springs' principal employment activities. Educational, health and social services (15.8%), manufacturing (22.4%), and retail trade (11.6%) make up the major industries in the City. The City has a labor force of 6,946 persons (less than 1% of the countywide workforce).

Mitigation activities are needed at the business level to ensure the safety and welfare of workers and limit damage to industrial infrastructure. Employees are highly mobile, commuting from surrounding areas to industrial and business centers. This creates a greater dependency on roads, communications, accessibility and emergency plans to reunite people with their families. Before a natural hazard event, large and small businesses can develop strategies to prepare for natural hazards, respond efficiently, and prevent loss of life and property.

Transportation and Commuting Patterns

The General Plan for the City identifies the private automobile as the dominant means of transportation in the City. For the transit dependent population, a network of public bus

routes provides access to employment center, schools, shopping, and recreational areas within the City. Regional bus service is provided by the Metropolitcan Transportation Authority (MTA). Subregional bus service is provided by the City of Norwalk. Additionally, the City of Santa Fe Springs contracts with the City of Norwalk for a local, fixed-route circulator. The Cities of Norwalk and Santa Fe Springs offer an inter-city service which provides transportation between the two cities for seniors and persons with disabilities, as well as a taxi voucher program for transportation to medical appointments within the cities of Bellflower, Downey, Lakewood, Norwalk, Pico Rivera, Santa Fe Springs and Whittier. The City operates a Demand-Response service of its own, which provides transportation to medical appointments for seniors and persons with disabilities for medical appointments within Downey, Norwalk, Pico Rivera, Santa Fe Springs and Whittier. This service also provides transportation to the City's two Senior Centers for a nutritional program run out of the centers. The City fulfills its fixed-route paratransit obligation through an association with Access Services.

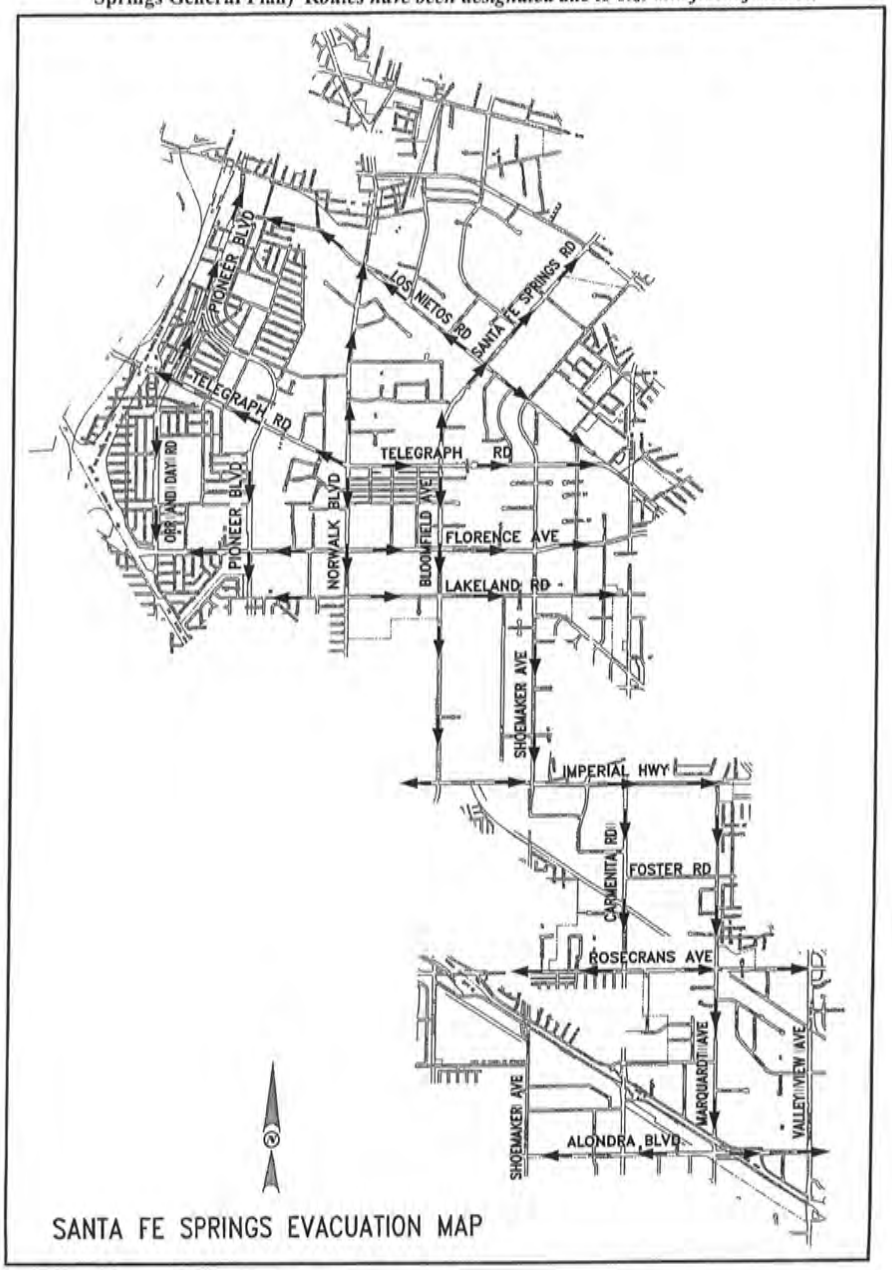
The Cities of Norwalk and Santa Fe Springs jointly own and operate a Metrolink station known as the Norwalk/Santa Fe Springs Transportation, which provides rail service for long distance commuters traveling between Santa Fe Springs and distant locations in the Counties of Los Angeles, Orange and Riverside. To encourage the use of Metrolink as an alternative mode of transportation, the City of Santa Fe Springs provides free connecting shuttle service, known as MetroExpress. MetroExpress is a curb-to-curb service which allows intermodal transfers for Metrolink riders between the Transportation Center and businesses within the service area. The Metrorail system does not run directly through Santa Fe Springs, but is accessible via bus service provided by Norwalk Transit. Passenger rail service is provided by Amtrak. However, the closest Amtrak station is located in Fullerton and may be accessed through Metrolink or through bus service.

According to U.S. Bureau of the Census, Census 2000 close to 35% of the City of Santa Fe Springs's population works outside of the City. This suggests that population growth is a more suburban phenomenon, where residents work in the City of Santa Fe Springs but live in other communities. However, a rapid growth rate in the high technology industry in City of Santa Fe Springs has attracted commuters to travel in the opposite direction as well, with more than one in three jobs in City of Santa Fe Springs filled by nonresidents.

The City of Santa Fe Springs is served by Interstates 5 and 605, connecting the City to adjoining parts of Los Angeles County. The City's 105.5 mile road system includes 31.5 miles of arterial highways and 74 miles of local roads, and 22 bridges. As daily transit rises, there is an increased risk that a natural hazard event will disrupt the travel plans of residents across the region, as well as local, regional and national commercial traffic.

Localized flooding can render roads unusable. A severe winter storm has the potential to disrupt the daily driving routine of hundreds of thousands of people. Natural hazards can disrupt automobile traffic and shut down local and regional transit systems.

Map 3-3: City of Santa Fe Springs Evacuation Routes (Source: City of Santa Fe Springs General Plan) ***Routes have been designated due to size and flow of streets.***



Section 4:

Risk Assessment

What is a Risk Assessment?

Conducting a risk assessment can provide information on: the location of hazards, the value of existing land and property in hazard locations, and an analysis of risk to life, property, and the environment that may result from natural hazard events. Specifically, the five levels of a risk assessment are as follows:

1) Hazard Identification

The Planning Team considered a range of natural hazards facing the region including: Earthquakes, Flooding, Earth Movement, Windstorms, Wildfires, Tsunami, and Drought. The attached Ranking Your Hazards – Attachment I handout guided the Team in prioritizing the natural hazards with the highest probability of significantly impacting the City of Santa Fe Springs. The Team agreed that any hazards receiving a Team average score of "3" or higher would be included in the Natural Hazard Mitigation Plan.

This is the description of the geographic extent, potential intensity and the probability of occurrence of a given hazard. Maps are frequently used to display hazard identification data. The City of Santa Fe Springs identified two major hazards that affect this geographic area. These hazards - earthquakes and flooding - were identified through an extensive process that utilized input from the Hazard Mitigation Planning Team. The geographic extent of each of the identified hazards has been identified by the City of utilizing the maps contained in the City General Plan and the MHFP Threat Assessment, and are illustrated by the tables, maps, and photos listed on page iii.

2) Profiling Hazard Events

The maps help to describe the causes and characteristics of each hazard and what part of the City's population, infrastructure, and environment may be vulnerable to each specific hazard. A profile of each hazard discussed in this plan is provided in each hazard section. For a full description of the history of hazard specific events, please see the appropriate hazard chapter.

3) Vulnerability Assessment/Inventorying Assets

This is a combination of hazard identification with an inventory of the existing (or planned) property development(s) and population(s) exposed to a hazard. Critical facilities are of particular concern because these entities provide essential products and services to the general public that are necessary to preserve the welfare and quality of life in the City and fulfill important public safety, emergency response, and/or disaster recovery functions. The critical facilities have been identified and are illustrated in Table 4-2 at the end of this section. A description of the critical facilities in the City is also

provided in this section. In addition, this plan includes a community issues summary in each hazard section to identify the most vulnerable and problematic areas in the City, including critical facilities and essential facilities.

4) Risk Analysis

Estimating potential losses involves assessing the damage, injuries, and financial costs likely to be sustained in a geographic area over a given period of time. This level of analysis involves using mathematical models. The two measurable components of risk analysis are magnitude of the harm that may result and the likelihood of the harm occurring. Describing vulnerability in terms of dollar losses provides the community and the state with a common framework in which to measure the effects of hazards on assets.

5) Assessing Vulnerability/ Analyzing Development Trends

This step provides a general description of land uses and development trends within the community so that mitigation options can be considered in land use planning and future land use decisions. This plan provides a comprehensive description of the character of the City in the Community Profile. This description includes the geography and environment, population and demographics, land use and development, housing and community development, employment and industry, and transportation and commuting patterns. Analyzing these components of the City can help in identifying potential problem areas and can serve as a guide for incorporating the goals and ideas contained in this mitigation plan into other community development plans.

Hazard assessments are subject to the availability of hazard-specific data. Gathering data for a hazard assessment requires a commitment of resources on the part of participating organizations and agencies. Each hazard-specific section of the plan includes a section on hazard identification using data and information from City, County or State agency sources.

Regardless of the data available for hazard assessments, there are numerous strategies the City can take to reduce risk. These strategies are described in the action items detailed in each hazard section of this Plan. Mitigation strategies can further reduce disruption to critical services, reduce the risk to human life, and alleviate damage to personal and public property and infrastructure. Action items identified in the hazard sections provide recommendations to collect further data to map hazard locations and conduct hazard assessments.

Federal Requirements for Risk Assessment

Recent federal regulations for hazard mitigation plans outlined in 44 CFR Part 201 include a requirement for risk assessment. This risk assessment requirement is intended to provide information that will help communities identify and prioritize mitigation activities that will reduce losses from the identified hazards. There are two hazards profiled in the mitigation plan, earthquakes and flooding. The Federal criteria for risk

assessment and information on how the City of Santa Fe Springs Natural Hazards Mitigation Plan meets those criteria is outlined in Table 4-1 below.

Table 4-1. Federal Criteria for Risk Assessment

Section 322 Plan Requirement	How is this addressed?
Identifying Hazards	Each hazard section includes an inventory of the best available data sources that identify hazard areas. To the extent data are available; the existing maps identifying the location of the hazard were utilized. The Executive Summary and the Risk Assessment sections of the plan include a list of the hazard maps.
Profiling Hazard Events	Each hazard section includes documentation of the history and causes and characteristics of the hazard in the City.
Assessing Vulnerability: Identifying Assets	Where data is available, the vulnerability assessment for each hazard addressed in the mitigation plan includes an inventory of all publicly owned land within hazardous areas. Each hazard section provides information on vulnerable areas in the City in the Community Issues section. Each hazard section also identifies potential mitigation strategies.
Assessing Vulnerability: Estimating Potential Losses	The Risk Assessment Section of this mitigation plan identifies key critical facilities in the City and includes a map of these facilities. Vulnerability assessments have been completed for the hazards addressed in the plan, and quantitative estimates were made for each hazard where data was available.
Assessing Vulnerability: Analyzing Development Trends	The Community Profile Section of this plan provides a description of the development trends in the City, including the geography and environment, population and demographics, land use and development, housing and community development, employment and industry, and transportation and commuting patterns.

Critical and Essential Facilities

Facilities critical to government response and recovery activities (i.e., life safety and property and environmental protection) include 911 centers, emergency operations centers, police and fire stations, public works facilities, communications centers, sewer and water facilities, hospitals, bridges and roads, and shelters. Also, facilities that, if damaged, could cause serious secondary impacts may also be considered "critical." A hazardous material facility is one example of this type of critical facility.

Critical and essential facilities are those facilities that are vital to the continued delivery

of key government services or that may significantly impact the public's ability to recover from the emergency. These facilities may include buildings such as the jail, law enforcement center, public services building, community corrections center, the courthouse, and juvenile services building and other public facilities such as schools. The following map and table illustrate the critical and essential facilities serving the City of Santa Fe Springs.

courthouse, and juvenile services building and other public facilities such as schools. The following map and table illustrate the critical and essential facilities serving the City of Santa Fe Springs.

Map 4-1: City of Santa Fe Springs Critical and Essential Facilities
(Source: Santa Fe Springs General Plan)

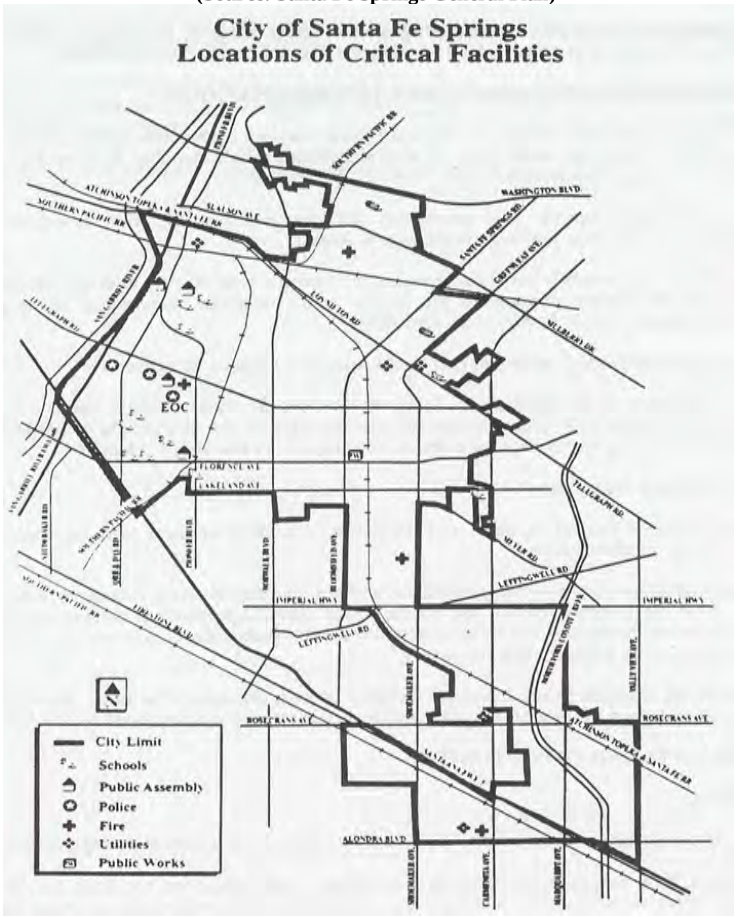


Table 4-2: City of Santa Fe Springs Critical and Essential Facilities

EQ	Flood	Critical Facilities	Address	
X	X	Emergency Operations Center	11736 Telegraph Road	CF
X	X	Fire Station # 1 Headquarters	11300 Greenstone Avenue	CF
X	X	Fire Station # 2	8634 Dice Road	CF
X	X	Fire Station # 3	15517 Carmenita Road	CF
X	X	Fire Station # 4	11736 Telegraph Road	CF
X	X	Police Services Center	11576 Telegraph Road	CF
X	X	Public Works City Yard	12636 Emmens Way	CF
X	X	California Highway Patrol	10051 Orr & Day Road	CF
X	X	Santa Fe Springs Municipal Water System	12636 Emmens Way	CF
X	X	Family Center	10349 Heritage Park Drive	CF
X	X	City Hall	11710 Telegraph Road	CF
X	X	Activity Center	11155 Charlesworth Road	CF
X	X	Neighborhood Center	9255 Pioneer Blvd.	CF
X	X	Betty Wilson Center	11641 Florence Avenue	CF
X	X	Town Center Hall	11740 Telegraph Road	CF
EQ	**Flood**	**Essential Facilities**	**Address**	
X	X	Edison Substations (3)	9901 Geary Avenue	U
X	X	Telephone Switching Stations (2)	12905 East Los Nietos Road	U
X	X	Carmela Children Center	13300 Lakeland Road	S
X	X	Hancock Preschool	11449 Florence Avenue	S
X	X	Jersey Elementary	9400 Jersey Avenue	S
X	X	Lake Center Middle School	10503 Pioneer Boulevard	S
X	X	Lakeview School	11500 Joslin Avenue	S
X	X	Los Nietos Child Development Center	11115 Charlesworth Road	S
X	X	Los Nietos Middle School	11425 East Rivera Road	S
X	X	Rancho Santa Gertrudes	11233 Charlesworth Road	S
X	X	Santa Fe High High School	10400 Orr & Day Road	S
X	X	Santa Fe Springs Christian School	11457 Florence Avenue	S
X	X	South Whittier Middle School	13243 East Los Nietos Road	S
X	X	St. Paul High School	9635 Greenleaf Avenue	S
X	X	St. Pius X School	10855 Pioneer Boulevard	S
X	X	Santa Fe Kid Company	11304 Washington Boulevard	S
X	X	Lake Center Athletic Park	11641 Florence Avenue	P
X	X	Santa Fe Springs Park	10068 Cedardale Drive	P
X	X	Lakeview Recreation	10225 Jersey Avenue	P
X	X	Little Lake Park	10900 Pioneer Blvd.	P
X	X	Ability First Apartments	13331 Lakeland Road	N
X	X	Little Lake Villages Apartments	10850-52 Fulton Wells	N

X	X	South FultonVillage Apartments	10829-35 Fulton Wells	N

Type of Facility

C = Commercial
CF = Critical Facility
M = Medical Facility
N = Nursing/Boarding/Disable Resident Facility
P = Public Facility
U = Utility

Summary

Natural hazard mitigation strategies can reduce the impacts concentrated at large employment and industrial centers, public infrastructure, and critical facilities. Natural hazard mitigation for industries and employers may include developing relationships with emergency management services and their employees before disaster strikes, and establishing mitigation strategies together. Collaboration among the public and private sector to create mitigation plans and actions can reduce the impacts of natural hazards.

Section 5: Earthquake Hazards in the City of Santa Fe Springs

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Why Are Earthquakes a Threat to the City of Santa Fe Springs?

Attachment 2 is a listing of Earthquake Probable Events gathered from the Southern California Earthquake Data Center. The list includes various faults and projected magnitude earthquakes likely to impact the region. The Southern California Earthquake Data Center predicts that some where in southern California (not everywhere, therefore many residents would not be affected) should experience a magnitude 7.0 or greater earthquake about seven times each century. Approximately half of these will be on the San Andreas "system" (the San Andreas, San Jacinto, Imperial, and Elsinore Faults) and half will be on other faults. The equivalent probability in the next 30 years is 85%.

The most recent significant earthquake event affecting Southern California was the January 17th 1994 Northridge Earthquake. At 4:31 A.M. on Monday, January 17, a moderate but very damaging earthquake with a magnitude of 6.7 struck the San Fernando Valley. In the following days and weeks, thousands of aftershocks occurred, causing additional damage to affected structures.

57 people were killed and more than 1,500 people seriously injured. For days afterward, thousands of homes and businesses were without electricity; tens of thousands had no gas; and nearly 50,000 had little or no water. Approximately 15,000 structures were moderately to severely damaged, which left thousands of people temporarily homeless. 66,500 buildings were inspected. Nearly 4,000 were severely damaged and over 11,000 were moderately damaged. Several collapsed bridges and overpasses created commuter havoc on the freeway system. Extensive damage was caused by ground shaking, but earthquake triggered liquefaction and dozens of fires also caused additional severe damage. This extremely strong ground motion in large portions of Los Angeles County resulted in record economic losses.

However, the earthquake occurred early in the morning on a holiday. This circumstance considerably reduced the potential effects. Many collapsed buildings were unoccupied, and most businesses were not yet open. The direct and indirect economic losses ran into the 10's of billions of dollars.

Historical and geological records show that California has a long history of seismic events. Southern California is probably best known for the San Andreas Fault, a 400 mile long fault running from the Mexican border to a point offshore, west of San Francisco. "Geologic studies show that over the past 1,400 to 1,500 years large earthquakes have occurred at about 130 year intervals on the southern San Andreas Fault. As the last large earthquake on the Southern San Andreas occurred in 1857, that section

of the fault is considered a likely location for an earthquake within the next few decades."[1]

But San Andreas is only one of dozens of known earthquake faults that crisscross Southern California. Some of the better known faults include the Newport-Inglewood, Whittier, Chatsworth, Elsinore, Hollywood, Los Alamitos, Puente Hills, and Palos Verdes faults. Beyond the known faults, there are a potentially large number of "blind" faults that underlie the surface of Southern California. One such blind fault was involved in the Whittier Narrows earthquake in October 1987.

Although the most famous of the faults, the San Andreas, is capable of producing an earthquake with a magnitude of 8+ on the Richter scale, some of the "lesser" faults have the potential to inflict greater damage on the urban core of the Los Angeles Basin. Seismologists believe that a 6.0 earthquake on the Newport-Inglewood would result in far more death and destruction than a "great" quake on the San Andreas, because the San Andreas is relatively remote from the urban centers of Southern California.

For decades, partnerships have flourished between the USGS, Cal Tech, the California Geological Survey and universities to share research and educational efforts with Californians. Tremendous earthquake mapping and mitigation efforts have been made in California in the past two decades, and public awareness has risen remarkably during this time. Major federal, state, and local government agencies and private organizations support earthquake risk reduction, and have made significant contributions in reducing the adverse impacts of earthquakes. Despite the progress, the majority of California communities remain unprepared because there is a general lack of understanding regarding earthquake hazards among Californians.

Table 5-1: Earthquake Events in the Southern California Region

Southern California Region Earthquakes with a Magnitude 5.0 or Greater			
1769	Los Angeles Basin	1916	Tejon Pass Region
1800	San Diego Region	1918	San Jacinto
1812	Wrightwood	1923	San Bemardino Region
1812	Santa Barbara Channel	1925	Santa Barbara
1827	Los Angeles Region	1933	Long Beach
1855	Los Angeles Region	1941	Carpenteria
1857	Great Fort Tejon Earthquake	1952	Kern County
1858	San Bernardino Region	1954	W. of Wheeler Ridge
1862	San Diego Region	1971	San Fernando
1892	San Jacinto or Elsinore Fault	1973	Point Mugu

1893	Pico Canyon	1986	North Palm Springs
1894	Lytle Creek Region	1987	Whittier Narrows
1894	E. of San Diego	1992	Landers
1899	Lytle Creek Region	1992	Big Bear
1899	San Jacinto and Hemet	1994	Northridge
1907	San Bernardino Region	1999	Hector Mine
1910	Glen Ivy Hot Springs		

Source:
http://geology.about.com/gi/dynamic/offsite.htm?site=http%3A%2F%2Fpasadena.wr.usgs.gov%2Finfo%2Fcahist_eqs.html

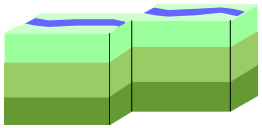
To better understand the earthquake hazard, the scientific community has looked at historical records and accelerated research on those faults that are the source of the earthquakes occurring in the Southern California region. Historical earthquake records can generally be divided into records of the pre-instrumental period and the instrumental period. In the absence of instrumentation, the detection of earthquakes is based on observations and felt reports, and is dependent upon population density and distribution. Since California was sparsely populated in the 1800s, the detection of pre-instrumental earthquakes is relatively difficult. However, two very large earthquakes, the Fort Tejon in 1857 (7.9) and the Owens Valley in 1872 (7.6) are evidence of the tremendously damaging potential of earthquakes in Southern California. In more recent times two 7.3 earthquakes struck Southern California, in Kern County (1952) and Landers (1992). The damage from these four large earthquakes was limited because they occurred in areas which were sparsely populated at the time they happened. The seismic risk is much more severe today than in the past because the population at risk is in the millions, rather than a few hundred or a few thousand persons.

History of Earthquake Events in Southern California

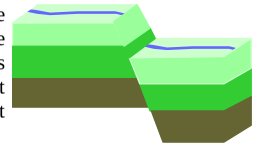
The City of Santa Fe Springs experienced minimal effects of the 1987 Whittier earthquake. Although the City is not directly located on a fault line, according the City's Multi-Hazard Functional Plan, there are over 100 faults in the Los Angeles area. Since seismologists started recording and measuring earthquakes, there have been tens of thousands of recorded earthquakes in Southern California, most with a magnitude below three. No community in Southern California is beyond the reach of a damaging earthquake. Figure 5-1 describes the historical earthquake events that have affected Southern California.

Figure 5-1 Causes and Characteristics of Earthquakes in Southern California

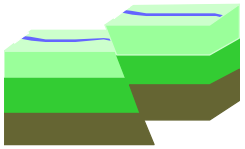
Earthquake Faults
A fault is a fracture between blocks of the earth's crust where either side moves relative to the other along a parallel plane to the fracture.



Strike-slip
Strike-slip faults are vertical or almost vertical rifts where the earth's plates move mostly horizontally. From the observer's perspective, if the opposite block looking across the fault moves to the right, the slip style is called a right lateral fault; if the block moves left, the shift is called a left lateral fault.



Dip-slip
Dip-slip faults are slanted fractures where the blocks mostly shift vertically. If the earth above an inclined fault moves down, the fault is called a normal fault, but when the rock above the fault moves up, the fault is called a reverse fault. Thrust faults are a reverse fault with a dip of 45 ° or less.



Dr. Kerry Sieh of Cal Tech has investigated the San Andreas Fault at Pallett Creek. "The record at Pallett Creek shows that rupture has recurred about every 130 years, on average, over the past 1500 years. But actual intervals have varied greatly, from less than 50 years to more than 300. The physical cause of such irregular recurrence remains unknown." [2] Damage from a great quake on the San Andreas would be widespread throughout Southern California.

Earthquake Related Hazards
Ground shaking, landslides, liquefaction, and amplification are the specific hazards associated with earthquakes. The severity of these hazards depends on several factors, including soil and slope conditions, proximity to the fault, earthquake magnitude, and the type of earthquake.

Ground Shaking
Ground shaking is the motion felt on the earth's surface caused by seismic waves generated by the earthquake. It is the primary cause of earthquake damage. The strength of ground shaking depends on the magnitude of the earthquake, the type of fault, and distance from the epicenter (where the earthquake originates). Buildings on poorly

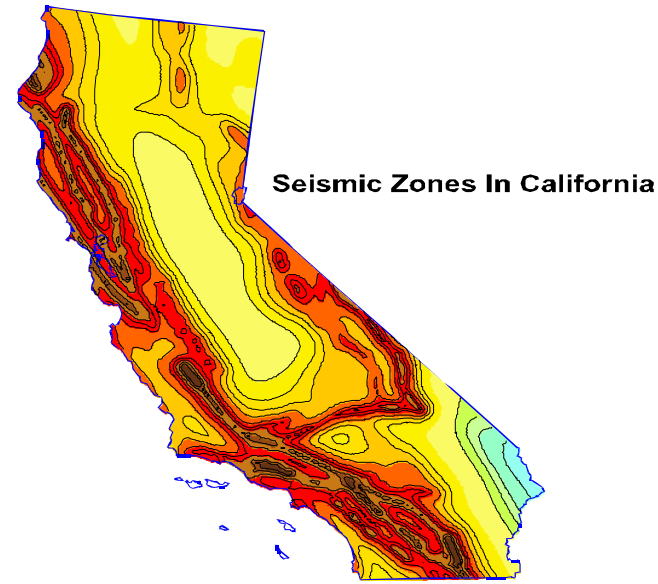
consolidated and thick soils will typically see more damage than buildings on consolidated soils and bedrock.

Earthquake-Induced Landslides
Earthquake-induced landslides are secondary earthquake hazards that occur from ground shaking. They can destroy the roads, buildings, utilities, and other critical facilities necessary to respond and recover from an earthquake. Many communities in Southern California have a high likelihood of encountering such risks, especially in areas with steep slopes.

Liquefaction
Liquefaction occurs when ground shaking causes wet granular soils to change from a solid state to a liquid state. This results in the loss of soil strength and the soil's ability to support weight. Buildings and their occupants are at risk when the ground can no longer support these buildings and structures. Many communities in Southern California are built on ancient river bottoms and have sandy soil. In some cases this ground may be subject to liquefaction, depending on the depth of the water table.

Amplification
Soils and soft sedimentary rocks near the earth's surface can modify ground shaking caused by earthquakes. One of these modifications is amplification. Amplification increases the magnitude of the seismic waves generated by the earthquake. The amount of amplification is influenced by the thickness of geologic materials and their physical properties. Buildings and structures built on soft and unconsolidated soils can face greater risk.[3] Amplification can also occur in areas with deep sediment filled basins and on ridge tops.

Map 5-1: Seismic Zones in California



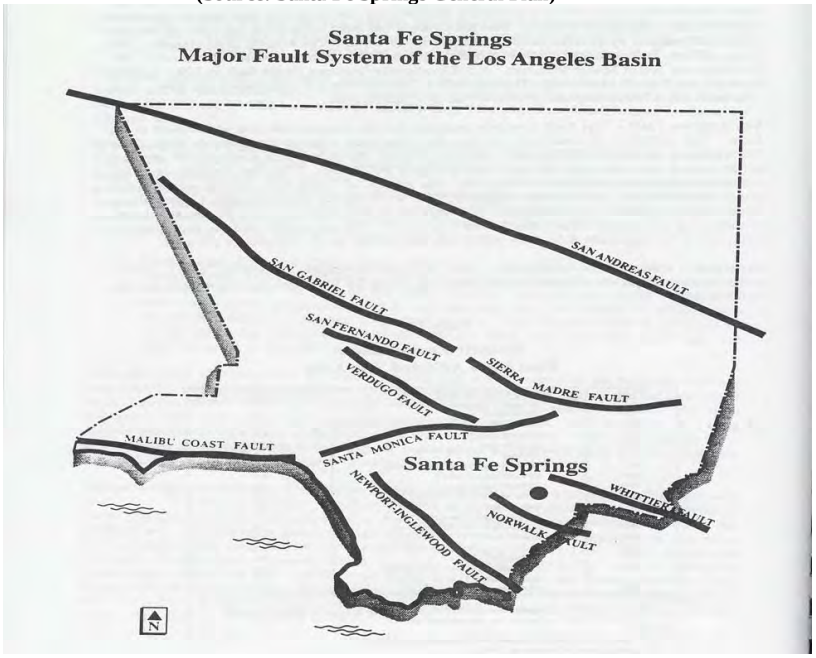
Earthquake Hazard Assessment

Hazard Identification

In California, many agencies are focused on seismic safety issues: the State's Seismic Safety Commission, the Applied Technology Council, Governor's Office of Emergency Services, United States Geological Survey, Cal Tech, the California Geological Survey as well as a number of universities and private foundations.

These organizations, in partnership with other state and federal agencies, have undertaken a rigorous program in California to identify seismic hazards and risks including active fault identification, bedrock shaking, tsunami inundation zones, ground motion amplification, liquefaction, and earthquake induced landslides. Seismic hazard maps have been published and are available for many communities in California through the State Division of Mines and Geology. Map 5-2 illustrates the known earthquake faults in Southern California.

Map 5-2: Major Fault System of the Los Angeles Basin
(Source: Santa Fe Springs General Plan)



According to the City of Santa Fe Springs General Plan, the City is in the vicinity of several known active and potentially active earthquake faults including the San Andreas, the San Jacinto, Whittier-Elsinore, Norwalk, Sierra Madre and Newport-Inglewood. In fact, scientist recently located a major active fault system, the Puente Hills fault, under metropolitan Los Angeles that most likely caused the 1987 Whittier Narrows earthquake, which killed eight people, injured 200, and caused $354-million in damages. The Puente Hills fault runs in three broad segments for almost 25 miles under downtown Los Angeles, through Santa Fe Springs and into the Coyote Hills of northern Orange County.

New faults within the region are continuously being discovered. Scientists have identified almost 100 faults in the Los Angeles are known to be capable of a magnitude 6.0 or greater earthquake. The January 17, 1994 magnitude 6.7 1994 Northridge Earthquake (thrust fault) which produce severe ground motions, caused 57 deaths, 9,253 injuries and left over 20,000 displaced. Scientists have stated that such devastation shaking should be considered the norm near any large thrust earthquake.

Recent reports from scientists of the U.S. Geological Survey and the Southern California Earthquake Center say that the Los Angeles Area could expect one earthquake every year of magnitude 5.0 or more for the foreseeable future. The Southern California Earthquake Data Center's Earthquake Probable Events (Attachment 2) states that the interval between ruptures of the Whittier Fault is unknown; for the Elsinor Fault Zone, is roughly 250 years; for the San Andreas Fault Zone, varies from 140 to over 300 years; and for the San Jacinto Fault Zone is between 100 to 300 years per segment.

A major earthquake occurring in or near this jurisdiction may cause many deaths and casualties, extensive property damage, fires, and hazardous material spills and other ensuing hazards. The effects could be aggravated by aftershocks and by the secondary affects of fire, hazardous material/chemical accidents and possible failure of the waterways and dams. The time of day and season of the year would have a profound effect on the number of dead and injured and the amount of property damage sustained. Such an earthquake would be catastrophic in its affect upon the population and could exceed the response capabilities of the individual cities, Los Angeles County Operational Area and the State of California Emergency Services. Damage control and disaster relief support would be required from other local governmental and private organizations, and from the state and federal governments.

Extensive search and rescue operations would be required to assist trapped or injured persons. Emergency medical care, food and temporary shelter could be required by injured or displaced persons. Identification and burial of many dead persons would pose difficult problems; public health would be a major concern. Mass evacuation may be essential to save lives, particularly in areas downwind from hazardous material releases. Many families would be separated particularly if the earthquake should occur during working hours, and a personal inquire or locator system could be essential to maintain morale. Emergency operations could be seriously hampered by the loss of communications and damage to transportation routes within, and to and from, the disaster area and by the disruption of public utilities and services.

The economic impact on the City of Santa Fe Springs from a major earthquake was considerable in terms of loss of employment and loss of tax base. Also, a major earthquake could cause serious damage and/or outage of computer facilities. The loss of such facilities could curtail or seriously disrupt the operations of banks, insurance companies and other elements of the financial community. In turn, this could affect the ability of local government, business and the population to make payments and purchases.

In California, each earthquake is followed by revisions and improvements in the Building Codes. The 1933 Long Beach resulted in the Field Act, affecting school construction. The 1971 Sylmar earthquake brought another set of increased structural standards. Similar re-evaluations occurred after the 1989 Loma Prieta and 1994 Northridge earthquakes. These code changes have resulted in stronger and more earthquake resistant structures.

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. This state law was a direct result of the 1971 San Fernando Earthquake, which was associated with extensive surface fault ruptures that damaged numerous homes, commercial buildings, and other structures. Surface rupture is the most easily avoided seismic hazard.[4]

The Seismic Hazards Mapping Act, passed in 1990, addresses non-surface fault rupture earthquake hazards, including liquefaction and seismically induced landslides.[5] The State Department of Conservation operates the Seismic Mapping Program for California. Extensive information is available at their website: http://gmw.consrv.ca.gov/shmp/index.htm

Vulnerability Assessment

The effects of earthquakes span a large area, and large earthquakes occurring in many parts of the Southern California region would probably be felt throughout the region. However, the degree to which the earthquakes are felt, and the damages associated with them may vary. At risk from earthquake damage are large stocks of old buildings and bridges: many high tech and hazardous materials facilities: extensive sewer, water, and natural gas pipelines; earth dams; petroleum pipelines; and other critical facilities and private property located in the county. The relative or secondary earthquake hazards, which are liquefaction, ground shaking, amplification, and earthquake-induced landslides, can be just as devastating as the earthquake.

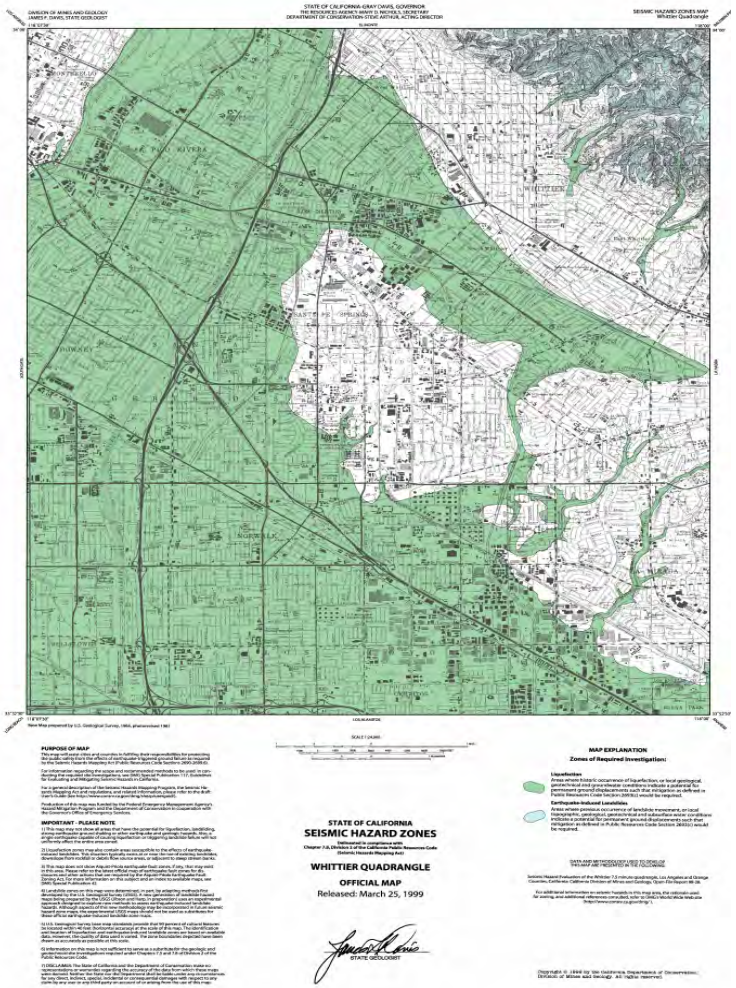
In the City of Santa Fe Springs, the types of buildings that would be affected by earthquakes primarily include residential, commercial and industrial buildings. The essential or special facilities that could be affected by an earthquake are identified Fire and Police stations, garages and shelter for emergency vehicles, structures and shelter in emergency preparedness centers, stand-by power generated equipment for essential facilities, water tanks and storage of fire suppression material or equipment and

structures containing chemical manufacturing and storage, included radioactive. The essential or special facilities that could be affected by an earthquake are identified in Table 4-2.

The City of Santa Fe Springs has conducted a vulnerability assessment on the impacts of seismic activity in the region to determine its possible loss to its buildings, structures and infrastructure. Based on available historical data and the experience from the 1987 Whittier Narrows Earthquake which occurred adjacent to the City of Santa Fe Springs, the estimated loss to buildings, structures and City infrastructure could range from 5% to 10% should an earthquake of a magnitude 6.0 or greater occur. However, this estimated percentage could increase depending on the location of the epicenter and the characteristics of earthquake.

The California Geological Survey has identified areas most vulnerable to liquefaction. Liquefaction occurs when ground shaking causes wet granular soils to change from a solid state to a liquid state. This results in the loss of soil strength and the soil's ability to support weight. Buildings and their occupants are at risk when the ground can no longer support these buildings and structures. As highlighted in the Multi-Hazard Functional Plan, liquefaction is of low probability and is not an imminent threat to the City. This is due to the water table being generally deeper than 50 feet throughout the City. Map 5-3 identifies the local population centers in City of Santa Fe Springs that have soils vulnerable to liquefaction.

Map 5-3: Liquefaction and EQ-Induced Landslide Areas in the City of Santa Fe Springs (Source: California Seismic Hazard Maps – Whittier Quadrangle)



Southern California has many active landslide areas, and a large earthquake could trigger accelerated movement in these slide areas, in addition to jarring loose other unknown areas of landslide risk. In addition to having low risk of liquefaction, the City's General Plan states the City of Santa Fe Springs has a low risk of landslides.

Risk Analysis

Risk analysis is the third phase of a hazard assessment. Risk analysis involves estimating the damage and costs likely to be experienced in a geographic area over a period of time[6]. Factors included in assessing earthquake risk include population and property distribution in the hazard area, the frequency of earthquake events, landslide susceptibility, buildings, infrastructure, and disaster preparedness of the region. This type of analysis can generate estimates of the damages to the region due to an earthquake event in a specific location. FEMA's software program, HAZUS, uses mathematical formulas and information about building stock, local geology and the location and size of potential earthquakes, economic data, and other information to estimate losses from a potential earthquake.[7] The HAZUS software is available from FEMA at no cost.

For greater Southern California there are multiple worst case scenarios, depending on which fault might rupture, and which communities are in proximity to the fault. But damage will not necessarily be limited to immediately adjoining communities. Depending on the epicenter of the earthquake, seismic waves may be transmitted through the ground to unsuspecting communities. In the Northridge 1994 earthquake, Santa Monica suffered extensive damage, even though there was a range of mountains between it and the origin of the earthquake.

Damages for a large earthquake almost anywhere in Southern California are likely to run into the billions of dollars. Although building codes are some of the most stringent in the world, ten's of thousands of older existing buildings were built under much less rigid codes. California has laws affecting unreinforced masonry buildings (URM's) and although many building owners have retrofitted their buildings, hundreds of pre-1933 buildings still have not been brought up to current standards.

Non-structural bracing of equipment and contents is often the most cost-effective type of seismic mitigation. Inexpensive bracing and anchoring may be the most cost effective way to protect expensive equipment. Non-structural bracing of equipment and furnishings will also reduce the chance of injury for the occupants of a building.

Community Earthquake Issues

What is Susceptible to Earthquakes?

Earthquake damage occurs because humans have built structures that cannot withstand severe shaking. Buildings, airports, schools, and lifelines (highways and utility lines) suffer damage in earthquakes and can cause death or injury to humans. The welfare of homes, major businesses, and public infrastructure is very important. Addressing the reliability of buildings, critical facilities, and infrastructure, and understanding the

potential costs to government, businesses, and individuals as a result of an earthquake, are challenges faced by the City.

Dams
According to the City General Plan, the City's greatest threat from dam inundation comes from the Whittier Narrows Dam located 5 miles northwest of the city's northern boundary. This earth filled dam was built in 1956 and has a capacity of 9.75 million gallons of water. The Santa Fe Springs Multihazard Functional Plan states there is a low risk that the city will experience flooding due to dam failure. If dam inundation were to occur, the northern most part of Santa Fe Springs would become flooded approximately one hour after dam failure. If a dam failure occurs the flood inundation area would be between Norwalk Blvd. on the east and the Los Angeles River to the west. The water level is predicted to be five feet in depth, gradually declining to four feet at the southern end of the City's impacted area. If the dam were to fail, the City's General Plan states it could require the evacuation of approximately 18,000 residents and 300 businesses.

There are a total of 103 dams in Los Angeles County, owned by 23 agencies or organizations, ranging from the Federal government to Homeowner Associations.[8] These dams hold billions of gallons of water in reservoirs. Releases of water from the major reservoirs are designed to protect Southern California from flood waters and to store domestic water. Seismic activity can compromise the dam structures, and the resultant flooding could cause catastrophic flooding. Following the 1971 Sylmar earthquake the Lower Van Norman Dam showed signs of structural compromise, and tens of thousands of persons had to be evacuated until the dam could be drained. The dam has never been refilled.

Buildings
The built environment is susceptible to damage from earthquakes. Buildings that collapse can trap and bury people. Lives are at risk and the cost to clean up the damages is great. In most California communities, including the City of Santa Fe Springs, many buildings were built before 1993 when building codes were not as strict. In addition, retrofitting is not required except under certain conditions and can be expensive. Therefore, the number of buildings at risk remains high. The California Seismic Safety Commission makes annual reports on the progress of the retrofitting of unreinforced masonry buildings.

Infrastructure and Communication
Residents in the City of Santa Fe Springs commute frequently by automobiles and public transportation such as buses and light rail. An earthquake can greatly damage bridges and roads, hampering emergency response efforts and the normal movement of people and goods. Damaged infrastructure strongly affects the economy of the community because it disconnects people from work, school, food, and leisure, and separates businesses from their customers and suppliers.

Bridge Damage

Even modern bridges can sustain damage during earthquakes, leaving them unsafe for use. Some bridges have failed completely due to strong ground motion. Bridges are a vital transportation link - with even minor damages making some areas inaccessible. Because bridges vary in size, materials, location and design, any given earthquake will affect them differently. Bridges built before the mid-1970' s have a significantly higher risk of suffering structural damage during a moderate to large earthquake compared with those built after 1980 when design improvements were made.

Much of the interstate highway system was built in the mid to late 1960's. The bridges in the City of Santa Fe Springs are state, county or privately owned (including railroad bridges). Caltrans has retrofitted most bridges on the freeway systems; however there are still some county maintained bridges that are not retrofitted. The FHWA requires that bridges on the National Bridge Inventory be inspected every 2 years. Caltrans checks when the bridges are inspected because they administer the Federal funds for bridge projects.

Damage to Lifelines
Lifelines are the connections between communities and outside services. They include water and gas lines, transportation systems, electricity, and communication networks. Ground shaking and amplification can cause pipes to break open, power lines to fall, roads and railways to crack or move, and radio and telephone communication to cease. Disruption to transportation makes it especially difficult to bring in supplies or services. Lifelines need to be usable after earthquake to allow for rescue, recovery, and rebuilding efforts and to relay important information to the public.

Disruption of Critical Services
Critical facilities include police stations, fire stations, hospitals, shelters, and other facilities that provide important services to the community. These facilities and their services need to be functional after an earthquake event. Many critical facilities are housed in older buildings that are not up to current seismic codes.

Businesses
Seismic activity can cause great loss to businesses, both large-scale corporations and small retail shops. When a company is forced to stop production for just a day, the economic loss can be tremendous, especially when its market is at a national or global level. Seismic activity can create economic loss that presents a burden to large and small shop owners who may have difficulty recovering from their losses.

Forty percent of businesses do not reopen after a disaster and another twenty-five percent fail within one year according to the Federal Emergency Management Agency (FEMA). Similar statistics from the United States Small Business Administration indicate that over ninety percent of businesses fail within two years after being struck by a disaster.[9]

Individual Preparedness

Because the potential for earthquake occurrences and earthquake related property damage is relatively high in the City of Santa Fe Springs, increasing individual preparedness is a significant need. Strapping down heavy furniture, water heaters, and expensive personal property, as well as being earthquake insured, and anchoring buildings to foundations are just a few steps individuals can take to prepare for an earthquake.

Death and Injury
Death and injury can occur both inside and outside of buildings due to collapsed buildings falling equipment, furniture, debris, and structural materials. Downed power lines and broken water and gas lines can also endanger human life.

Fire
Downed power lines or broken gas mains may trigger fires. When fire stations suffer building or lifeline damage, quick response to extinguish fires is less likely. Furthermore, major incidents will demand a larger share of resources, and initially smaller fires and problems will receive little or insufficient resources in the initial hours after a major earthquake event. Loss of electricity may cause a loss of water pressure in some communities, further hampering firefighting ability.

Debris
After damage to a variety of structures, much time is spent cleaning up bricks, glass, wood, steel or concrete building elements, office and home contents, and other materials. Developing a strong debris management strategy is essential in post-disaster recovery. Disasters do not exempt the City from compliance with AB 939 regulations.

Existing Mitigation Activities
Existing mitigation activities include current mitigation programs and activities that are being implemented by county, regional, state, or federal agencies or organizations.

City of Santa Fe Springs Codes
Implementation of earthquake mitigation policy most often takes place at the local government level. The City of Santa Fe Springs Department of Building and Safety enforces building codes pertaining to earthquake hazards.

The following sections of the Los Angeles County Building Code address the earthquake hazard:

- Chapter 16 – Division I, IV, V for structural design requirements
- Chapter 18 – Division I for foundation design requirements
- Sections 1921 – Seismic provisions for reinforced concrete structures.
- Chapter 22 – Division IV for Seismic provision for structural steel buildings.
- Section 2315 and 2319 Seismic provisions in wood steel structures

Generally, these codes seek to discourage development in areas that could be prone to flooding, landslide, wildfire and/or seismic hazards, and where development is permitted, that the applicable construction standards are met. Developers in hazard-prone areas may

be required to retain a qualified professional engineer to evaluate the level of risk on the site and recommend appropriate mitigation measures.

Coordination among Building Officials
The City of Santa Fe Springs Building Division is responsible for compliance with the City adopted Building Code (2002 County of Los Angeles Building Code) for all new construction, tenant improvements, conversions and repairs to buildings and other structures. Adherence to the Building Code ensures that each project meets a minimum set of safety standards, which in turn help reserve the value and integrity of the buildings and structures built at higher seismic standard.

Since 1999 the City also requires that site-specific seismic hazard investigations be performed for new essential facilities, major structures, hazardous facilities, and special occupancy structures such as schools, hospitals, and emergency response facilities.

Businesses/Private Sector
Natural hazards have a devastating impact on businesses. In fact, of all businesses which close following a disaster, more than forty-three percent never reopen, and an additional twenty-nine percent close for good within the next two years.[10] The Institute of Business and Home Safety has developed "Open for Business", which is a disaster planning toolkit to help guide businesses in preparing for and dealing with the adverse affects of natural hazards. The kit integrates protection from natural disasters into the company's risk reduction measures to safeguard employees, customers, and the investment itself. The guide helps businesses secure human and physical resources during disasters and helps to develop strategies to maintain business continuity before, during and after a disaster occurs.

Hospitals
"The Alfred E. Alquist Hospital Seismic Safety Act ("Hospital Act") was enacted in 1973 in response to the moderate Magnitude 6.6 Sylmar Earthquake in 1971 when four major hospital campuses were severely damaged and evacuated. Two hospital buildings collapsed killing forty seven people. Three others were killed in another hospital that nearly collapsed.

In approving the Act, the Legislature noted that: "Hospitals, that house patients who have less than the capacity of normally healthy persons to protect themselves, and that must be reasonably capable of providing services to the public after a disaster, shall be designed and constructed to resist, insofar as practical, the forces generated by earthquakes, gravity and winds." (Health and Safety Code Section 129680)

When the Hospital Act was passed in 1973, the State anticipated that, based on the regular and timely replacement of aging hospital facilities, the majority of hospital buildings would be in compliance with the Act's standards within 25 years. However, hospital buildings were not, and are not, being replaced at that anticipated rate. In fact, the great majority of the State's urgent care facilities are now more than 40 years old.

The moderate Magnitude 6.7 Northridge Earthquake in 1994 caused $3 billion in hospital-related damage and evacuations. Twelve hospital buildings constructed before the Act were cited (red tagged) as unsafe for occupancy after the earthquake. Those hospitals that had been built in accordance with the 1973 Hospital Act were very successful in resisting structural damage. However, nonstructural damage (for example, plumbing and ceiling systems) was still extensive in those post-1973 buildings.

Senate Bill 1953 ("SB 1953"), enacted in 1994 after the Northridge Earthquake, expanded the scope of the 1973 Hospital Act. Under SB 1953, all hospitals are required, as of January 1, 2008, to survive earthquakes without collapsing or posing the threat of significant loss of life. The 1994 Act further mandates that all existing hospitals be seismically evaluated, and retrofitted, if needed, by 2030, so that they are in substantial compliance with the Act (which requires that the hospital buildings be reasonably capable of providing services to the public after disasters). SB 1953 applies to all urgent care facilities (including those built prior to the 1973 Hospital Act) and affects approximately 2,500 buildings on 475 campuses.

SB 1953 directed the Office of Statewide Health Planning and Development ("OSHPD"), in consultation with the Hospital Building Safety Board, to develop emergency regulations including "…earthquake performance categories with sub gradations for risk to life, structural soundness, building contents, and nonstructural systems that are critical to providing basic services to hospital inpatients and the public after a disaster." (Source: Health and Safety Code Section 130005)

The Seismic Safety Commission Evaluation of the State's Hospital Seismic Safety Policies

In 2001, recognizing the continuing need to assess the adequacy of policies, and the application of advances in technical knowledge and understanding, the California Seismic Safety Commission created an Ad Hoc Committee to re-examine the compliance with the Alquist Hospital Seismic Safety Act. The formation of the Committee was also prompted by the recent evaluations of hospital buildings reported to OSHPD that revealed that a large percentage (40%) of California's operating hospitals are in the highest category of collapse risk.".[11]

California Earthquake Mitigation Legislation

California is painfully aware of the threats it faces from earthquakes. Dating back to the 19th Century, Californians have been killed, injured, and lost property as a result of earthquakes. As the State's population continues to grow and urban areas become even more densely developed, the risk will continue to increase. For decades the legislature has passed laws to strengthen the built environment and protect the citizens. Table 5-2 provides a sampling of some of the 200 plus laws in the State's codes.

Table 5-2: Partial List of the Over 200 California Laws on Earthquake Safety

Government Code Section 8870-8870.95	Creates Seismic Safety Commission.
Government Code Section 8876.1-8876.10	Established the California Center for Earthquake Engineering Research.
Public Resources Code Section 2800-2804.6	Authorized a prototype earthquake prediction system along the Central San Andreas Fault near the City of Parkfield.
Public Resources Code Section 2810-2815	Continued the Southern California Earthquake Preparedness Project and the Bay Area Regional Earthquake Preparedness Project.
Health and Safety Code Section 16100-16110	The Seismic Safety Commission and State Architect, will develop a state policy on acceptable levels of earthquake risk for new and existing state-owned buildings.
Government Code Section 8871-8871.5	Established the California Earthquake Hazards Reduction Act of 1986.
Health and Safety Code Section 130000-130025	Defined earthquake performance standards for hospitals.
Public Resources Code Section 2805-2808	Established the California Earthquake Education Project.
Government Code Section 8899.10-8899.16	Established the Earthquake Research Evaluation Conference.
Public Resources Code Section 2621-2630 2621.	Established the Alquist-Priolo Earthquake Fault Zoning Act.
Government Code Section 8878.50-8878.52 8878.50.	Created the Earthquake Safety and Public Buildings Rehabilitation Bond Act of 1990.
Education Code Section 35295-35297 35295.	Established emergency procedure systems in kindergarten through grade 12 in all the public or private schools.
Health and Safety Code Section 19160-19169	Established standards for seismic retrofitting of unreinforced masonry buildings.
Health and Safety Code Section 1596.80-1596.879	Required all child day care facilities to include an Earthquake Preparedness Checklist as an attachment to their disaster plan.
Source: http://www.leginfo.ca.gov/calaw.html	

Earthquake Education

Earthquake research and education activities are conducted at several major universities in the Southern California region, including Cal Tech, USC, UCLA, UCI, and UCSB. The local clearinghouse for earthquake information is the Southern California Earthquake Center located at the University of Southern California, Los Angeles, CA 90089, Telephone: (213) 740-5843, Fax: (213) 740-0011, Email: SCEinfo@usc.edu, Website: http://www.scec.org. The Southern California Earthquake Center (SCEC) is a community of scientists and specialists who actively coordinate research on earthquake hazards at nine core institutions, and communicate earthquake information to the public. SCEC is a National Science Foundation (NSF) Science and Technology Center and is co-funded by the United States Geological Survey (USGS).

In addition, Los Angeles County along with other Southern California counties, sponsors the Emergency Survival Program (ESP), an educational program for learning how to prepare for earthquakes and other disasters. Many school districts have very active emergency preparedness programs that include earthquake drills and periodic disaster response team exercises.

End Notes

[1] http://pubs.usgs.gov/gip/earthq3/when.html

[2] http://www.gps.caltech.edu/~sieh/home.html

[3] Planning for Natural Hazards: The California Technical Resource Guide, Department of Land Conservation and Development (July 2000)

[4] http://www.consrv.ca.gov/CGS/rghm/ap/

[5] Ibid

[6] Burby, R. (Ed.) Cooperating with Nature: Confronting Natural Hazards with Land Use Planning for Sustainable Communities (1998), Washington D.C., Joseph Henry Press.

[7] FEMA HAZUS http://www.fema.gov/hazus/hazus2.htm (May 2001).

[8] Source: Los Angeles County Public Works Department, March 2004

[9] http://www.chamber101.com/programs_committee/natural_disasters/DisasterPreparedness/Forty.htm

[10] Institute for Business and Home Safety Resources (April 2001),

[11] http://www.seismic.ca.gov/pub/CSSC_2001-04_Hospital.pdf

Attachment 2

Earthquake Probable Events

Southern California Earthquake Data Center

Elsinore Fault Zone

TYPE OF FAULTING: right-lateral strike-slip
LENGTH: about 180 km (not including the Whittier, Chino, and Laguna Salada faults)
NEARBY COMMUNITIES: Temecula, Lake Elsinore, Julian
LAST MAJOR RUPTURE: May 15, 1910; Magnitude 6 -- no surface rupture found
SLIP RATE: roughly 4.0 mm/yr
INTERVAL BETWEEN MAJOR RUPTURES: roughly 250 years
PROBABLE MAGNITUDES: M_w6.5 - 7.5
MOST RECENT SURFACE RUPTURE: 18th century A.D.(?)

San Andreas Fault Zone

TYPE OF FAULT: right-lateral strike-slip
LENGTH: 1200 km
550 km south from Parkfield; 650km northward
NEARBY COMMUNITY: Parkfield, Frazier Park, Palmdale, Wrightwood, San Bernardino, Banning, Indio
LAST MAJOR RUPTURE: January 9, 1857 (Mojave segment); April 18, 1906 (Northern segment)
SLIP RATE: about 20 to 35 mm per year
INTERVAL BETWEEN MAJOR RUPTURES: average of about 140 years on the Mojave segment; recurrence interval varies greatly -- from under 20 years (at Parkfield only) to over 300 years
PROBABLE MAGNITUDES: M_w6.8 - 8.0

San Jacinto Fault Zone

TYPE OF FAULTING : right-lateral strike-slip; minor right-reverse
LENGTH: 210 km, including Coyote Creek fault
NEARBY COMMUNITIES: Lytle Creek, San Bernardino, Loma Linda, San Jacinto, Hemet, Anza, Borrego Springs, Ocotillo Wells
MOST RECENT SURFACE RUPTURE: within the last few centuries; April 9, 1968, M_w6.5 on Coyote Creek segment
SLIP RATE: typically between 7 and 17 mm/yr
INTERVAL BETWEEN SURFACE RUPTURES: between 100 and 300 years, per segment
PROBABLE MAGNITUDES: M_w6.5 - 7.5

Whittier Fault

TYPE OF FAULTING: right-lateral strike-slip with some reverse slip
LENGTH: about 40 km
NEARBY COMMUNITIES: Yorba Linda, Hacienda Heights, Whittier
MOST RECENT SURFACE RUPTURE: Holocene
SLIP RATE: between 2.5 and 3.0 mm/yr
INTERVAL BETWEEN MAJOR RUPTURES: unknown
PROBABLE MAGNITUDES: M_w6.0 - 7.2
OTHER NOTES: The Whittier fault dips toward the northeast.

Section 6: Flooding Hazards in the City of Santa Fe Springs

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Why are Floods a Threat to the City of Santa Fe Springs?
The City of Santa Fe Springs ("City") is adjacent to the San Gabriel River, which is susceptible to flooding events. Flooding poses a threat to life and safety and can cause severe damage to public and private property.

According to the City of Santa Fe Springs' Multi-hazard Function Plan, the City has three areas that are designated as zone "A" by the National Flood Insurance Program. These areas are as follows: 1) North of Florence Avenue between Pioneer Boulevard and Norwalk Boulevard. 2) North of Bora Drive east of North Coyote Creek Fork and City boundary. 3) North of Lakeland Road between Bloomfield Avenue and Greenstone Avenue. In Light of the FIRM Zone A Floodplain designations located in various areas in the City, the flood threat to the City is considered to be moderate. However, the sizes of the zone present a relatively minor percentage of the City's total land area. Map 6-1 illustrates which parts of Santa Fe Springs lie in flood zones.

The City was most recently affected by the flooding in 1950 that affected the northern portion of the City. There were no damages to public facilities and a Presidential Disaster Declaration was not made.

History of Flooding in the City of Santa Fe Springs
Floods have affected the citizens of the City as early as 1865, when it was reported that the San Gabriel River crested at 12 feet over the banks of the river. Since than, flood control projects have been implemented that minimize flood hazards and the number of flood zones in the City.

There are a number of rivers in the Southern California region, but the river with the best recorded history is the Los Angeles River. The flood history of the Los Angeles River is generally indicative of the flood history of much of Southern California.

Historic Flooding in Los Angeles County
Records show that since 1811, the Los Angeles River has flooded 30 times, on average once every 6.1 years. Averages are deceiving though, for the Los Angeles basin goes through periods of drought and then periods of above average rainfall. Between 1889 and 1891 the river flooded every year, and from 1941 to 1945, the river flooded 5 times. Conversely, from 1896 to 1914, a period of 18 years, and again from 1944 to 1969, a period of 25 years, the river did not have serious floods.[1]

Table 6-1: Major Floods of the Los Angeles River

1811	Flooding
1815	Flooding
1825	L.A. River changed its course back from the Ballona wetlands to San Pedro
1832	Heavy flooding
1861-62	Heavy flooding. Fifty inches of rain falls during December and January.
1867	Floods create a large, temporary lake out to Ballona Creek.
1876	The Novician Deluge
1884	Heavy flooding causes the river to change course again, turning east to Vernon and then southward to San Pedro.
1888-1891	Annual floods
1914	Heavy flooding. Great damage to the harbor.
1921	Flooding
1927	Moderate flood
1934	Moderate flood starting January 1. Forty dead in La Canada.
1938	Great County-wide flood with 4 days of rain. Most rain on day 4.
1941-44	L.A. River floods five times.
1952	Moderate flooding
1969	One heavy flood after 9 day storm. One moderate flood.
1978	Two moderate floods
1979	Los Angeles experiences severe flooding and mudslides.
1980	Flood tops banks of river in Long Beach. Sepulveda Basin spillway almost opened.
1983	Flooding kills six people.
1992	15 year flood. Motorists trapped in Sepulveda basin. Six people dead.
1994	Heavy flooding
Sources: http://www.lalc.k12.ca.us/target/units/river/tour/hist.html and (http://www.losangelesalmanac.com/topics/History/hi01i.htm)	

While the City is 13 miles southeast of downtown Los Angeles, it is not so far away as to be unaffected by the heavy rains that brought flooding to Los Angeles. In addition, the towering mountains that give the Los Angeles region its spectacular views also wring a great deal of rain out of the storm clouds that pass through. Because the mountains are so steep, the rainwater moves rapidly down the slopes and across the coastal plains on its way to the ocean.

> "The Santa Monica, Santa Susana and Verdugo Mountains, which surround three sides of the valley, seldom reach heights above three thousand feet. The Western San Gabriel Mountains, in contrast, have elevations of more than seven thousand feet. These higher ridges often trap eastern-moving winter storms. Although downtown Los Angeles averages just fifteen inches of rain a year, some mountain peaks in the San Gabriels receive more than forty inches of precipitation annually".[2]

Naturally, this rainfall moves rapidly down stream, often with severe consequences for anything in its path. In extreme cases, flood-generated debris flows will roar down a canyon at speeds near 40 miles per hour with a wall of mud, debris and water tens of feet high.

In Southern California, stories of floods, debris flows, persons buried alive under tons of mud and rock and persons swept away to their death in a river flowing at thirty-five miles an hour are without end.

However, flooding of the Los Angeles River, given its distance from the City of Santa Fe Springs would not directly affect the City. Although the San Gabriel River is in closer proximity to a small area of western Santa Fe Springs, most of the city is at a higher elevation and therefore the impact of river flooding would be very minimal. Data on the impact on Santa Fe Springs of past San Gabriel River flooding is not available.

What Factors Create Flood Risk?
Flooding occurs when climate, geology, and hydrology combine to create conditions where water flows outside of its usual course. The City's Multi-Hazard Functional Plan (MHFP) states there are multiple low-lying areas in the City that have potential for flooding. Factors that contribute to urban flooding include debris accumulation on storm drains and in flood control channels.

Winter Rainfall
The average annual rainfall in Los Angeles is 14.8 inches. But the term "average" means very little as the annual rainfall during this time period has ranged from only 4.35 inches in 2001-2002 to 38.2 inches in 1883-1884 and 25.28 inches in 2004-2005. In fact, in only fifteen of the past 125 years, has the annual rainfall been within plus or minus 10% of the 14.9 inch average. And in only 38 years has the annual rainfall been within plus or minus 20% of the 14.9 inch average. This makes the Los Angeles basin a land of extremes in terms of annual precipitation.

The City is in the southeastern section of the Los Angeles Basin. It is located west of the Puente Hills, which increases the collection of rainwater.

Monsoons
Another relatively regular source for heavy rainfall, particularly in the mountains and adjoining cities is from summer tropical storms. Table 6-2 lists tropical storms that have had significant rainfall in the past century and the general areas affected by these storms. These tropical storms usually coincide with El Niño years.

Table 6-2: Tropical Storms of Southern California

Tropical Storms that have affected Southern California during the 20th Century			
Month-Year	**Date(s)**	**Area(s) Affected**	**Rainfall**
July 1902	20th & 21st	Deserts & Southern Mountains	up to 2"
Aug. 1906	18th & 19th	Deserts & Southern Mountains	up to 5"
Sept. 1910	15th	Mountains of Santa Barbara County	2"
Aug. 1921	20th & 21st	Deserts & Southern Mountains	up to 2"
Sept. 1921	30th	Deserts	up to 4"
Sept. 1929	18th	Southern Mountains & Deserts	up to 4"
Sept. 1932	28th - Oct 1st	Mountains & Deserts, 15 Fatalities	up to 7
Aug. 1935	25th	Southern Valleys, Mountains & Deserts	up to 2"
Sept. 1939	4th - 7th	Southern Mountains, Southern & Eastern Deserts	up to 7
	11th & 12th	Deserts, Central & Southern Mountains	up to 4"
	19th - 21st	Deserts, Central & Southern Mountains	up to 3"
	25th	Long Beach, W/ Sustained Winds of 50 Mph	5"
Sept. 1945	9th & 10th	Central & Southern Mountains	up to 2"
Sept. 1946	30th - Oct 1st	Southern Mountains	up to 4"
Aug. 1951	27th - 29th	Southern Mountains & Deserts	2 to 5"
Sept. 1952	19th - 21st	Central & Southern Mountains	up to 2"
July 1954	17th - 19th	Deserts & Southern Mountains	up to 2"
July 1958	28th & 29th	Deserts & Southern Mountains	up to 2"
Sept. 1960	9th & 10th	Julian	3.40"
Sept. 1963	17th - 19th	Central & Southern Mountains	up to 7"
Sept. 1967	1st - 3rd	Southern Mountains & Deserts	2"
Oct. 1972	6th	Southeast Deserts	up to 2"
Sept. 1976	10th & 11th	Central & Southern Mountains. Ocotillo, CA was Destroyed 3 Fatalities	6 to 12"
Aug. 1977	n/a	Los Angeles	2"
		Mountains	up to 8"
Oct. 1977	6th & 7th	Southern Mountains & Deserts	up to 2
Sept. 1978	5th & 6th	Mountains	3"
Sept. 1982	24th - 26th	Mountains	up to 4"
Sept. 1983	20th & 21st	Southern Mountains & Deserts	up to 3"
http://www.fema.gov/nwz97/eln_scal.shtm			

Geography and Geology
The greater Los Angeles Basin is the product of rainstorms and erosion for millennia. "Most of the mountains that ring the valleys and coastal plain are deeply fractured faults

and, as they (the mountains) grew taller, their brittle slopes were continually eroded. Rivers and streams carried boulders, rocks, gravel, sand, and silt down these slopes to the valleys and coastal plain....In places these sediments are as much as twenty thousand feet thick"[3]

Much of the coastal plain rests on the ancient rock debris and sediment washed down from the mountains. This sediment can act as a sponge, absorbing vast quantities of rain in those years when heavy rains follow a dry period. But like a sponge that is near saturation, the same soil fills up rapidly when a heavy rain follows a period of relatively wet weather. So even in some years of heavy rain, flooding is minimal because the ground is relatively dry. The same amount of rain following a wet period of time can cause extensive flooding.

The greater Los Angeles Basin is for all intents and purposes developed. This leaves precious little open land to absorb rainfall. This lack of open ground forces water to remain on the surface and rapidly accumulate. If it were not for the massive flood control system with its concrete lined river and stream beds, flooding would be a much more common occurrence. In-fill building is becoming a much more common practice in many areas. Developers tear down an older home which typically covers up to 40% of the lot size and replacing it with three or four town homes or apartments which may cover 90-95% of the lot.

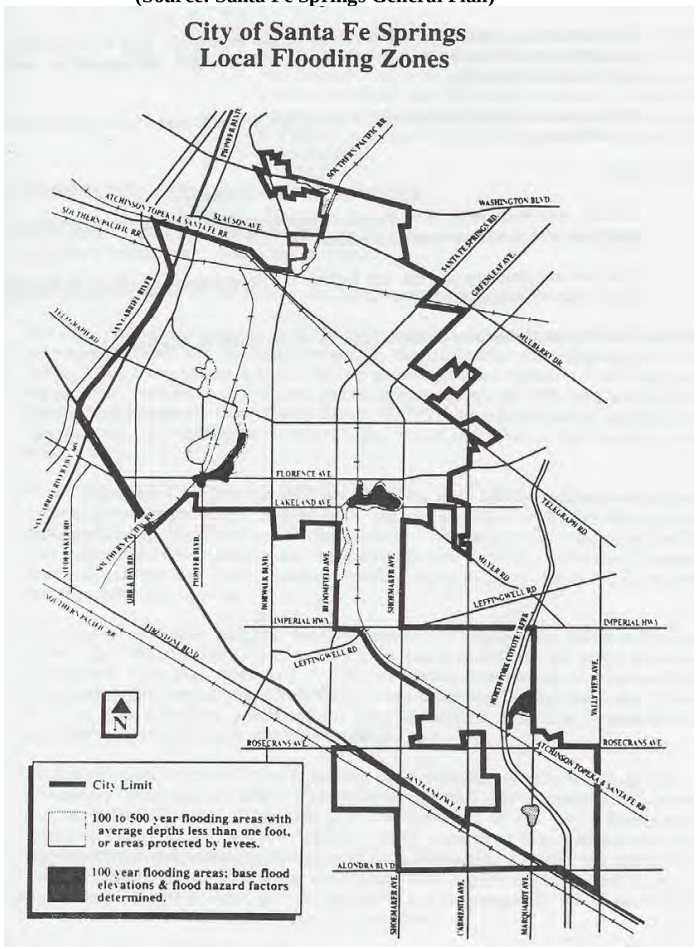
Another potential source of flooding is "asphalt creep." The street space between the curbs of a street is a part of the flood control system. Water leaves property and accumulates in the streets, where it is directed towards the underground portion of the flood control system. The carrying capacity of the street is determined by the width of the street and the height of the curbs along the street. Often, when streets are being resurfaced, a one to two inch layer of asphalt is laid down over the existing asphalt. This added layer of asphalt subtracts from the rated capacity of the street to carry water. Thus the original engineered capacity of the entire storm drain system is marginally reduced over time. Subsequent re-paving of the street will further reduce the engineered capacity even more.

Flood Terminology

Floodplain
A floodplain is a land area adjacent to a river, stream, lake, estuary, or other water body that is subject to flooding. This area, if left undisturbed, acts to store excess flood water. The floodplain is made up of two sections: the floodway and the flood fringe.

100-Year Flood
The 100-year flooding event is the flood having a one percent chance of being equaled or exceeded in magnitude in any given year. Contrary to popular belief, it is not a flood occurring once every 100 years. The 100-year floodplain is the area adjoining a river, stream, or watercourse covered by water in the event of a 100-year flood. Map 5-1 illustrates the 100-year floodplain in the City.

Map 6-1: Floodplains in the City
(Source: Santa Fe Springs General Plan)



Floodway
The floodway is one of two main sections that make up the floodplain. Floodways are defined for regulatory purposes. Unlike floodplains, floodways do not reflect a recognizable geologic feature. For NFIP purposes, floodways are defined as the channel of a river or stream, and the overbank areas adjacent to the channel. The floodway carries the bulk of the flood water downstream and is usually the area where water velocities and forces are the greatest. NFIP regulations require that the floodway be kept open and free from development or other structures that would obstruct or divert flood flows onto other properties.

The City regulations prohibit all development in the floodway. The NFIP floodway definition is "the channel of a river or other watercourse and adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot. Floodways are not mapped for all rivers and streams but are generally mapped in developed areas.

Flood Fringe
The flood fringe refers to the outer portions of the floodplain, beginning at the edge of the floodway and continuing outward.

Development
For floodplain ordinance purposes, development is broadly defined by the City Zoning Ordinance to mean "any manmade change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation, or drilling operations." The definition of development for floodplain purposes is generally broader and includes more activities than the definition of development used in other sections of local land use ordinances.

Base Flood Elevation (BFE)
The term "Base Flood Elevation" refers to the elevation (normally measured in feet above sea level) that the base flood is expected to reach. Base flood elevations can be set at levels other than the 100-year flood. Some communities choose to use higher frequency flood events as their base flood elevation for certain activities, while using lower frequency events for others. For example, for the purpose of storm water management, a 25-year flood event might serve as the base flood elevation; while the 500-year flood event may serve as base flood elevation for the tie down of mobile homes. The regulations of the NFIP focus on development in the 100-year floodplain.

Characteristics of Flooding
Two types of flooding primarily affect the City: riverine flooding and urban flooding (see descriptions below). In addition, any low-lying area has the potential to flood. The flooding of developed areas may occur when the amount of water generated from rainfall and runoff exceeds a storm water system's capability to remove it.

Riverine Flooding
Riverine flooding is the overbank flooding of rivers and streams, historically has not been

an issue. The natural processes of riverine flooding add sediment and nutrients to fertile floodplain areas. Flooding in large river systems typically results from large-scale weather systems that generate prolonged rainfall over a wide geographic area, causing flooding in hundreds of smaller streams, which then drain into the major rivers. Map 6-1 shows the various river basins (or flood zones) in the City.

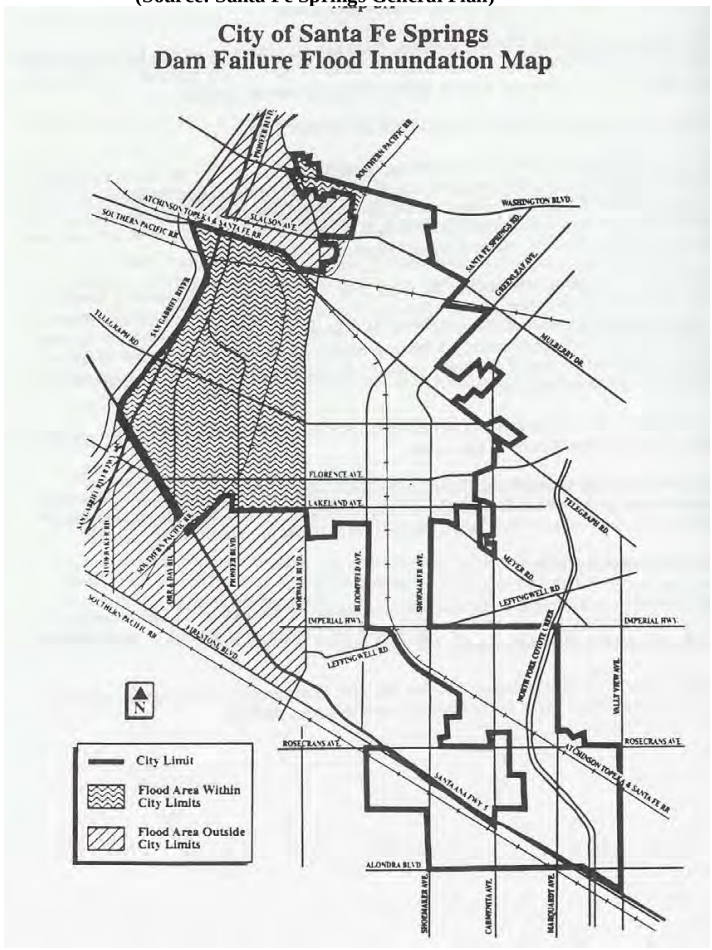
Shallow area flooding is a special type of riverine flooding. FEMA defines shallow flood hazards as areas that are inundated by the 100-year flood with flood depths of only one to three feet. These areas are generally flooded by low velocity sheet flows of water.

Urban Flooding
As land is converted from fields or woodlands to roads and parking lots, it loses its ability to absorb rainfall. Urbanization of a watershed changes the hydrologic systems of the basin. Heavy rainfall collects and flows faster on impervious concrete and asphalt surfaces. The water moves from the clouds, to the ground, and into streams at a much faster rate in urban areas. Adding these elements to the hydrological systems can result in flood waters that rise very rapidly and peak with violent force.

A majority of the area in the City of Santa Fe Springs has a high concentration of impermeable surfaces that either collect water, or concentrate the flow of water in unnatural channels. During periods of urban flooding, streets can become swift moving rivers and basements can fill with water. Storm drains often back up with vegetative debris causing additional, localized flooding.

Dam Failure Flooding
Loss of life and damage to structures, roads, and utilities may result from a dam failure. Economic losses can also result from a lowered tax base and lack of utility profits. According to the City's General Plan, the greatest threat from dam inundation comes from the Whittier Narrows Dam located 5 miles northwest of the City's northern boundary. This earth filled dam was built in 1956 and has a capacity of 9.75 million gallons of water. The City of Santa Fe Springs Multi-Hazard Functional Plan states there is a low risk that the City will experience flooding due to dam failure. If dam inundation should occur, the northern most part of Santa Fe Springs would become flooded approximately one hour after dam failure. If a dam failure occurs the flood inundation area would be between Norwalk Blvd. on the east and the Los Angeles River to the west. The water level is predicted to be five feet in depth, gradually declining to four feet at the southern end of the City's impacted area. If the dam were to fail, the City's General Plan states it could require the evacuation of 17,500 residents and 300 businesses. Map 6-2 shows the portion of Santa Fe Springs that would be affected by dam failure.

Map 6-2: City Dam Failure Inundation
(Source: Santa Fe Springs General Plan)



Because dam failure can have severe consequences, FEMA requires that all dam owners develop Emergency Action Plans (EAP) for warning, evacuation, and post-flood actions. Although there may be coordination with county officials in the development of the EAP, the responsibility for developing potential flood inundation maps and facilitation of emergency response is the responsibility of the dam owner. For more detailed information regarding dam failure flooding, and potential flood inundation zones for a particular dam in the county, refer to the City Emergency Action Plan.

There have been a total of 45 dam failures in California since the 19th century. The significant dam failures in Southern California are listed in Table 6-3.

Table 6-3: Dam Failures in Southern California

Sheffield	Santa Barbara	1925	Earthquake slide
Puddingstone	Pomona	1926	Overtopping during construction
Lake Hemet	Palm Springs	1927	Overtopping
Saint Francis	San Francisquito Canyon	1928	Sudden failure at full capacity through foundation, 426 deaths
Cogswell	Monrovia	1934	Breaching of concrete cover
Baldwin Hills	Los Angeles	1963	Leak through embankment turned into washout, 3 deaths
http://cee.engr.ucdavis.edu/faculty/lund/dams/Dam_History_Page/Failures.htm			

The two most significant dam failures are the St. Francis Dam in 1928 and the Baldwin Hills Dam in 1963.

> "The failure of the St. Francis Dam, and the resulting loss of over 500 lives in the path of a roaring wall of water, was a scandal that resulted in the almost complete destruction of the reputation of its builder, William Mulholland.
>
> Mulholland was an immigrant from Ireland who rose up through the ranks of the City of Los Angeles Water Department to the position of Chief Engineer. It was he who proposed, designed, and supervised the construction of the Los Angeles Aqueduct, which brought water from the Owens Valley to the Los Angeles. The St. Francis Dam, built in 1926, was 180 feet high and 600 feet long; it was located near Saugus in the San Francisquito Canyon.
>
> The dam gave way on March 12, 1928, three minutes before midnight. Its waters swept through the Santa Clara Valley toward the Pacific Ocean, about 54 miles away. 65 miles of valley were devastated before the water finally made its way into the ocean between Oxnard and Ventura. At its peak the wall of water was said to be 78 feet high; by the time it hit Santa

Paula, 42 miles south of the dam, the water was estimated to be 25 feet deep. Almost everything in its path was destroyed: livestock, structures, railways, bridges, and orchards. By the time it was over, parts of Ventura County lay under 70 feet of mud and debris. Over 500 people were killed and damage estimates topped $20 million."[4]

The Baldwin Hills dam failed during the daylight hours, and was one of the first disaster events documented by a live helicopter broadcast.

The Baldwin Hills Dam collapsed with the fury of a thousand cloudbursts, sending a 50-foot wall of water down Cloverdale Avenue and slamming into homes and cars on Dec. 14, 1963.

Five people were killed. Sixty-five hillside houses were ripped apart, and 210 homes and apartments were damaged. The flood swept northward in a V-shaped path roughly bounded by La Brea Avenue and Jefferson and La Cienega Boulevards.

The earthen dam that created a 19-acre reservoir to supply drinking water for West Los Angeles residents ruptured at 3:38 p.m. As a pencil-thin crack widened to a 75-foot gash, 292 million gallons surged out. It took 77 minutes for the lake to empty. But it took a generation for the neighborhood below to recover. Two decades passed before the Baldwin Hills ridge top was reborn.

Photo 6-1: Baldwin Hills Dam



The cascade caused an unexpected ripple effect that is still being felt in Los Angeles and beyond. It foreshadowed the end of urban-area earthen dams as a major element of the Department of Water and Power's water storage system. It prompted a tightening of Division of Safety of Dams control over reservoirs throughout the state.

The live telecast of the collapse from a KTLA-TV helicopter is considered the precursor to airborne news coverage that is now routine everywhere."[5]

Debris Flows

Another flood related hazard that can affect certain parts of the Southern California region are debris flows. Most typically debris flows occur in mountain canyons and the foothills against the San Gabriel Mountains. However, any hilly or mountainous area with intense rainfall and the proper geologic conditions may experience one of these very sudden and devastating events.

"Debris flows, sometimes referred to as mudslides, mudflows, lahars, or debris avalanches, are common types of fast-moving landslides. These flows generally occur during periods of intense rainfall or rapid snow melt. They usually start on steep hillsides as shallow landslides that liquefy and accelerate to speeds that are typically about 10 miles per hour, but can exceed 35 miles per hour. The consistency of debris flow ranges from watery mud to thick, rocky mud that can carry large items such as boulders, trees, and cars. Debris flows from many different sources can combine in channels, and their destructive power may be greatly increased. They continue flowing down hills and through channels, growing in volume with the addition of water, sand, mud, boulders, trees, and other materials. When the flows reach flatter ground, the debris spreads over a broad area, sometimes accumulating in thick deposits that can wreak havoc in developed areas."[6]

What is the Effect of Development on Floods?
When structures or fill are placed in the floodway or floodplain water is displaced. Development raises the river levels by forcing the river to compensate for the flow space obstructed by the inserted structures and/or fill. When structures or materials are added to the floodway or floodplain and no fill is removed to compensate, serious problems can arise. Flood waters may be forced away from historic floodplain areas. As a result, other existing floodplain areas may experience flood waters that rise above historic levels. Local governments must require engineer certification to ensure that proposed developments will not adversely affect the flood carrying capacity of the Special Flood Hazard Area (SFHA). Displacement of only a few inches of water can mean the difference between no structural damage occurring in a given flood event, and the inundation of many homes, businesses, and other facilities. Careful attention should be given to development that occurs within the floodway to ensure that structures are prepared to withstand base flood events. In highly urbanized areas, increased paving can lead to an increase in volume and velocity of runoff after a rainfall event, exacerbating the potential flood hazards. Care should be taken in the development and implementation of storm water management systems to ensure that these runoff waters are dealt with effectively.

How are Flood-Prone Areas Identified?
Flood maps and Flood Insurance Studies (FIS) are often used to identify flood-prone areas. The NFIP was established in 1968 as a means of providing low-cost flood insurance to the nation's flood-prone communities. The NFIP also reduces flood losses through regulations that focus on building codes and sound floodplain management. In the City, the NFIP and related building code regulations went into effect on April 15, 1980. NFIP regulations (44 Code of Federal Regulations (CFR) Chapter 1, Section 60, 3) require that all new construction in floodplains must be elevated at or above base flood level.

Flood Insurance Rate Maps (FIRM) and Flood Insurance Studies (FIS) Floodplain maps are the basis for implementing floodplain regulations and for delineating flood insurance purchase requirements. A Flood Insurance Rate Map (FIRM) is the official map produced by FEMA which delineates SFHA in communities where NFIP regulations apply. FIRMs are also used by insurance agents and mortgage lenders to determine if flood insurance is required and what insurance rates should apply.

Water surface elevations are combined with topographic data to develop FIRMs. FIRMs illustrate areas that would be inundated during a 100-year flood, floodway areas, and elevations marking the 100-year-flood level. In some cases they also include base flood elevations (BFEs) and areas located within the 500-year floodplain. Flood Insurance Studies and FIRMs produced for the NFIP provide assessments of the probability of flooding at a given location. FEMA conducted many Flood Insurance Studies in the late 1970s and early 1980s. These studies and maps represent flood risk at the point in time when FEMA completed the studies. However, it is important to note that not all 100-year or 500-year floodplains have been mapped by FEMA. It is estimated that the flood maps cover 1.6% of the total population in the City.

FEMA flood maps are not entirely accurate. These studies and maps represent flood risk at the point in time when FEMA completed the studies, and does not incorporate planning for floodplain changes in the future due to new development. Although FEMA is considering changing that policy, it is optional for local communities. The FEMA FIRM map for the City was completed in 1980. Man-made and natural changes to the environment have changed the dynamics of storm water run-off since then.

Flood Mapping Methods and Techniques
Although many communities rely exclusively on FIRMs to characterize the risk of flooding in their area, there are some flood-prone areas that are not mapped but remain susceptible to flooding. These areas include locations next to small creeks, local drainage areas, and areas susceptible to manmade flooding.

Communities find it particularly useful to overlay flood hazard areas on tax assessment parcel maps. This allows a community to evaluate the flood hazard risk for a specific parcel during review of a development request. Coordination between FEMA and local planning jurisdictions is the key to making a strong connection with GIS technology for the purpose of flood hazard mapping.

FEMA and the Environmental Systems Research Institute (ESRI), a private company, have formed a partnership to provide multi-hazard maps and information to the public via the Internet. ESRI produces GIS software, including ArcViewC9 and ArcInfoC9 . The ESRI web site has information on GIS technology and downloadable maps. The hazards maps provided on the ESRI site are intended to assist communities in evaluating geographic information about natural hazards. Flood information for most communities is available on the ESRI web site. Visit www.esri.com for more information.

Hazard Assessment

Hazard Identification
Hazard identification is the first phase of flood-hazard assessment. Identification is the process of estimating: (1) the geographic extent of the floodplain (i.e., the area at risk from flooding); (2) the intensity of the flooding that can be expected in specific areas of the floodplain; and (3) the probability of occurrence of flood events. This process usually results in the creation of a floodplain map. Floodplain maps provide detailed information that can assist jurisdictions in making policies and land-use decisions.

Data Sources
The U.S. Department of Housing and Urban Development (HUD) study, which mapped the floodplain in April of 1980. This is when the City initially entered into the NFIP. Los Angeles County has updated portions of the USACE and FEMA maps through smaller drainage studies in the county since that time.

Vulnerability Assessment
Vulnerability assessment is the second step of flood-hazard assessment. It combines the floodplain boundary, generated through hazard identification, with an inventory of the

property within the floodplain. Understanding the population and property exposed to natural hazards will assist in reducing risk and preventing loss from future events. Because site-specific inventory data and inundation levels given for a particular flood event (10-year, 25-year, 50-year, 100-year, 500-year) are not readily available, calculating a community's vulnerability to flood events is not straightforward. The amount of property in the floodplain, as well as the type and value of structures on those properties, should be calculated to provide a working estimate for potential flood losses.

The City of Santa Fe Springs has conducted a vulnerability assessment on the impacts of flooding occurring within the City to determine its possible loss to structures, buildings and infrastructure in the floodplain areas or the result of dam failure or urban flooding. The City of Santa Fe Springs estimates a 1% loss in its infrastructure and buildings, primarily the result of urban flooding in the floodplain prone areas due to systems or equipment failure.

Disruption of Critical Services
Critical facilities include police stations, fire stations, hospitals, shelters, and other facilities that provide important services to the community. These facilities and their services need to be functional after a flooding event.

Risk Analysis
Risk analysis is the third and most advanced phase of a hazard assessment. It builds upon the hazard identification and vulnerability assessment. A flood risk analysis for the City should include two components: (1) the life and value of property that may incur losses from a flood event (defined through the vulnerability assessment); and (2) the number and type of flood events expected to occur over time. Within the broad components of a risk analysis, it is possible to predict the severity of damage from a range of events. Flow velocity models can assist in predicting the amount of damage expected from different magnitudes of flood events. The data used to develop these models is based on hydrological analysis of landscape features. Changes in the landscape, often associated with human development, can alter the flow velocity and the severity of damage that can be expected from a flood event.

Using GIS technology and flow velocity models, it is possible to map the damage that can be expected from flood events over time. It is also possible to pinpoint the effects of certain flood events on individual properties. At the time of publication of this plan, data was insufficient to conduct a risk analysis for flood events in the City. However, the current mapping projects will result in better data that will assist in understanding the potential risk. This plan includes recommendations for building partnerships that will support the development of a flood risk analysis in the City of Santa Fe Springs.

Community Flood Issues

What is Susceptible to Damage during a Flood Event?
The largest impact on communities from flood events is the loss of life and property. During certain years, property losses resulting from flood damage are extensive.

Development in the floodplains of the City will continue to be at risk from flooding because flood damage occurs on a regular basis throughout the county. Property loss from floods strikes both private and public property.

Property Loss Resulting from Flooding Events
The type of property damage caused by flood events depends on the depth and velocity of the flood waters. Faster moving flood waters can wash buildings off their foundations and sweep cars downstream. Pipelines, bridges, and other infrastructure can be damaged when high waters combine with flood debris. Extensive damage can be caused by basement flooding and landslide damage related to soil saturation from flood events. Most flood damage is caused by water saturating materials susceptible to loss (i.e., wood, insulation, wallboard, fabric, furnishings, floor coverings, and appliances). In many cases, flood damage to homes renders them unlivable.

Manufactured Homes
Statewide, the 1996 floods destroyed 156 housing units. Of those units, 61% were mobilehomes and trailers. Many older manufactured home parks are located in floodplain areas. Manufactured homes have a lower level of structural stability than stick-built homes, and must be anchored to provide additional structural stability during flood events. Because of confusion in the late 1980s resulting from multiple changes in NFIP regulations, there are some communities that do not actively enforce anchoring requirements. Lack of enforcement of manufactured home construction standards in floodplains can contribute to severe damages from flood events.

There are two mobilehome parks located in the City of Santa Fe Springs, however neither one is located in the 100-year floodplain:

- Lakeland Villa Mobilehome Park (Northwest corner of Lakeland Road and Norwalk Boulevard)
- Elmwood Trailer Park (Southeast corner of Sorensen Avenue and Washington Boulevard)

Business/Industry
Flood events impact businesses by damaging property and by interrupting business. Flood events can cut off customer access to a business as well as close a business for repairs. A quick response to the needs of businesses affected by flood events can help a community maintain economic vitality in the face of flood damage. Responses to business damages can include funding to assist owners in elevating or relocating flood-prone business structures.

Public Infrastructure
Publicly owned facilities are a key component of daily life for all citizens of the county. Damage to public water and sewer systems, transportation networks, flood control facilities, emergency facilities, and offices can hinder the ability of local government to deliver services. Government can take action to reduce the risk to public infrastructure from flood events, as well as craft public policy that reduces risk to private property from flood events.

Roads
During natural hazard events or any type of emergency or disaster, dependable road connections are critical for providing emergency services. Roads systems in the City are maintained by multiple jurisdictions. Federal, state, county, and City governments all have a stake in protecting roads from flood damage. Road networks often traverse floodplain and floodway areas. Transportation agencies responsible for road maintenance are typically aware of roads at risk from flooding.

Bridges
Bridges are key points of concern during flood events because they are important links in road networks, river crossings, and they can be obstructions in watercourses, inhibiting the flow of water during flood events. The bridges in the City are state, county, City, or privately owned. A state-designated inspector must inspect all state, county, and City bridges every two years; but private bridges are not inspected, and can be very dangerous. The inspections are rigorous, looking at everything from seismic capability to erosion and scour.

Storm Water Systems
Local drainage problems are common throughout the City. There is a drainage master plan, and City Public Works staff is aware of local drainage threats. The problems are often present where storm water runoff enters culverts or goes underground into storm sewers. As stated in the City's General Plan, the drainage system in Santa Fe Springs can generally manage storm water from a 10 year storm.

Water/Wastewater Treatment Facilities
The City receives its water from three sources: well water, the Central Basin Water Authority, and the Metropolitan Water District. The well water is controlled by the Water Replenishment District of Southern California. The cities of Whittier, Pico Rivera, and the Southern California Water Company have agreements to provide water service to Santa Fe Springs in an emergency situation.

Water Quality
The Santa Fe Springs General Plan states the City's water resources are protected and managed by the State Department of Water Resources. Environmental quality problems include bacteria, toxins, and pollution. The water rights are administered by the State Water Resources Control Board. The Board also regulates the water quality for Santa Fe Springs.

Flood Endnotes

1. http://www.lalc.k12.ca.us/target/units/river/tour/hist.html

2. Gumprecht, Blake, 1999, Johns Hopkins University Press, Baltimore, MD.

3. Ibid

4. http://www.usc.edu/isd/archives/la/scandals/st_francis_dam.html

5. http://www.latimes.com/news/local/surroundings/la-me-surround11dec11,0,1754871.story?coll=la-adelphia-right-rail

6. http://www.fema.gov/rrr/talkdiz/landslide.shtm#what

Appendix A:
Master Resource Directory

The Resource Directory provides contact information for local, regional, state, and federal programs that are currently involved in hazard mitigation activities. The Hazard Mitigation Advisory Committee may look to the organizations on the following pages for resources and technical assistance. The Resource Directory provides a foundation for potential partners in action item implementation.

The Hazard Mitigation Advisory Committee will continue to add contact information for organizations currently engaged in hazard mitigation activities. This section may also be used by various community members interested in hazard mitigation information and projects.

American Public Works Association			
Level: National	Hazard: Multi	http://www.apwa.net	
2345 Grand Boulevard		Suite 500	
Kansas City, MO 64108-2641		Ph: 816-472-6100	Fx: 816-472-1610
Notes: The American Public Works Association is an international educational and professional association of public agencies, private sector companies, and individuals dedicated to providing high quality public works goods and services.			
Association of State Floodplain Managers			
Level: Federal	Hazard: Flood	www.floods.org	
2809 Fish Hatchery Road			
Madison, WI 53713		Ph: 608-274-0123	Fx:
Notes: The Association of State Floodplain Managers is an organization of professionals involved in floodplain management, flood hazard mitigation, the National Flood Insurance Program, and flood preparedness, warning and recovery			
Building Seismic Safety Council (BSSC)			
Level: National	Hazard: Earthquake	www.bssconline.org	
1090 Vermont Ave., NW		Suite 700	
Washington, DC 20005		Ph: 202-289-7800	Fx: 202-289-109
Notes: The Building Seismic Safety Council (BSSC) develops and promotes building earthquake risk mitigation regulatory provisions for the nation.			

California Department of Transportation (CalTrans)			
Level: State	Hazard: Multi	http://www.dot.ca.gov/	
120 S. Spring Street			
Los Angeles, CA 90012		Ph: 213-897-3656	Fx:
Notes: CalTrans is responsible for the design, construction, maintenance, and operation of the California State Highway System, as well as that portion of the Interstate Highway System within the state's boundaries. Alone and in partnership with Amtrak, Caltrans is also involved in the support of intercity passenger rail service in California.			
California Resources Agency			
Level: State	Hazard: Multi	http://resources.ca.gov/	
1416 Ninth Street		Suite 1311	
Sacramento, CA 95814		Ph: 916-653-5656	Fx:
Notes: The California Resources Agency restores, protects and manages the state's natural, historical and cultural resources for current and future generations using solutions based on science, collaboration and respect for all the communities and interests involved.			
California Division of Forestry (CDF)			
Level: State	Hazard: Multi	http://www.fire.ca.gov/php/index.php	
210 W. San Jacinto			
Perris CA 92570		Ph: 909-940-6900	Fx:
Notes: The California Department of Forestry and Fire Protection protects over 31 million acres of California's privately-owned wildlands. CDF emphasizes the management and protection of California's natural resources.			
California Division of Mines and Geology (DMG)			
Level: State	Hazard: Multi	www.consrv.ca.gov/cgs/index.htm	
801 K Street		MS 12-30	
Sacramento, CA 95814		Ph: 916-445-1825	Fx: 916-445-5718
Notes: The California Geological Survey develops and disseminates technical information and advice on California's geology, geologic hazards, and mineral resources.			
California Environmental Resources Evaluation System (CERES)			
Level: State	Hazard: Multi	http://ceres.ca.gov/	
900 N St.		Suite 250	
Sacramento, Ca. 95814		Ph: 916-653-2238	Fx:
Notes: CERES is an excellent website for access to environmental information and websites.			

California Department of Water Resources (DWR)			
Level: State	Hazard: Flood	http://wwwdwr.water.ca.gov	
1416 9th Street			
Sacramento, CA 95814		Ph: 916-653-6192	Fx:
Notes: The Department of Water Resources manages the water resources of California in cooperation with other agencies, to benefit the State's people, and to protect, restore, and enhance the natural and human environments.			

California Department of Conservation: Southern California Regional Office			
Level: State	Hazard: Multi	www.consrv.ca.gov	
655 S. Hope Street		#700	
Los Angeles, CA 90017-2321		Ph: 213-239-0878	Fx: 213-239-0984
Notes: The Department of Conservation provides services and information that promote environmental health, economic vitality, informed land-use decisions and sound management of our state's natural resources.			

California Planning Information Network			
Level: State	Hazard: Multi	www.calpin.ca.gov	
		Ph:	Fx:
Notes: The Governor's Office of Planning and Research (OPR) publishes basic information on local planning agencies, known as the California Planners' Book of Lists. This local planning information is available on-line with new search capabilities and up-to-the- minute updates.			

EPA, Region 9			
Level: Regional	Hazard: Multi	http://www.epa.gov/region09	
75 Hawthorne Street			
San Francisco, CA 94105		Ph: 415-947-8000	Fx: 415-947-3553
Notes: The mission of the U.S. Environmental Protection Agency is to protect human health and to safeguard the natural environment through the themes of air and global climate change, water, land, communities and ecosystems, and compliance and environmental stewardship.			

Federal Emergency Management Agency, Region IX			
Level: Federal	Hazard: Multi	www.fema.gov	
1111 Broadway		Suite 1200	
Oakland, CA 94607		Ph: 510-627-7100	Fx: 510-627-7112
Notes: The Federal Emergency Management Agency is tasked with responding to, planning for, recovering from and mitigating against disasters.			

Federal Emergency Management Agency, Mitigation Division			
Level: Federal	Hazard: Multi	www.fema.gov/fima/planhowto.shtm	
500 C Street, S.W.			
Washington, D.C. 20472		Ph: 202-566-1600	Fx:
Notes: The Mitigation Division manages the National Flood Insurance Program and oversees FEMA's mitigation programs. It has of a number of programs and activities of which provide citizens Protection, with flood insurance; Prevention, with mitigation measures and Partnerships, with communities throughout the country.			

Floodplain Management Association			
Level: Federal	Hazard: Flood	www.floodplain.org	
P.O. Box 50891			
Sparks, NV 89435-0891		Ph: 775-626-6389	Fx: 775-626-6389
Notes: The Floodplain Management Association is a nonprofit educational association. It was established in 1990 to promote the reduction of flood losses and to encourage the protection and enhancement of natural floodplain values. Members include representatives of federal, state and local government agencies as well as private firms.			

Gateway Cities Partnership			
Level: Regional	Hazard: Multi	www.gatewaycities.org	
7300 Alondra Boulevard		Suite 202	
Paramount, CA 90723		Ph: 562-817-0820	Fx:
Notes: Gateway Cities Partnership is a 501 C 3 non-profit Community Development Corporation for the Gateway Cities region of southeast LA County. The region comprises 27 cities that roughly speaking extends from Montebello on the north to Long Beach on the South, the Alameda Corridor on the west to the Orange County line on the east.			

Governor's Office of Emergency Services (OES)			
Level: State	Hazard: Multi	www.oes.ca.gov	
P.O. Box 419047			
Rancho Cordova, CA 95741-9047		Ph: 916 845- 8911	Fx: 916 845- 8910
Notes: The Governor's Office of Emergency Services coordinates overall state agency response to major disasters in support of local government. The office is responsible for assuring the state's readiness to respond to and recover from natural, manmade, and war-caused emergencies, and for assisting local governments in their emergency preparedness, response and recovery efforts.			

Greater Antelope Valley Economic Alliance			
Level: Regional	Hazard: Multi		
42060 N. Tenth Street West			
Lancaster, CA 93534		Ph: 661-945-2741	Fx: 661-945-7711
Notes: The Greater Antelope Valley Economic Alliance, (GA VEA) is a 501 (c)(6) nonprofit organization with a 501(c)(3) affiliated organization the Antelope Valley Economic Research and Education Foundation. GA VEA is a public-private partnership of business, local governments, education, non-profit organizations and health care organizations that was founded in 1999 with the goal of attracting good paying jobs to the Antelope Valley in order to build a sustainable economy.			

Landslide Hazards Program, USGS			
Level: Federal	Hazard: Landslide	http://landslides.usgs.gov/index.html	
12201 Sunrise Valley Drive		MS 906	
Reston, VA 20192		Ph: 703-648- 4000	Fx:
Notes: The NLIC website provides good information on the programs and resources regarding landslides. The page includes information on the National Landslide Hazards Program Information Center, a bibliography, publications, and current projects. USGS scientists are working to reduce long-term losses and casualties from landslide hazards through better understanding of the causes and mechanisms of ground failure both nationally and worldwide.			

Los Angeles County Economic Development Corporation			
Level: Regional	Hazard: Multi	www.laedc.org	
444 S. Flower Street		34th Floor	
Los Angeles, CA 90071		Ph: 213-236-4813	Fx: 213- 623-0281
Notes: The LAEDC is a private, non-profit 501 (c) 3 organization established in 1981 with the mission to attract, retain and grow businesses and jobs in the Los Angeles region. The LAEDC is widely relied upon for its Southern California Economic Forecasts and Industry Trend Reports. Lead by the renowned Jack Kyser (Sr. Vice President, Chief Economist) his team of researchers produces numerous publications to help business, media and government navigate the LA region's diverse economy.			

Los Angeles County Public Works Department			
Level: County	Hazard: Multi	http://ladpw.org	
900 S. Fremont Ave.			
Alhambra, CA 91803		Ph: 626-458-5100	Fx:
Notes: The Los Angeles County Department of Public Works protects property and promotes public safety through Flood Control, Water Conservation, Road Maintenance, Bridges, Buses and Bicycle Trails, Building and Safety, Land Development, Waterworks, Sewers, Engineering, Capital Projects and Airports			

National Wildland/Urban Interface Fire Program			
Level: Federal	Hazard: Wildfire	www.firewise.org/	
1 Batterymarch Park			
Quincy, MA 02169-7471		Ph: 617-770-3000	Fx: 617 770-0700
Notes: FIREWISE maintains a Website designed for people who live in wildfire- prone areas, but it also can be of use to local planners and decision makers. The site offers online wildfire protection information and checklists, as well as listings of other publications, videos, and conferences.			

National Resources Conservation Service			
Level: Federal	Hazard: Multi	http://www.nrcs.usda.gov/	
14th and Independence Ave., SW		Room 5105-A	
Washington, DC 20250		Ph: 202-720-7246	Fx: 202-720-7690
Notes: NRCS assists owners of America's private land with conserving their soil, water, and other natural resources, by delivering technical assistance based on sound science and suited to a customer's specific needs. Cost shares and financial incentives are available in some cases.			

National Interagency Fire Center (NIFC)			
Level: Federal	Hazard: Wildfire	www.nifc.gov	
3833 S. Development Ave.			
Boise, Idaho 83705-5354		Ph: 208-387- 5512	Fx:
Notes: The NIFC in Boise, Idaho is the nation's support center for wildland firefighting. Seven federal agencies work together to coordinate and support wildland fire and disaster operations.			
National Fire Protection Association (NFPA)			
Level: National	Hazard: Wildfire	http://www.nfpa.org/catalog/home/index.asp	
1 Batterymarch Park			
Quincy, MA 02169-7471		Ph: 617-770-3000	Fx: 617 770-0700
Notes: The mission of the international nonprofit NFPA is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating scientifically-based consensus codes and standards, research, training and education			
National Floodplain Insurance Program (NFIP)			
Level: Federal	Hazard: Flood	www.fema.gov/nfip/	
500 C Street, S.W.			
Washington, D.C. 20472		Ph: 202-566-1600	Fx:
Notes: The Mitigation Division manages the National Flood Insurance Program and oversees FEMA's mitigation programs. It has of a number of programs and activities providing citizens Protection, with flood insurance; Prevention, with mitigation measures and Partnerships, with communities throughout the country.			
National Oceanic /Atmospheric Administration			
Level: Federal	Hazard: Multi	www.noaa.gov	
14th Street & Constitution Ave NW		Rm 6013	
Washington, DC 20230		Ph: 202-482-6090	Fx: 202-482-3154
Notes: NOAA's historical role has been to predict environmental changes, protect life and property, provide decision makers with reliable scientific information, and foster global environmental stewardship.			

National Weather Service, Office of Hydrologic Development			
Level: Federal	Hazard: Flood	http://www.nws.noaa.gov/	
1325 East West Highway		SSMC2	
Silver Spring, MD 20910		Ph: 301-713-1658	Fx: 301-713-0963
Notes: The Office of Hydrologic Development (OHD) enhances National Weather Service (NWS) products by: infusing new hydrologic science, developing hydrologic techniques for operational use, managing hydrologic development by NWS field office, providing advanced hydrologic products to meet needs identified by NWS customers			
National Weather Service			
Level: Federal	Hazard: Multi	http://www.nws.noaa.gov/	
520 North Elevar Street			
Oxnard, CA 93030		Ph: 805-988- 6615	Fx:
Notes: The National Weather Service is responsible for providing weather service to the nation. It is charged with the responsibility of observing and reporting the weather and with issuing forecasts and warnings of weather and floods in the interest of national safety and economy. Briefly, the priorities for service to the nation are: 1. protection of life, 2. protection of property, and 3. promotion of the nation's welfare and economy.			
San Gabriel Valley Economic Partnership			
Level: Regional	Hazard: Multi	www.valleynet.org	
4900 Rivergrade Road		Suite A310	
Irwindale, CA 91706		Ph: 626-856-3400	Fx: 626-856-5115
Notes: The San Gabriel Valley Economic Partnership is a non-profit corporation representing both public and private sectors. The Partnership is the exclusive source for San Gabriel Valley-specific information, expertise, consulting, products, services, and events. It is the single organization in the Valley with the mission to sustain and build the regional economy for the mutual benefit of all thirty cities, chambers of commerce, academic institutions, businesses and residents.			
Sanitation Districts of Los Angeles County			
Level: County	Hazard: Flood	http://www.lacsd.ora/	
1955 Workman Mill Road			
Whittier, CA 90607		Ph:562-699-7411 x2301	Fx:
Notes: The Sanitation Districts provide wastewater and solid waste management for over half the population of Los Angeles County and turn waste products into resources such as reclaimed water, energy, and recyclable materials.			

Santa Monica Mountains Conservancy			
Level: Regional	Hazard: Multi	http://smmc.ca.gov/	
570 West Avenue Twenty-Six		Suite 100	
Los Angeles, CA 90065		Ph: 323-221-8900	Fx:
Notes: The Santa Monica Mountains Conservancy helps to preserve over 55,000 acres of parkland in both wilderness and urban settings, and has improved more than 114 public recreational facilities throughout Southern California.			

South Bay Economic Development Partnership			
Level: Regional	Hazard: Multi	www.southbaypartnership.com	
3858 Carson Street		Suite 110	
Torrance, CA 90503		Ph: 310-792-0323	Fx: 310-543-9886
Notes: The South Bay Economic Development Partnership is a collaboration of business, labor, education and government. Its primary goal is to plan an implement an economic development and marketing strategy designed to retain and create jobs and stimulate economic growth in the South Bay of Los Angeles County.			

South Coast Air Quality Management District (AQMD)			
Level: Regional	Hazard: Multi	www.aqmd.gov	
21865 E. Copley Drive			
Diamond Bar, CA 91765		Ph: 800-CUT-SMOG	Fx:
Notes: AQMD is a regional government agency that seeks to achieve and maintain healthful air quality through a comprehensive program of research, regulations, enforcement, and communication. The AQMD covers Los Angeles and Orange Counties and parts of Riverside and San Bernardino Counties.			

Southern California Earthquake Center (SCEC)			
Level: Regional	Hazard: Earthquake	www.scec.org	
3651 Trousdale Parkway		Suite 169	
Los Angeles, CA 90089-0742		Ph: 213-740-5843	Fx: 213/740-0011
Notes: The Southern California Earthquake Center (SCEC) gathers new information about earthquakes in Southern California, integrates this information into a comprehensive and predictive understanding of earthquake phenomena, and communicates this understanding to end-users and the general public in order to increase earthquake awareness, reduce economic losses, and save lives.			

Southern California Association of Governments (SCAG)			
Level: Regional	Hazard: Multi	www.scag.ca.gov	
818 W. Seventh Street		12th Floor	
Los Angeles, CA 90017		Ph: 213-236-1800	Fx: 213-236-1825
Notes: The Southern California Association of Governments functions as the Metropolitan Planning Organization for six counties: Los Angeles, Orange, San Bernardino, Riverside, Ventura and Imperial. As the designated Metropolitan Planning Organization, the Association of Governments is mandated by the federal government to research and draw up plans for transportation, growth management, hazardous waste management, and air quality.			

State Fire Marshal (SFM)			
Level: State	Hazard: Wildfire	http://osfm.fire.ca.gov	
1131 "S" Street			
Sacramento, CA 95814		Ph: 916-445-8200	Fx: 916-445-8509
Notes: The Office of the State Fire Marshal (SFM) supports the mission of the California Department of Forestry and Fire Protection (CDF) by focusing on fire prevention. SFM regulates buildings in which people live, controls substances which may, cause injuries, death and destruction by fire; provides statewide direction for fire prevention within wildland areas; regulates hazardous liquid pipelines; reviews regulations and building standards; and trains and educates in fire protection methods and responsibilities.			

The Community Rating System (CRS)			
Level: Federal	Hazard: Flood	http://www.fema.gov/nfip/crs.shtm	
500 C Street, S.W.			
Washington, D.C. 20472		Ph: 202-566-1600	Fx:
Notes: The Community Rating System (CRS) recognizes community floodplain management efforts that go beyond the minimum requirements of the NFIP. Property owners within the County would receive reduced NFIP flood insurance premiums if the County implements floodplain management practices that qualify it for a CRS rating. For further information on the CRS, visit FEMA's website.			

United States Geological Survey			
Level: Federal	Hazard: Multi	http://www.usgs.gov/	
345 Middlefield Road			
Menlo Park, CA 94025		Ph: 650-853-8300	Fx:
Notes: The USGS provides reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.			

U.S. Army Corps of Engineers			
Level: Federal	Hazard: Multi	http://www.usace.army.mil	
P.O. Box 532711			
Los Angeles CA 90053- 2325		Ph: 213-452- 3921	Fx:
Notes: The United States Army Corps of Engineers work in engineering and environmental matters. A workforce of biologists, engineers, geologists, hydrologists, natural resource managers and other professionals provide engineering services to the nation including planning, designing, building and operating water resources and other civil works projects.			

USDA Forest Service			
Level: Federal	Hazard: Wildfire	http://www.fs.fed.us	
1400 Independence Ave. SW			
Washington, D.C. 20250-0002		Ph: 202-205-8333	Fx:
Notes: The Forest Service is an agency of the U.S. Department of Agriculture. The Forest Service manages public lands in national forests and grasslands.			

USGS Water Resources			
Level: Federal	Hazard: Multi	www.water.usgs.gov	
6000 J Street		Placer Hall	
Sacramento, CA 95819-6129		Ph: 916-278-3000	Fx: 916-278-3070
Notes: The USGS Water Resources mission is to provide water information that benefits the Nation's citizens: publications, data, maps, and applications software.			

Western States Seismic Policy Council (WSSPC)			
Level: Regional	Hazard: Earthquake	www.wsspc.org/home.html	
125 California Avenue		Suite D201, #1	
Palo Alto, CA 94306		Ph: 650-330-1101	Fx: 650-326-1769
Notes: WSSPC is a regional earthquake consortium funded mainly by FEMA. Its website is a great resource, with information clearly categorized - from policy to engineering to education.			

Westside Economic Collaborative C/O Pacific Western Bank			
Level: Regional	Hazard: Multi	http://www.westside-Ia.or	
120 Wilshire Boulevard			
Santa Monica, CA 90401		Ph: 310-458-1521	Fx: 310-458-6479
Notes: The Westside Economic Development Collaborative is the first Westside regional economic development corporation. The Westside EDC functions as an information gatherer and resource center, as well as a forum, through bringing business, government, and residents together to address issues affecting the region: Economic Diversity, Transportation, Housing, Workforce Training and Retraining, Lifelong Learning, Tourism, and Embracing Diversity.			

Appendix B:
Public Participation

Public participation is a key component to any strategic planning process. It is very important that such broad-reaching plans not be written in isolation. Agency participation offers an opportunity for impacted departments and organizations to provide expertise and insight into the planning process. Citizen participation offers citizens the chance to voice their ideas, interests, and opinions. The Federal Emergency Management Agency also requires public input during the development of mitigation plans.

The City of Santa Fe Springs Natural Hazards Mitigation Plan integrates a cross-section of public input throughout the planning process. To accomplish this goal, the City of Santa Fe Springs Multi-Jurisdictional Planning Team developed a public participation process through five components: (1) developing a Planning Team comprised of knowledgeable individuals representative of the City, City of Whittier, Little Lake City School District, East Whittier City School District, Whittier Union High School District, and Whittier City School District; (2) conducting a survey of "Levels of Concerns" to verify the primary concerns of citizens and business owners as relates to natural hazards; (3) soliciting the assistance of local media representatives and community newsletters to announce the progress of the planning activities and to announce the availability of the Draft Natural Hazards Mitigation Plan; (4) creating opportunities for the citizens and public agencies to review the Draft Natural Hazards Mitigation Plan; (5) conducting public hearings with the Planning Commission and City Council where the public had an opportunity to express their views concerning the Draft Natural Hazards Mitigation Plan.

Integrating public participation during the development of the Natural Hazards Mitigation Plan has ultimately resulted in increased public awareness. Through public involvement, the mitigation plan reflects community issues, concerns, and new ideas and perspectives on mitigation opportunities and plan action items.

Working Group

Hazard mitigation in the City of Santa Fe Springs is overseen by the Hazard Mitigation Working Group, which consists of representatives from various city departments. The Working Group members have an understanding of how the community is structured and how residents, businesses, and the environment may be affected by natural hazard events. The Working Group guided the development of the plan, and assisted in developing plan goals and action items, identifying stakeholders and plan reviewers, and sharing local expertise to create a more comprehensive plan. The majority of the Working Group also participated on the Multi-Jurisdictional Planning Team.

Meeting Summary

Training Session – January 28, 2004: This training session was sponsored by the Disaster Management Area Coordinators. The training session was provided to

essentially help familiarize local agencies with the requirements of DMA 2000. The training session lasted 4 hours.

The following meetings were facilitated by Emergency Planning Consultants, the consulting firm hired to prepare the Natural Hazards Mitigation Plan for the City of Santa Fe Springs:

Meeting #1: Pre-Training April 5, 2004
The meeting was hosted by the City of Santa Fe Springs. EPC delivered pre-training to the Planning Team and Working Groups. The pre-training consisted of the history of the Disaster Mitigation Act of 2000, the purpose and role of hazard mitigation, and the planning process. The Pre-Training lasted approximately 2 hours.

Meeting #2: Kick-Off Meeting April 5, 2004
EPC facilitated a workshop where participants had an opportunity to learn about various natural hazards, assess and rank the local threats, examine hazard maps, and complete the FEMA Worksheets contained in FEMA 386-2 Understanding Your Risks. Part of the discussion included a presentation by EPC of historical disaster events across the country. Those slides served as a backdrop for discussing potential mitigation activities.

There was an extensive discussion on various methods of engaging the public in the mitigation process. The Planning Team prepared a draft media release and discussed a public opinion survey provided by EPC. EPC committed to revising the media release and survey and distributing electronic copies to each of the Planning Team entities. The Kick-Off Meeting lasted approximately 7 hours.

Meeting #3 Pre-Training: Mitigation June 8, 2004
The meeting was hosted by the City of Whittier and held at the East Whittier City School District Offices. EPC delivered pre-training to the Planning Team. The pre-training consisted of the concepts and issues related to developing mitigation actions. The pre-training lasted approximately 1 hour.

Meeting #4 Mitigation Actions June 8, 2004
EPC delivered the Draft Hazard Analysis and the Planning Team discussed missing information, data, and maps. EPC distributed copies of the Mitigation Actions Planning Tools to assist the Team in developing Goals and Action Items appropriate to their natural hazards. The Planning Tools provided a process for collecting the mitigation actions presently in practice in the City of Santa Fe Springs, as well as identifying future mitigation actions.

A brainstorming process was then conducted to develop the goals for the Plan. The entire Multi-Jurisdictional Planning Team quickly agreed to adopt the same mitigation goals. Following a discussion of alternative ranking techniques, the Team agreed to cluster the rankings of the hazards in the following order: #1 Multi-Hazard, #2 Earthquakes, and #3 Flooding.

The next task was to examine a FEMA-approved Mitigation Plan to get an idea of how mitigation actions are written. Each of the jurisdictions was pleased to announce the broad range of mitigation actions already being practiced. The Planning Tools, developed by EPC, consisted of nearly 300 mitigation actions gathered from dozens of Mitigation Plans across the country.

The Planning Team broke into individual jurisdictions to develop their own mitigation actions, utilizing the sample plans and Planning Tools list. Because of the plan samples and Tools, the process of identifying appropriate mitigations actions was accomplished in a very efficient manner.

Public Meetings
City of Santa Fe Springs conducted two public meetings where the Draft Natural Hazard Mitigation Plan was presented and discussed. Both the Planning Commission (August 23, 2004) and City Council (October 11, 2004) were impressed with the range of mitigation actions already in practice throughout the City. The City Council was very supportive of the overall goal established by the Multi-Jurisdictional Planning Team to become a Disaster Resistant Community. The results of the citizen survey were discussed and the City Council commended the Planning Team for its expeditious efforts to satisfy the DMA 2000 requirements.

Invitation Process
The City's Director of Police Services identified possible public notice sources. A press release was submitted to the Chambers of Commerce, local daily and weekly print media. A notice was also placed in the city newsletter that is mailed to all residents.

Results
The Committee's Chairperson began the presentation by providing an overview of meeting objectives to the participants. The citizens were encouraged to present their views and make suggestions on possible mitigation actions. The Committee's Chairperson presented the staff report on the Plan, including an overview of the Hazard Analysis, Mitigation Goals, and Mitigation Actions. The staff presentation concluded with a summary of the input received during the public review of the document. The Chairperson then fielded questions from the City Council. The meeting lasted approximately 2 hours.

The Planning Commission and City Council were unanimous in their adoption of the City of Santa Fe Springs Natural Hazards Mitigation Plan.

On October 12 , 2006, adopted Resolution No. 9017 amending the City's Hazard Mitigation Plan.

Appendix B – Attachment 1
Media Release Announcing Mitigation Project



NEWS RELEASE
FOR IMMEDIATE RELEASE
_____ (Date of Release)
Contact: Fernando Tarin (562) 409-1850

CITY OF SANTA FE SPRINGS PREPARES HAZARD MITIGATION PLAN DOCUMENT

Plan to Cover Natural Hazards Impacting the Community

The City of Santa Fe Springs has begun the process of preparing a Hazard Mitigation Plan which will identify ways to minimize potential damage from natural hazards before a disaster occurs. The Plan is being prepared by the City of Santa Fe Springs with assistance from Emergency Planning Consultants. The City is part of a Multi-Jurisdictional Planning Team including the City of Whittier, Whittier City School District, East Whittier City School District, Whittier Union High School District, and Little Lake School District. The Planning Team was created in an effort to better utilize the resources of the various jurisdictions and to more effectively address the hazards that impact the entire region.

The planning document will focus on potential impacts of natural hazards including earthquakes, floods, and wildfires. Upon completion of the Draft Local Hazard Mitigation Plan, a copy of the document will be available for review at the Santa Fe Springs Police Services Center during the month of August. Following the review period, the Plan will be forwarded to the City Council for approval.

"Public input into this process is very important so we encourage residents and business owners to review the document and participate in the public hearing that will be scheduled for later in the year", said Fernando Tarin, City of Santa Fe Springs Director of Police Services.

Appendix B – Attachment 2
List of Reviewers

City of Whittier
- Bob Chavez, Park Director
- Ann-Marie Hayashi, Emergency Services Assistant
- Carl Reese, Building Services Manager
- Dave Mochizuki, Public Works Director
- Don Dooley, Planning Services Manager
- Joe Dyer, Asst. Director of Public Works
- Nancy Mendez, Assistant City Manager
- David Singer, Whittier Police Chief

City of Pico Rivera
- Michael Moore, Acting Deputy Director of Public Works

City of Downey
- Gerald Caton, City Manager

City of Norwalk
- Kevin Gano, Director of Public Safety
- Ernie Garcia, City Manager

City of La Mirada
- Andrea Travis, City Manager

Santa Fe Springs Chamber of Commerce
- Lou Booker, Santa Fe Springs Executive Director

Planning Commission (five members)

City Council (five members)

City of Santa Fe Springs
- Frederick W. Latham, City Manager
- Robert G. Orpin, Director of Planning & Development
- Don Jensen, Director of Public Works
- Susan Bergeron-Vance, Director of Finance/Admin Services
- Neal Welland, Fire Chief
- Fernando L. Tarin, Director of Police Services
- Bryan Collins, Admin Public Safety Officer
- Cuong Nguyen, Associate Planner
- Tony Olmos, Principle Civil Engineer

Little Lake City School District
- Maureen Evens, Asst. Superintendent – Business Services
- Phil Perez, Superintendent Little Lake City School District

Whittier Union High School District
- Paul Muschetto, Associate Superintendent
- Sandy Thorstenson, Superintendent Whittier Union High School

Whittier City School District
- Bob Mazzeo, Director of Business Projects

East Whittier School District
- Steve Ritter, Assistant Superintendent
- Lee Bean, Director of Facilities, Maintenance and Operations

South Whittier School District
- Dr. David Morton, Senior Director of Fiscal Services & Classified Personnel

Los Nietos School District
- Dr. Florentino G. Noriega, Superintendent
- Douglas C. Mc Master, Director of Business Services

St. Paul High School
- Frank A. Laurenzello, Principal

Rio Hondo Community College
- Rose Marie Joyce, President

The Gas Company
- Julia Emerson, Public Affairs Manager

Southern California Edison
- Sylvia Suthernland, Region Manager

State of California Governor's Officer of Emergency Services
- John Rowden, Chief, Hazard Mittgation

San Gabriel Water Company
- Robert Young, Safety Manager

City of Santa Fe Springs
11710 Telegraph Road • CA • 90670-3679 • (562) 868-0511 • Fax (562) 868-7112 • www.santafesprings.org

APPENDIX B – ATTACHMENT 3

EXCERPT FROM MINUTES OF CITY COUNCIL MEETING

State of California)
County of Los Angeles)ss.
City of Santa Fe Springs)

I, Marilyn Jannak, City Clerk of the City of Santa Fe Springs, California, do hereby certify that the attached is a full, true, and complete excerpt from the minutes of the meeting of the City Council of the City of Santa Fe Springs held on the 11th day of October, 2004, concerning item:

PUBLIC HEARING

15. Santa Fe Springs Natural Hazards Mitigation Plan.

Marilyn Jannak
City Clerk

Date: October 26, 2004

EXCERPT FROM MINUTES OF MEETING OF THE CITY COUNCIL, CITY OF SANTA FE SPRINGS, HELD ON OCTOBER 11, 2004

PUBLIC HEARING

15. Santa Fe Springs Natural Hazards Mitigation Plan.

Recommendation: That the City Council (1) open the Public Hearing for those wishing to speak on this matter; (2) adopt the Santa Fe Springs Natural Hazards Mitigation Plan; and (3) direct the Director of Police Services to forward the City's Natural Hazards Mitigation Plan to the State Office of Emergency Services for review, and then forward the plan to the Federal Emergency Management Agency (FEMA).

Fernando Tarin, Director of Police Services, stated that the plan will be reviewed annually, and he introduced Carolyn Harshman, President of Emergency Planning Consultants, who gave a presentation on the goals and objectives of the Natural Hazards Mitigation Plan.

Fred Latham, City Manager, stated that this plan does not replace the City' s Emergency Response Plan.

Councilmember Velasco asked if the Los Nietos School District was part of the Planning Team. Mr. Tarin stated that the Los Nietos School District is part of the South Whittier School District team.

Mr. Latham stated that the Los Nietos School District and South Whittier School District can be integrated into the Planning Team.

Mayor Putnam, at 8:03 p.m., opened the Public Hearing and asked if anyone wished to comment on this matter. There being no one wishing to address the City Council, Mayor Putnam, at 8:04 p.m., closed the Public Hearing.

Councilmember Velasco moved approval of recommendation nos. 2 and 3, and added that the Los Nietos School District and the South Whittier School District be included as part of the City's Planning Team. Councilmember Gonzalez seconded the motion, which carried unanimously.

Marilyn Jannak
City Clerk

Date: October 26, 2004

Attachment B-1

Newspaper Clipping Announcing Mitigation Process
Daily News – May 4, 2004

Officials creating disaster procedure

Input being sought from area residents

By Tracy Garcia
Staff Writer

WHITTIER — Earthquakes, fires, floods — these are three natural disasters that could realistically cripple the Whittier and Santa Fe Springs areas, city and school officials say.

That is why representatives of both cities and four local school districts are putting their heads together now to come up with the best plan to respond to those kinds of disasters, as well as develop ways to reduce the chances of potential damage.

The cities of Whittier and Santa Fe Springs, and the four Whittier City, Little Lake City, Whittier City and Whittier Union High school districts have been meeting since last month to prepare a new Hazard Mitigation Plan.

Local governments are required now — for the first time ever — to come up with the Hazard Mitigation Plan under new regulations from the Federal Emergency Management Agency, said Ann-Marie Hayashi, emergency services assistant for the city of Whittier.

FEMA has said areas without a hazard mitigation plan may not qualify for federal funds if a natural disaster does occur.

"FEMA's goal is to see how cities deal with natural hazards and that they have a plan to mitigate them, so that if and when a natural disaster strikes, the damage is minimized," Hayashi said.

Most importantly, FEMA has said areas without a hazard mitigation plan may not qualify for federal funds if a natural disaster does occur, officials said.

The 15-member group expects to have final drafts available for review by the public at city libraries and school districts in August. Each governing body is expected to approve the document in the fall.

Public participation in the plan is also important, officials said, because residents can alert them to potential problems that they may not have been aware of, such as a street that floods easily. Mailings and Web site postings will be made at a later date to instruct residents on how to participate.

"Awareness is the critical element," said Paul Marchetti, assistant superintendent for the Whittier Union High School District. "For the community, it is beneficial for them to know local agencies are taking the extra step and that in the event of a disaster we will be eligible for

NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN that a Public Hearing, as provided by law, will be held by the Santa Fe Springs City Council, to consider the approval of the City's Natural Hazard Mitigation Plan.

The Public Hearing is scheduled to be held on Monday, October 11, 2004 at 7:00 p.m., in the City Council Chambers, City Hall, 11710 Telegraph Road, Santa Fe Springs, California. Any person may attend to provide input with regard to the spending of the funds. Inquiries concerning this Public Hearing may be directed to the Department of Police Services, (562) 409-1850.

Dated: September 14, 2004
Fernando L. Tarin, Director of Police Services
City of Santa Fe Springs, California

Publish: October 1, 2004 & October 8, 2004

Whittier Daily News Ad

SAN GABRIEL VALLEY NEWSPAPER GROUP

San Gabriel Valley Tribune / Pasadena Star-News / Whittier Daily News
Highlander Newspaper

210 N. Azusa Canyon Road, West Covina, CA 91790
626-962-8811 Fax 626-856-2750

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CITY OF
SANTA FE SPRINGS

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DATE ORDERED: 10/03/06
PAGE: 1

CITY OF SANTA FE SPRINGS
11710 TELEGRAPH ROAD
ATTN: TINA HOANG

SANTA FE SPRINGS ,CA 90670

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PRINCIPAL CLERK (000)

NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN that a Public Hearing, as provided by law, will be held by the Santa Fe Springs City Council, to consider the adoption of Resolution No. 9017 to amend the City's Natural Hazard Mitigation Plan.

The Public Hearing is scheduled to be held on **Thursday, October 12, 2006 at 7:00** p.m., in the City Council Chambers, City Hall, 11710 Road, Santa Fe Springs, California. Any person may attend to provide input with regard to the amendments of the City's Natural Hazard Mitigation Plan. For copies of the City's Natural Hazard Mitigation Plan and all inquiries concerning this Public Hearing may be directed to the Department of Police Services, (562) 409-1850.

Dated: October 2, 2006
Fernando L. Tarin, Director of Police Services
City of Santa Fe Springs, California

Publish: October 6, 10, 2006
Whittier Daily News Ad No. 110009

Appendix B-10

18

Appendix C:
Benefit/Cost Analysis

Benefit/Cost Analysis is a key mechanism used by the California Office of Emergency Services (OES), the Federal Emergency Management Agency, and other state and federal agencies in evaluating hazard mitigation projects, and is required by the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288, as amended.

This Appendix outlines several approaches for conducting economic analysis of natural hazard mitigation projects. It describes the importance of implementing mitigation activities, different approaches to economic analysis of mitigation strategies, and methods to calculate costs and benefits associated with mitigation strategies. Information in this section is derived in part from: Federal Emergency Management Agency Publication 331, Report on Costs and Benefits of Natural Hazard Mitigation.

This section is not intended to provide a comprehensive description of benefit/cost analysis, nor is it intended to provide the details of economic analysis methods that can be used to evaluate local projects. It is intended to (1) raise benefit/cost analysis as an important issue, and (2) provide some background on how economic analysis can be used to evaluate mitigation projects.

Why Evaluate Mitigation Strategies?
Mitigation activities reduce the cost of disasters by minimizing property damage, injuries, and the potential for loss of life, and by reducing emergency response costs, which would otherwise be incurred.

Evaluating natural hazard mitigation provides decision-makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects. Evaluating mitigation projects is a complex and difficult undertaking, which is influenced by many variables. First, natural disasters affect all segments of the communities they strike, including individuals, businesses, and public services such as fire, police, utilities, and schools.

Second, while some of the direct and indirect costs of disaster damages are measurable, some of the costs are non-financial and difficult to quantify in dollars. Third, many of the impacts of such events produce "ripple-effects" throughout the community, greatly increasing the disaster's social and economic consequences.

While not easily accomplished, there is value, from a public policy perspective, in assessing the positive and negative impacts from mitigation activities, and obtaining an instructive benefit/cost comparison. Otherwise, the decision to pursue or not pursue various mitigation options would not be based on an objective understanding of the net benefit or loss associated with these actions.

What are Some Economic Analysis Approaches for Mitigation Strategies?
The approaches used to identify the costs and benefits associated with natural hazard mitigation strategies, measures, or projects fall into two general categories: benefit/cost analysis and cost-

effectiveness analysis. The distinction between the two methods is the way in which the relative costs and benefits are measured. Additionally, there are varying approaches to assessing the value of mitigation for public sector and private sector activities.

Benefit/Cost Analysis
Benefit/Cost Analysis is used in natural hazards mitigation to show if the benefits to life and property protected through mitigation efforts exceed the cost of the mitigation activity. Conducting benefit/cost analysis for a mitigation activity can assist communities in determining whether a project is worth undertaking now, in order to avoid disaster related damages later. Benefit/cost analysis is based on calculating the frequency and severity of a hazard, avoided future damages, and risk.

In benefit/cost analysis, all costs and benefits are evaluated in terms of dollars, and a net benefit/cost ratio is computed to determine whether a project should be implemented (i.e., if net benefits exceed net costs, the project is worth pursuing). A project must have a benefit/cost ratio greater than 1 in order to be funded.

Cost-Effectiveness Analysis
Cost-effectiveness analysis evaluates how best to spend a given amount of money to achieve a specific goal. This type of analysis, however, does not necessarily measure costs and benefits in terms of dollars. Determining the economic feasibility of mitigating natural hazards can also be organized according to the perspective of those with an economic interest in the outcome. Hence, economic analysis approaches are covered for both public and private sectors as follows.

Investing in public sector mitigation activities
Evaluating mitigation strategies in the public sector is complicated because it involves estimating all of the economic benefits and costs regardless of who realizes them, and potentially to a large number of people and economic entities. Some benefits cannot be evaluated monetarily, but still affect the public in profound ways. Economists have developed methods to evaluate the economic feasibility of public decisions that involve a diverse set of beneficiaries and non-market benefits.

Investing in private sector mitigation activities
Private sector mitigation projects may occur on the basis of one of two approaches: it may be mandated by a regulation or standard, or it may be economically justified on its own merits. A building or landowner, whether a private entity or a public agency, required to conform to a mandated standard may consider the following options:

1. Request cost sharing from public agencies;
2. Dispose of the building or land either by sale or demolition;
3. Change the designated use of the building or land and change the hazard mitigation compliance requirement; or
4. Evaluate the most feasible alternatives and initiate the most cost effective hazard mitigation alternative.

The sale of a building or land triggers another set of concerns. For example, real estate disclosure laws can be developed which require sellers of real property to disclose known

defects and deficiencies in the property, including earthquake weaknesses and hazards to prospective purchasers. Correcting deficiencies can be expensive and time consuming, but their existence can prevent the sale of the building. Conditions of a sale regarding the deficiencies and the price of the building can be negotiated between a buyer and seller.

Estimating the costs and benefits of a hazard mitigation strategy can be a complex process.

Employing the services of a specialist can assist in this process.

How can an Economic Analysis be Conducted?
Benefit/cost analysis and cost-effectiveness analysis are important tools in evaluating whether or not to implement a mitigation activity. A framework for evaluating alternative mitigation activities is outlined below:

1. Identify the Alternatives: Alternatives for reducing risk from natural hazards can include structural projects to enhance disaster resistance, education and outreach, and acquisition or demolition of exposed properties, among others. Different mitigation project can assist in minimizing risk to natural hazards, but do so at varying economic costs.

2. Calculate the Costs and Benefits: Choosing economic criteria is essential to systematically calculating costs and benefits of mitigation projects and selecting the most appropriate alternative. Potential economic criteria to evaluate alternatives include:

- **Determine the project cost.** This may include initial project development costs, and repair and operating costs of maintaining projects over time.

- **Estimate the benefits.** Projecting the benefits or cash flow resulting from a project can be difficult. Expected future returns from the mitigation effort depend on the correct specification of the risk and the effectiveness of the project, which may not be well known. Expected future costs depend on the physical durability and potential economic obsolescence of the investment. This is difficult to project. These considerations will also provide guidance in selecting an appropriate salvage value. Future tax structures and rates must be projected. Financing alternatives must be researched, and they may include retained earnings, bond and stock issues, and commercial loans.

- **Consider costs and benefits to society and the environment.** These are not easily measured, but can be assessed through a variety of economic tools including existence value or contingent value theories. These theories provide quantitative data on the value people attribute to physical or social environments. Even without hard data, however, impacts of structural projects to the physical

environment or to society should be considered when implementing mitigation projects.

- **Determine the correct discount rate.** Determination of the discount rate can just be the risk-free cost of capital, but it may include the decision maker's time preference and also a risk premium. Including inflation should also be considered.

3. Analyze and Rank the Alternatives: Once costs and benefits have been quantified, economic analysis tools can rank the alternatives. Two methods for determining the best alternative given varying costs and benefits include net present value and internal rate of return.

- **Net present value.** Net present value is the value of the expected future returns of an investment minus the value of expected future cost expressed in today's dollars. If the net present value is greater than the project costs, the project may be determined feasible for implementation. Selecting the discount rate, and identifying the present and future costs and benefits of the project calculates the net present value of projects.

- **Internal Rate of Return.** Using the internal rate of return method to evaluate mitigation projects provides the interest rate equivalent to the dollar returns expected from the project. Once the rate has been calculated, it can be compared to rates earned by investing in alternative projects. Projects may be feasible to implement when the internal rate of return is greater than the total costs of the project.

Once the mitigation projects are ranked on the basis of economic criteria, decision-makers can consider other factors, such as risk; project effectiveness; and economic, environmental, and social returns in choosing the appropriate project for implementation.

How are Benefits of Mitigation Calculated?

Economic Returns of Natural Hazard Mitigation
The estimation of economic returns, which accrue to building or land owner as a result of natural hazard mitigation, is difficult. Owners evaluating the economic feasibility of mitigation should consider reductions in physical damages and financial losses. A partial list follows:

- Building damages avoided
- Content damages avoided
- Inventory damages avoided
- Rental income losses avoided
- Relocation and disruption expenses avoided
- Proprietor's income losses avoided

These parameters can be estimated using observed prices, costs, and engineering data. The difficult part is to correctly determine the effectiveness of the hazard mitigation project and the resulting reduction in damages and losses. Equally as difficult is assessing the probability that an

event will occur. The damages and losses should only include those that will be borne by the owner. The salvage value of the investment can be important in determining economic feasibility. Salvage value becomes more important as the time horizon of the owner declines. This is important because most businesses depreciate assets over a period of time.

Additional Costs from Natural Hazards
Property owners should also assess changes in a broader set of factors that can change as a result of a large natural disaster. These are usually termed "indirect" effects, but they can have a very direct effect on the economic value of the owner's building or land. They can be positive or negative, and include changes in the following:

- Commodity and resource prices
- Availability of resource supplies
- Commodity and resource demand changes
- Building and land values
- Capital availability and interest rates
- Availability of labor
- Economic structure
- Infrastructure
- Regional exports and imports
- Local, state, and national regulations and policies
- Insurance availability and rates

Changes in the resources and industries listed above are more difficult to estimate and require models that are structured to estimate total economic impacts. Total economic impacts are the sum of direct and indirect economic impacts. Total economic impact models are usually not combined with economic feasibility models. Many models exist to estimate total economic impacts of changes in an economy. Decision makers should understand the total economic impacts of natural disasters in order to calculate the benefits of a mitigation activity. This suggests that understanding the local economy is an important first step in being able to understand the potential impacts of a disaster, and the benefits of mitigation activities.

Additional Considerations
Conducting an economic analysis for potential mitigation activities can assist decision-makers in choosing the most appropriate strategy for their community to reduce risk and prevent loss from natural hazards. Economic analysis can also save time and resources from being spent on inappropriate or unfeasible projects. Several resources and models are listed on the following page that can assist in conducting an economic analysis for natural hazard mitigation activities.

Benefit/cost analysis is complicated, and the numbers may divert attention from other important issues. It is important to consider the qualitative factors of a project associated with mitigation that cannot be evaluated economically. There are alternative approaches to implementing mitigation projects. Many communities are looking towards developing multi-objective projects. With this in mind, opportunity rises to develop strategies that integrate natural hazard mitigation with projects related to watersheds, environmental planning, community economic development, and small business development, among others. Incorporating natural hazard mitigation with other community projects can increase the viability of project implementation.

Resources

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Appendix D: Acronyms

Federal Acronyms

AASHTO	American Association of State Highway and Transportation Officials
ATC	Applied Technology Council
b/ca	benefit/cost analysis
BFE	Base Flood Elevation
BLM	Bureau of Land Management
BSSC	Building Seismic Safety Council
CDBG	Community Development Block Grant
CFR	Code of Federal Regulations
CRS	Community Rating System
DOE	Department of Energy
EDA	Economic Development Administration
EPA	Environmental Protection Agency
ER	Emergency Relief
EWP	Emergency Watershed Protection (NRCS Program)
FAS	Federal Aid System
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMA	Flood Mitigation Assistance (FEMA Program)
FTE	Full Time Equivalent
GIS	Geographic Information System
GNS	Institute of Geological and Nuclear Sciences (International)
GSA	General Services Administration
HAZUS	Hazards U.S.
HMGP	Hazard Mitigation Grant Program
HMST	Hazard Mitigation Survey Team
HUD	Housing and Urban Development (United States, Department of)
IBHS	Institute for Business and Home Safety
ICC	Increased Cost of Compliance
IHMT	Interagency Hazard Mitigation Team
NCDC	National Climate Data Center
NFIP	National Flood Insurance Program
NFPA	National Fire Protection Association
NHMP	Natural Hazard Mitigation Plan (also known as "409 Plan")
NIBS	National Institute of Building Sciences
NIFC	National Interagency Fire Center
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NWS	National Weather Service

SBA	Small Business Administration
SHMO	State Hazard Mitigation Officer
TOR	Transfer of Development Rights
UGB	Urban Growth Boundary
URM	Unreinforced Masonry
USACE	United States Army Corps of Engineers
USBR	United States Bureau of Reclamation
USDA	United States Department of Agriculture
USFA	United States Fire Administration
USFS	United States Forest Service
USGS	United States Geological Survey
WSSPC	Western States Seismic Policy Council

California Acronyms

A&W	Alert and Warning
AA	Administering Areas
AAR	After Action Report
ARC	American Red Cross
ARP	Accidental Risk Prevention
ATC20	Applied Technology Council20
ATC21	Applied Technology Council21
BCP	Budget Change Proposal
BSA	California Bureau of State Audits
CAER	Community Awareness & Emergency Response
CalARP	California Accidental Release Prevention
CalBO	California Building Officials
CalEPA	California Environmental Protection Agency
CalREP	California Radiological Emergency Plan
CALSTARS	California State Accounting Reporting System
CalTRANS	California Department of Transportation
CBO	Community Based Organization
CD	Civil Defense
CDF	California Department of Forestry and Fire Protection
CDMG	California Division of Mines and Geology
CEC	California Energy Commission
CEPEC	California Earthquake Prediction Evaluation Council
CESRS	California Emergency Services Radio System
CHIP	California Hazardous Identification Program
CHMIRS	California Hazardous Materials Incident Reporting System
CHP	California Highway Patrol
CLETS	California Law Enforcement Telecommunications System
CSTI	California Specialized Training Institute
CUEA	California Utilities Emergency Association
CUPA	Certified Unified Program Agency
DAD	Disaster Assistance Division (California Office of Emergency Services)

DFO	Disaster Field Office
DGS	California Department of General Services
DHSRHB	California Department of Health Services, Radiological Health Branch
DO	Duty Officer
DOC	Department Operations Center
DOF	California Department of Finance
DOJ	California Department of Justice
DPA	California Department of Personnel Administration
DPIG	Disaster Preparedness Improvement Grant
DR	Disaster Response
DSA	Division of the State Architect
DSR	Damage Survey Report
DSW	Disaster Service Worker
DWR	California Department of Water Resources
EAS	Emergency Alerting System
EDIS	Emergency Digital Information System
EERI	Earthquake Engineering Research Institute
EMA	Emergency Management Assistance
EMI	Emergency Management Institute
EMMA	Emergency Managers Mutual Aid
EMS	Emergency Medical Services
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
EPEDAT	Early Post Earthquake Damage Assessment Tool
EPI	Emergency Public Information
EPIC	Emergency Public Information Council
ESC	Emergency Services Coordinator
FAY	Federal Award Year
FDAA	Federal Disaster Assistance Administration
FEAT	Governor's Flood Emergency Action Team
FEMA	Federal Emergency Management Agency
FFY	Federal Fiscal Year
FIR	Final Inspection Reports
FIRESCOPE	Firefighting Resources of Southern California Organized for Potential Emergencies
FMA	Flood Management Assistance
FSR	Feasibility Study Report
FY	Fiscal Year
GIS	Geographical Information System
HAZMAT	Hazardous Materials
HAZMIT	Hazardous Mitigation
HAZUS	Hazards United States (an earthquake damage assessment prediction tool)
HAD	Housing and Community Development
HEICS	Hospital Emergency Incident Command System
HEPG	Hospital Emergency Planning Guidance
HIA	Hazard Identification and Analysis Unit

HMEP	Hazardous Materials Emergency Preparedness
HMGP	Hazard Mitigation Grant Program
IDE	Initial Damage Estimate
IA	Individual Assistance
IFG	Individual & Family Grant (program)
IRG	Incident Response Geographic Information System
IPA	Information and Public Affairs (of state Office of Emergency Services)
LAN	Local Area Network
LEMMA	Law Enforcement Master Mutual Aid
LEPC	Local Emergency Planning Committee
MARAC	Mutual Aid Regional Advisory Council
MHFP	Multi-Hazard Functional Plan
MHID	Multi-Hazard Identification
MOU	Memorandum of Understanding
NBC	Nuclear, Biological, Chemical
NEMA	National Emergency Management Agency
NEMIS	National Emergency Management Information System
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Association
NPP	Nuclear Power Plant
NSF	National Science Foundation
NWS	National Weather Service
OA	Operational Area
OASIS	Operational Area Satellite Information System
OCC	Operations Coordination Center
OCD	Office of Civil Defense
OEP	Office of Emergency Planning
OES	California Governor's Office of Emergency Services
OSHPD	Office of Statewide Health Planning and Development
OSPR	Oil Spill Prevention and Response
PA	Public Assistance
PC	Personal Computer
PDA	Preliminary Damage Assessment
PIO	Public Information Office
POST	Police Officer Standards and Training
PPA/CA	Performance Partnership Agreement/Cooperative Agreement (FEMA)
PSA	Public Service Announcement
PTAB	Planning and Technological Assistance Branch
PTR	Project Time Report
RA	Regional Administrator (OES)
RADEF	Radiological Defense (program)
RAMP	Regional Assessment of Mitigation Priorities
RAPID	Railroad Accident Prevention & Immediate Deployment
RDO	Radiological Defense Officer
RDMHC	Regional Disaster Medical Health Coordinator
REOC	Regional Emergency Operations Center

REPI	Reserve Emergency Public Information
RES	Regional Emergency Staff
RIMS	Response Information Management System
RMP	Risk Management Plan
RPU	Radiological Preparedness Unit (OES)
RRT	Regional Response Team
SAM	State Administrative Manual
SARA	Superfund Amendments & Reauthorization Act
SAVP	Safety Assessment Volunteer Program
SBA	Small Business Administration
SCO	California State Controller's Office
SEMS	Standardized Emergency Management System
SEPIC	State Emergency Public Information Committee
SLA	State and Local Assistance
SONGS	San Onofre Nuclear Generating Station
SOP	Standard Operating Procedure
SWEPC	Statewide Emergency Planning Committee
TEC	Travel Expense Claim
TRU	Transuranic
TTT	Train the Trainer
UPA	Unified Program Account
UPS	Uninterrupted Power Source
USAR	Urban Search and Rescue
USGS	United States Geological Survey
WC	California State Warning Center
WAN	Wide Area Network
WIPP	Waste Isolation Pilot Project

Appendix E

Glossary

Acceleration	The rate of change of velocity with respect to time. Acceleration due to gravity at the earth's surface is 9.8 meters per second squared. That means that every second that something falls toward the surface of earth its velocity increases by 9.8 meters per second.
Asset	Any manmade or natural feature that has value, including, but not limited to people; buildings; infrastructure like bridges, roads, and sewer and water systems; lifelines like electricity and communication resources; or environmental, cultural, or recreational features like parks, dunes, wetlands, or landmarks.
Base Flood	Flood that has a 1 percent probability of being equaled or exceeded in any given year. Also known as the 100-year flood.
Base Flood Elevation (BFE)	Elevation of the base flood in relation to a specified datum, such as the National Geodetic Vertical Datum of 1929. The Base Flood Elevation is used as the standard for the National Flood Insurance Program.
Bedrock	The solid rock that underlies loose material, such as soil, sand, clay, or gravel.
Building	A structure that is walled and roofed, principally above ground and permanently affixed to a site. The term includes a manufactured home on a permanent foundation on which the wheels and axles carry no weight.
Coastal High Hazard Area	Area, usually along an open coast, bay, or inlet that is subject to inundation by storm surge and, in some instances, wave action caused by storms or seismic sources.
Coastal Zones	The area along the shore where the ocean meets the land as the surface of the land rises above the ocean. This land/water interface includes barrier islands, estuaries, beaches, coastal wetlands, and land areas having direct drainage to the ocean.
Community Rating System (CRS)	An NFIP program that provides incentives for NFIP communities to complete activities that reduce flood hazard risk. When the community completes specified activities, the insurance premiums of policyholders in these communities are reduced.
Computer-Aided Design And Drafting (CADD)	A computerized system enabling quick and accurate electronic 2-D and 3-D drawings, topographic mapping, site plans, and profile/cross-section drawings.

Contour	A line of equal ground elevation on a topographic (contour) map.
Critical Facility	Facilities that are critical to the health and welfare of the population and that are especially important following hazard events. Critical facilities include, but are not limited to, shelters, police and fire stations, and hospitals.
Debris	The scattered remains of assets broken or destroyed in a hazard event. Debris caused by a wind or water hazard event can cause additional damage to other assets.
Digitize	To convert electronically points, lines, and area boundaries shown on maps into x, y coordinates (e.g., latitude and longitude, universal transverse mercator (UTM), or table coordinates) for use in computer applications.
Displacement Time	The average time (in days) which the building's occupants typically must operate from a temporary location while repairs are made to the original building due to damages resulting from a hazard event.
Duration	How long a hazard event lasts.
Earthquake	A sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of earth's tectonic plates.
Erosion	Wearing away of the land surface by detachment and movement of soil and rock fragments, during a flood or storm or over a period of years, through the action of wind, water, or other geologic processes.
Erosion Hazard Area	Area anticipated being lost to shoreline retreat over a given period of time. The projected inland extent of the area is measured by multiplying the average annual long-term recession rate by the number of years desired.
Essential Facility	Elements important to ensure a full recovery of a community or state following a hazard event. These would include: government functions, major employers, banks, schools, and certain commercial establishments, such as grocery stores, hardware stores, and gas stations.
Extent	The size of an area affected by a hazard or hazard event.
Extratropical Cyclone	Cyclonic storm events like Nor'easters and severe winter low-pressure systems. Both West and East coasts can experience these non-tropical storms that produce gale-force winds and precipitation in the form of heavy rain or snow. These cyclonic storms, commonly called Nor'easters on the East Coast because of the direction of the storm winds, can last for several days and can be very large – 1,000-mile wide storms are not uncommon.

Fault	A fracture in the continuity of a rock formation caused by a shifting or dislodging of the earth's crust, in which adjacent surfaces are differentially displaced parallel to the plane of fracture.
Federal Emergency Management Agency (FEMA)	Independent agency created in 1978 to provide a single point of accountability for all Federal activities related to disaster mitigation and emergency preparedness, response and recovery.
Fire Potential Index (FPI)	Developed by USGS and USFS to assess and map fire hazard potential over broad areas. Based on such geographic information, national policy makers and on-the-ground fire managers established priorities for prevention activities in the defined area to reduce the risk of managed and wildfire ignition and spread. Prediction of fire hazard shortens the time between fire ignition and initial attack by enabling fire managers to pre-allocate and stage suppression forces to high fire risk areas.
Flash Flood	A flood event occurring with little or no warning where water levels rise at an extremely fast rate.
Flood	A general and temporary condition of partial or complete inundation of normally dry land areas from (1) the overflow of inland or tidal waters, (2) the unusual and rapid accumulation or runoff of surface waters from any source, or (3) mudflows or the sudden collapse of shoreline land.
Flood Depth	Height of the flood water surface above the ground surface.
Flood Elevation	Elevation of the water surface above an established datum, e.g. National Geodetic Vertical Datum of 1929, North American Vertical Datum of 1988, or Mean Sea Level.
Flood Hazard Area	The area shown to be inundated by a flood of a given magnitude on a map.
Flood Insurance Rate Map (FIRM)	Map of a community, prepared by the Federal Emergency Management Agency that shows both the special flood hazard areas and the risk premium zones applicable to the community.
Flood Insurance Study (FIS)	A study that provides an examination, evaluation, and determination of flood hazards and, if appropriate, corresponding water surface elevations in a community or communities.
Floodplain	Any land area, including watercourse, susceptible to partial or complete inundation by water from any source.

Frequency	A measure of how often events of a particular magnitude are expected to occur. Frequency describes how often a hazard of a specific magnitude, duration, and/or extent typically occurs, on average. Statistically, a hazard with a 100-year recurrence interval is expected to occur once every 100 years on average, and would have a 1 percent chance – its probability – of happening in any given year. The reliability of this information varies depending on the kind of hazard being considered.
Fujita Scale of Tornado Intensity	Rates tornadoes with numeric values from F0 to F5 based on tornado wind speed and damage sustained. An F0 indicates minimal damage such as broken tree limbs or signs, while and F5 indicated severe damage sustained.
Functional Downtime	The average time (in days) during which a function (business or service) is unable to provide its services due to a hazard event.
Geographic Area Impacted	The physical area in which the effects of the hazard are experienced.
Geographic Information Systems (GIS)	A computer software application that relates physical features on the earth to a database to be used for mapping and analysis.
Ground Motion	The vibration or shaking of the ground during an earthquake. When a fault ruptures, seismic waves radiate, causing the ground to vibrate. The severity of the vibration increases with the amount of energy released and decreases with distance from the causative fault or epicenter, but soft soils can further amplify ground motions
Hazard	A source of potential danger or adverse condition. Hazards in this how to series will include naturally occurring events such as floods, earthquakes, tornadoes, tsunami, coastal storms, landslides, and wildfires that strike populated areas. A natural event is a hazard when it has the potential to harm people or property.
Hazard Event	A specific occurrence of a particular type of hazard.
Hazard Identification	The process of identifying hazards that threaten an area.
Hazard Mitigation	Sustained actions taken to reduce or eliminate long-term risk from hazards and their effects.
Hazard Profile	A description of the physical characteristics of hazards and a determination of various descriptors including magnitude, duration, frequency, probability, and extent. In most cases, a community can most easily use these descriptors when they are recorded and displayed as maps.

HAZUS (Hazards U.S.)	A GIS-based nationally standardized earthquake loss estimation tool developed by FEMA.
Hurricane	An intense tropical cyclone, formed in the atmosphere over warm ocean areas, in which wind speeds reach 74-miles-per-hour or more and blow in a large spiral around a relatively calm center or "eye." Hurricanes develop over the north Atlantic Ocean, northeast Pacific Ocean, or the south Pacific Ocean east of 160°E longitude. Hurricane circulation is counter-clockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.
Hydrology	The science of dealing with the waters of the earth. A flood discharge is developed by a hydrologic study.
Infrastructure	Refers to the public services of a community that have a direct impact on the quality of life. Infrastructure includes communication technology such as phone lines or Internet access, vital services such as public water supplies and sewer treatment facilities, and includes an area's transportation system such as airports, heliports; highways, bridges, tunnels, roadbeds, overpasses, railways, bridges, rail yards, depots; and waterways, canals, locks, seaports, ferries, harbors, dry docks, piers and regional dams.
Intensity	A measure of the effects of a hazard event at a particular place.
Landslide	Downward movement of a slope and materials under the force of gravity.
Lateral Spreads	Develop on gentle slopes and entail the sidelong movement of large masses of soil as an underlying layer liquefies in a seismic event. The phenomenon that occurs when ground shaking causes loose soils to lose strength and act like viscous fluid. Liquefaction causes two types of ground failure: lateral spread and loss of bearing strength.
Liquefaction	Results when the soil supporting structures liquefies. This can cause structures to tip and topple.
Lowest Floor	Under the NFIP, the lowest floor of the lowest enclosed area (including basement) of a structure.
Magnitude	A measure of the strength of a hazard event. The magnitude (also referred to as severity) of a given hazard event is usually determined using technical measures specific to the hazard.

Mitigation Plan	A systematic evaluation of the nature and extent of vulnerability to the effects of natural hazards typically present in the state and includes a description of actions to minimize future vulnerability to hazards.
National Flood Insurance Program (NFIP)	Federal program created by Congress in 1968 that makes flood insurance available in communities that enact minimum floodplain management regulations in 44 CFR §60.3.
National Geodetic Vertical Datum of 1929 (NGVD)	Datum established in 1929 and used in the NFIP as a basis for measuring flood, ground, and structural elevations, previously referred to as Sea Level Datum or Mean Sea Level. The Base Flood Elevations shown on most of the Flood Insurance Rate Maps issued by the Federal Emergency Management Agency are referenced to NGVD.
National Weather Service (NWS)	Prepares and issues flood, severe weather, and coastal storm warnings and can provide technical assistance to Federal and state entities in preparing weather and flood warning plans.
Nor'easter	An extra-tropical cyclone producing gale-force winds and precipitation in the form of heavy snow or rain.
Outflow	Follows water inundation creating strong currents that rip at structures and pound them with debris, and erode beaches and coastal structures.
Planimetric	Describes maps that indicate only man-made features like buildings.
Planning	The act or process of making or carrying out plans; the establishment of goals, policies and procedures for a social or economic unit.
Probability	A statistical measure of the likelihood that a hazard event will occur.
Recurrence Interval	The time between hazard events of similar size in a given location. It is based on the probability that the given event will be equaled or exceeded in any given year.
Repetitive Loss Property	A property that is currently insured for which two or more National Flood Insurance Program losses (occurring more than ten days apart) of at least $1000 each have been paid within any 10-year period since 1978.
Replacement Value	The cost of rebuilding a structure. This is usually expressed in terms of cost per square foot, and reflects the present-day cost of labor and materials to construct a building of a particular size, type and quality.
Richter Scale	A numerical scale of earthquake magnitude devised by seismologist C.F. Richter in 1935.

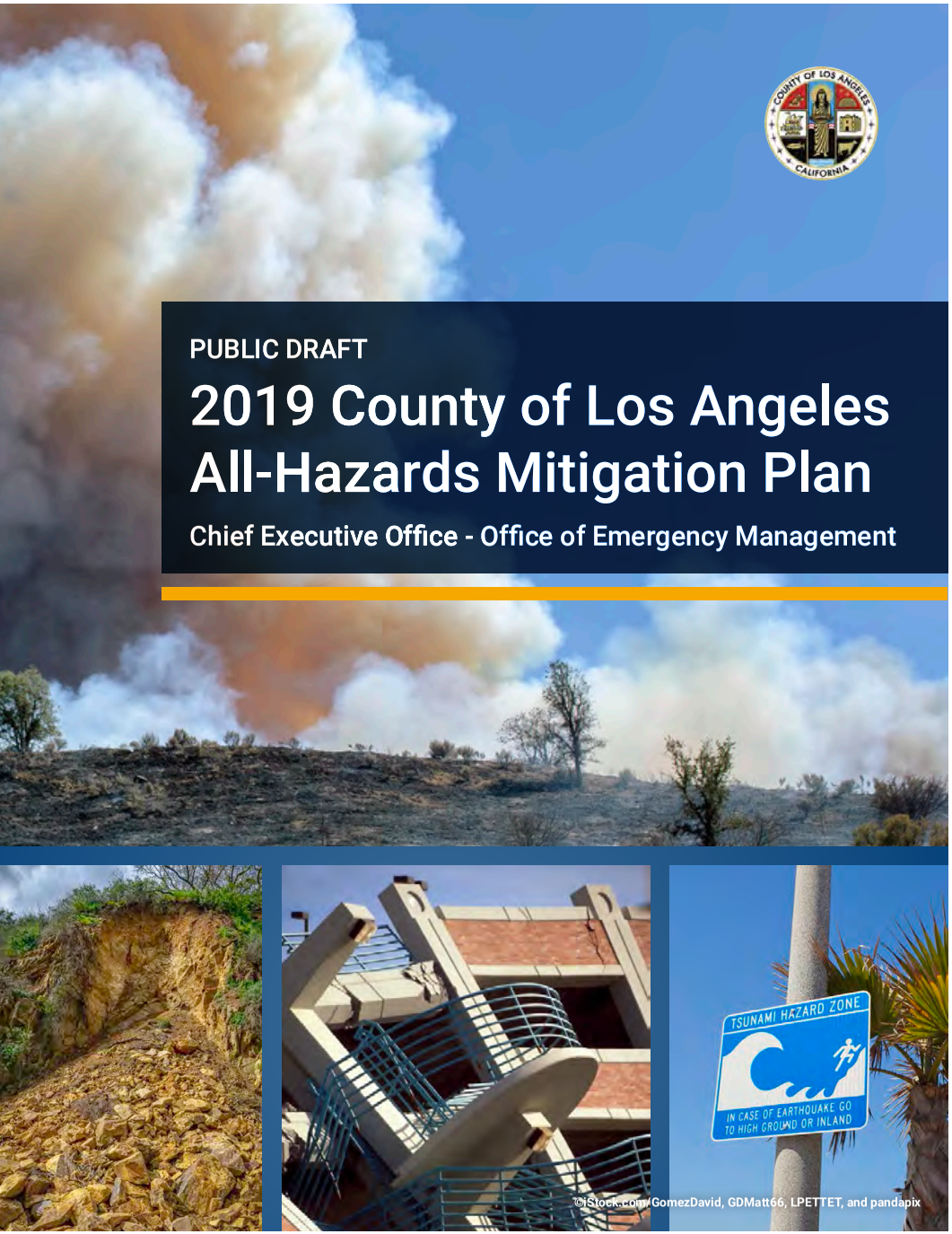
Risk	The estimated impact that a hazard would have on people, services, facilities, and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate or low likelihood of sustaining damage above a particular threshold due to a specific type of hazard event. It also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.
Riverine	Of or produced by a river.
Scale	A proportion used in determining a dimensional relationship; the ratio of the distance between two points on a map and the actual distance between the two points on the earth's surface.
Scarp	A steep slope.
Scour	Removal of soil or fill material by the flow of flood waters. The term is frequently used to describe storm-induced, localized conical erosion around pilings and other foundation supports where the obstruction of flow increases turbulence.
Seismicity	Describes the likelihood of an area being subject to earthquakes.
Special Flood Hazard Area (SFHA)	An area within a floodplain having a 1 percent or greater chance of flood occurrence in any given year (100-year floodplain); represented on Flood Insurance Rate Maps by darkly shaded areas with zone designations that include the letter A or V.
Stafford Act	The Robert T. Stafford Disaster Relief and Emergency Assistance Act, PL 100-107 was signed into law November 23, 1988 and amended the Disaster Relief Act of 1974, PL 93-288. The Stafford Act is the statutory authority for most Federal disaster response activities, especially as they pertain to FEMA and its programs.
State Hazard Mitigation Officer (SHMO)	The representative of state government who is the primary point of contact with FEMA, other state and Federal agencies, and local units of government in the planning and implementation of pre- and post-disaster mitigation activities.
Storm Surge	Rise in the water surface above normal water level on the open coast due to the action of wind stress and atmospheric pressure on the water surface.
Structure	Something constructed. (See also Building)
Substantial Damage	Damage of any origin sustained by a structure in a Special Flood Hazard Area whereby the cost of restoring the structure to its before-damaged condition would equal or exceeds 50 percent of the market value of the structure before the damage.

Super Typhoon	A typhoon with maximum sustained winds of 150 mph or more.
Surface Faulting	The differential movement of two sides of a fracture – in other words, the location where the ground breaks apart. The length, width, and displacement of the ground characterize surface faults.
Tectonic Plate	Torsionally rigid, thin segments of the earth's lithosphere that may be assumed to move horizontally and adjoin other plates. It is the friction between plate boundaries that cause seismic activity.
Topographic	Characterizes maps that show natural features and indicate the physical shape of the land using contour lines. These maps may also include manmade features.
Tornado	A violently rotating column of air extending from a thunderstorm to the ground.
Tropical Cyclone	A generic term for a cyclonic, low-pressure system over tropical or subtropical waters.
Tropical Depression	A tropical cyclone with maximum sustained winds of less than 39 mph.
Tropical Storm	A tropical cyclone with maximum sustained winds greater than 39 mph and less than 74 mph.
Tsunami	Great sea wave produced by submarine earth movement or volcanic eruption.
Typhoon	A special category of tropical cyclone peculiar to the western North Pacific Basin, frequently affecting areas in the vicinity of Guam and the North Mariana Islands. Typhoons whose maximum sustained winds attain or exceed 150 mph are called super typhoons.
Vulnerability	Describes how exposed or susceptible to damage an asset is. Vulnerability depends on an asset's construction, contents, and the economic value of its functions. Like indirect damages, the vulnerability of one element of the community is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power – if an electric substation is flooded, it will affect not only the substation itself, but a number of businesses as well. Often, indirect effects can be much more widespread and damaging than direct ones.
Vulnerability Assessment	The extent of injury and damage that may result from a hazard event of a given intensity in a given area. The vulnerability assessment should address impacts of hazard events on the existing and future built environment.

Water Displacement	When a large mass of earth on the ocean bottom sinks or uplifts, the column of water directly above it is displaced, forming the tsunami wave. The rate of displacement, motion of the ocean floor at the epicenter, the amount of displacement of the rupture zone, and the depth of water above the rupture zone all contribute to the intensity of the tsunami.
Wave Run-up	The height that the wave extends up to on steep shorelines, measured above a reference level (the normal height of the sea, corrected to the state of the tide at the time of wave arrival).
Wildfire	An uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures.
Zone	A geographical area shown on a Flood Insurance Rate Map (FIRM) that reflects the severity or type of flooding in the area.

APPENDIX L

LOS ANGELES COUNTY ALL-HAZARDS MITIGATION PLAN



2019 County of Los Angeles
All-Hazards Mitigation Plan

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LIST OF ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
AECOM	AECOM Technical Services, Inc.
AB	Assembly Bill
AHMP	All-Hazards Mitigation Plan
Cal FIRE	California Department of Forestry and Fire Protection
Cal OES	California Office of Emergency Services
CFR	Code of Federal Regulations
CGS	California Geological Survey
CWPP	Community Wildfire Protection Plans
CPG	Comprehensive Preparedness Guide
CRS	Community Rating System
DFIRM	Digital Flood Insurance Rate Map
DHS	Department of Homeland Security
DMA	Disaster Mitigation Act
DR	Disaster Declaration Number
DSOD	Division of Safety of Dams
EAP	Emergency Action Plan
EPA	Environmental Protection Agency
EQ	Earthquake
FEMA	Federal Emergency Management Agency
FHSZ	Fire Hazard Severity Zones
GIS	Geographic Information System
IPCC	Intergovernmental Panel on Climate Change
LACMA	Los Angeles County Museum of Art
LRA	Local Responsibility Area
M	Magnitude
MARAC	Mutual Aid Regional Advisory Committee
NFIP	National Flood Insurance Program
NHM	Los Angeles County Natural History Museum
OEM	Office of Emergency Management
PGA	Peak Ground Acceleration

RL	Repetitive Loss
SFHA	Special Flood Hazard Area
SRA	State Responsibility Area
U.S.	United States
USACE	United States Army Corps of Engineers
USGS	U.S. Geological Survey
WUI	wildland-urban interface

1 INTRODUCTION

1.1 HAZARD MITIGATION PLANNING

As defined in Title 44 of the Code of Federal Regulations (CFR), Subpart M, Section 206.401, hazard mitigation is "any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards." As such, hazard mitigation is any work to minimize the impacts of any type of hazard event before it occurs. Hazard mitigation aims to reduce losses from future disasters. It is a process that identifies and profiles hazards, analyzes the people and facilities at risk, and develops mitigation actions to reduce or eliminate hazard risk. The implementation of the mitigation actions, which include short- and long-term strategies that may involve planning, policy changes, programs, projects, and other activities, is the end result of this process.

In recent years, local hazard mitigation planning has been driven by a federal law, known as the Disaster Mitigation Act of 2000 (DMA 2000). On October 30, 2000, Congress passed the DMA 2000 (Public Law 106-390), which amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Stafford Act) (Title 42 of the United States Code Section 5121 et seq.) by repealing the act's previous mitigation planning section (409) and replacing it with a new mitigation planning section (322). This new section emphasized the need for state, tribal, and local entities to closely coordinate mitigation planning and implementation efforts. This new section also provided the legal basis for the Federal Emergency Management Agency's (FEMA's) mitigation plan requirements for the Hazard Mitigation Assistance grant programs.

1.2 2019 ALL-HAZARDS MITIGATION PLAN SYNOPSIS

To meet the requirements of the DMA 2000, the Los Angeles County Office of Emergency Management (OEM) has prepared an All- Hazards Mitigation Plan (AHMP) (hereinafter referred to as the 2019 AHMP) to assess risks posed by natural hazards and to develop a mitigation action plan for reducing the risks in Unincorporated Los Angeles County. The 2019 AHMP replaces the AHMP that was approved in 2014.

The 2019 AHMP is organized to follow FEMA's Local Mitigation Plan Review Tool, which demonstrates how local AHMPs meet the DMA 2000 regulations. As such, specific planning elements of this review tool are in their appropriate plan sections.

The 2019 AHMP structure has been updated to including the following sections:

- **Section 2 Planning Process** provides an overview of the 2019 planning process, starting with a plan update timeline. It identifies advisory committee members and describes their involvement with the plan update process. It also details stakeholder outreach, public involvement and continued public involvement. It provides an overview of the existing plans and reports and how they were incorporated into the 2019 AHMP and lastly lays out a plan update method and schedule. Supporting planning process documentation is listed in **Appendix A**.
- **Section 3 Community Profile** describes the planning area for the 2019 AHMP, which includes the unincorporated areas of the county. It touches on the current population and development trends in the county and discusses vulnerable populations in the county, including the growing homeless crisis. Finally, this section lists the county-owned and

county-related critical facilities included in this plan. Supporting community profile information can be found in **Appendix B**.

- **Section 4 Hazard Identification and Risk Assessment** describes each of the eight hazards addressed in this plan. Additionally, it includes impact (i.e., risk assessment) tables for the planning area, vulnerable populations and critical facilities within each hazard area. An overall summary description is also provided for each hazard. **Appendix C** contains supporting hazard identification and risk assessment information.
- **Section 5 Mitigation Strategy** details Los Angeles County's capabilities (authorities, policies, programs and resources) available for hazard mitigation. It also discusses the county's participation in the National Flood Insurance Program (NFIP). Finally, it describes the mitigation strategy, which is the blueprint for how the County will reduce its risks to hazards. The mitigation strategy is made up of three main components: mitigation goal(s); potential mitigation actions and projects; and a mitigation action plan.
- **Section 6 Plan Review, Evaluation and Implementation** discusses the revisions made to the 2019 AHMP to address changes in development, progress made in local mitigation efforts and changes to priorities.
- **Section 7 Plan Adoption** contains a scanned copy of the adoption resolution.

2 PLANNING PROCESS

Section 2 – Planning Process addresses Element A of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans
Element A: Planning Process
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))

2.1 OVERVIEW OF 2019 AHMP PLANNING PROCESS

The development of the 2019 AHMP was collaborative effort between Los Angeles County OEM, AECOM Technical Services, Inc. (AECOM), an advisory committee, and various county departments and agencies. **Table 2-1** provides a timeline of the major plan update tasks and milestones by month over a 9-month period. **Table 2-2** lists the advisory committee members and how they contributed to the development of the plan.

Table 2-1. AHMP Timeline

Date	Tasks	People Involved
March 2019	Reviewed the 2014 AHMP and decided to continue efforts to streamline the plan Held 2019 AHMP advisory committee kick-off meeting (March 15)	AHMP project manager, advisory committee
April 2019	Determined the hazards to be profiled, including climate change (new to the 2019 AHMP), drought, dam failure, earthquake, flood, landslide, tsunami and wildfire (all addressed in the 2014 AHMP)	AHMP project manager, AECOM
May 2019	Collected local and regional existing plans and reports	AECOM
June 2019	Determined the Geographic Information System (GIS) strategy for risk assessment including land area/geographical boundaries and critical facilities and discussed how to incorporate people experiencing homelessness	AHMP project manager, AECOM, Los Angeles County Office of Emergency Management

Table 2-1. AHMP Timeline

Date	Tasks	People Involved
July 2019	Identified initial list of stakeholders Crafted public outreach messages for the Twitter handle @ReadyLACounty Created draft hazard figures Developed homeless people risk assessment tables Developed land area/geographic boundaries risk assessment tables Rewrote/updated the hazard profiles into a streamlined tabular format Began developing/updating/collecting draft mitigation actions Streamlined and updated the community profile section to only address the planning area, population and development trends and county critical facilities (deleted general County information)	AHMP project manager, AECOM
August 2019	Tweeted public outreach messages about the 2019 AHMP Emailed stakeholders about the 2019 AHMP Conducted conference call with Los Angeles County Regional Planning (August 5) to discuss joint public outreach efforts as well as mitigation strategies Conducted meeting with Los Angeles County Public Works (August 7) to discuss 2019 AHMP, progress made to date, and existing and new mitigation strategies Developed critical facilities risk assessment tables Created draft risk assessment tables Revised plan maintenance approach from quarterly meetings to annual review questionnaires	AHMP project manager, AECOM, Los Angeles County Department of Regional Planning, Los Angeles County Public Works, advisory committee
September 2019	Updated the capability assessment tables Developed a list of potential mitigation actions and prioritized actions based on a new tiered approach Created public outreach flyers in English and Spanish and placed on the Los Angeles County OEM website Documented progress in local mitigation efforts Addressed changes in development since the 2014 AHMP Created Initial Draft AHMP Created Public Draft AHMP	AHMP project manager, AECOM, advisory committee
October 2019	Created Final Draft AHMP	AECOM

Table 2-2. Hazard Mitigation Advisory Committee

Name	Department / Agency, Title	Contribution
Emily Montanez	Office of Emergency Management, AHMP project manager, Senior Program Manager	Led kick-off meeting, reviewed draft hazard figures and risk assessment tables, draft mitigation actions and initial draft plan.
Margaret Carlin	Office of Emergency Management, GIS Project Supervisor	Provided input on GIS, reviewed draft hazard figures and risk assessment tables, draft mitigation actions and initial draft plan.
Stephanie Kim	Office of Emergency Management, Academic Intern	Reviewed and updated the community profile, provided input on people experiencing homelessness, participated on conference calls, attended department meetings, and reviewed the initial draft plan.
Caroline Chen	Los Angeles County Department of Regional Planning, Regional Planner	Attended kick-off meeting, participated on conference call, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Iris Chi	Los Angeles County Department of Regional Planning, Regional Planner	Attended kick-off meeting, participated on conference call, reviewed draft hazard figures and risk assessment tables, draft mitigation actions and initial draft plan.
Loni Eazell	Los Angeles County Public Works, Disaster Services Specialist	Coordinated August 7 department meeting, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Frank Forman	Los Angeles County Fire Department, Battalion Chief	Reviewed draft hazard figures and risk assessment tables, draft mitigation actions and initial draft plan.
Andrew Gano	City of Glendale Fire Department, Captain	Attended kick-off meeting, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Angine Geragoosian	Los Angeles County Public Works, Disaster Services Analyst	Attended kick-off meeting, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Patricia Hachiya	Regional Planning, Supervising Regional Planner	Attended kick-off meeting, participated on conference call, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Jack Husted	Department of Public Works, Senior Civil Engineer	Attended August 7 meeting, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Sheryll Jones	Emergency Services Coordinator, Southern Region Cal OES	Advised Los Angeles County OEM about initial update process and reviewed initial draft plan.
Sinan Khan	Office of Emergency Management, Associate Director	Reviewed draft hazard figures and risk assessment tables, draft mitigation actions and initial draft plan.

Table 2-2. Hazard Mitigation Advisory Committee

Name	Department / Agency, Title	Contribution
Diana Manzano	Area D Disaster Management, Coordinator	Attended kick-off meeting, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
John Eric Pearce	Fire Department, Captain	Reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Christine Shaffer	Sheriff's Department, Deputy	Reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Nathaniel VerGow	Los Angeles Homeless Services Authority, Director of Access and Engagement	Reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Steven Wallace	San Gabriel Fire Department, Interim Fire Chief	Reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Iain Watt	Office of Emergency Management, Emergency Management Coordinator	Participated on conference call, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.

2.2 OPPORTUNITIES FOR STAKEHOLDERS

On August 20, 2019, the AHMP project manager reached out to stakeholders about the 2019 AHMP to invite them to participate in the plan update process. The stakeholders were also notified on October 4, 2019, that a copy of the public draft plan was available for review on the Los Angeles County OEM website. Stakeholders include members of the Mutual Aid Regional Advisory Committee (MARAC) for the Southern Region. The MARAC consists of: the California Office of Emergency Services (Cal OES) regional administrator, or deputy, for the Administrative Region encompassing the mutual aid region(s); regional mutual aid coordinators (fire, law enforcement, disaster medical and other established mutual aid systems); a representative from each operational area located in the mutual aid region; representatives from two municipalities (small/large and rotates bi-annually); regional public utility representative; private utility representative; special district representative; and other designee as appointed by an individual MARAC. Stakeholder documentation is located in **Appendix A**.

2.3 PUBLIC INVOLVEMENT

The Los Angeles County OEM engaged the public in the plan update process through various media formats. A flyer about the 2019 AHMP was created in both English and Spanish and placed on the Los Angeles County OEM website. The website also includes a copy of the public draft plan for public comment on October 4, 2019.

https://www.lacounty.gov/emergency/county-of-los-angeles-all-hazards-mitigation-plan/

Additionally, the Los Angeles County OEM used Twitter, @ReadyLACounty, to engage the public through a series of tweets about the 2019 AHMP, hazards in Los Angeles County, hazard mitigation planning, and the public draft plan.

2.4 REVIEW AND INCORPORATION OF EXISTING PLANS AND REPORTS

The consultant reviewed existing relevant information to include in the 2019 AHMP. **Table 2-3** lists the plans and reports reviewed as well as information to be incorporated into the 2019 AHMP.

Table 2-3. Existing Plans and Reports

Plans and Reports	Information to be Incorporated into the 2019 AHMP
Los Angeles County Operational Area Emergency Response Plan (2012)	Appendix K Hazards-Specific to the operational area into Section 4 Hazard Identification and Risk Assessment
Los Angeles County 2035 General Plan (2015)	Safety element mitigation policies into Section 5 Mitigation Strategy
Los Angeles County Floodplain Management Plan (2016)	Flood hazard profile, non-implemented flood mitigation initiatives into Section 4 Hazard Identification and Risk Assessment
County of Los Angeles Floodplain Management Plan Progress Report 2017 – 2018	Non-implemented flood mitigation initiatives into Section 5 Mitigation Strategy, implemented flood mitigation initiatives into Section 6 Plan Review, Evaluation, and Implementation
County of Los Angeles Repetitive Loss Area Analysis Progress Report 2017 – 2018	Non-implemented flood mitigation initiatives into Section 5 Mitigation Strategy, implemented flood mitigation initiatives into Section 6 Plan Review, Evaluation, and Implementation
Unincorporated Los Angeles County Community Climate Action Plan 2020	Climate change mitigation objectives into Section 5 Mitigation Strategy
2019 Greater Los Angeles Homeless Count Results	People experiencing homelessness count into Section 4 Hazard Identification and Risk Assessment
Los Angeles County Fire Department 2018 Strategic Fire Plan	Vegetation management programs into Section 5 Mitigation Strategy
Southern California Earthquake Data Center's Earthquake Catalogs	Historic seismic data into Section 4 Hazard Identification and Risk Assessment
Maritime Tsunami Response Playbooks: Background Information and Guidance for Response and Hazard Mitigation Use (2016)	Historical tsunami information and evaluation data into Section 4 Hazard Identification and Risk Assessment
FEMA Flood Insurance Study, Los Angeles County, California (2018)	Historical flood information and flood hazard areas into Section 4 Hazard Identification and Risk Assessment
U.S. Geological Survey (USGS): Rainfall and Landslides in Southern California (active)	Landslide nature, location, historical and extent information into Section 4 Hazard Identification and Risk Assessment

2.5 CONTINUED PUBLIC PARTICIPATION

A copy of the 2019 AHMP will be kept on the Los Angeles County OEM website along with contact information. The Los Angeles County OEM will also notify residents of any changes or

updates to the 2019 AHMP, including mitigation projects identified in the plan as they are implemented, via @ReadyLACounty on Twitter.

2.6 PLAN UPDATE METHOD AND SCHEDULE

The 2014 AHMP recommended quarterly meetings to discuss and track mitigation projects implemented during the lifespan of the 2014 AHMP. It is unknown how often specific departments/agencies met to track the status of their mitigation actions. For the 2019 AHMP, the plan update method and schedule has been revised to include an annual review and an advisory committee roundtable prior to the 5-year update. Mitigation projects will be monitored via a progress project report. Details are as follows:

- **Annual Review Worksheets**: Every 12 months from plan adoption, the AHMP project manager will email each member of the advisory committee an Annual Review Worksheet to complete. As shown in Appendix A, the Annual Review Worksheet reflects the Local Mitigation Plan Review Tool and includes the following: planning process, hazard profile, risk assessment, and mitigation strategy. Each member of the advisory committee will email completed worksheets back to the AHMP project manager to review. The AHMP project manager will summarize these findings and email them out to the committee. If the AHMP project manager believes that the 2019 AHMP needs to be updated based on the findings, then an invitation will be sent to advisory committee members to attend a formal AHMP update meeting.
- **Mitigation Progress Project Reports**: Mitigation actions will be monitored and updated using the Mitigation Project Progress Report. During each annual review, each department or agency currently administering a mitigation project will submit a progress report to the AHMP project manager. For projects that are being funded by a FEMA mitigation grant, FEMA quarterly reports may be used as the preferred reporting tool. As shown in Appendix A, the progress report will discuss the current status of the mitigation project, including any changes made to the project, identify implementation problems, and describe appropriate strategies to overcome them.
- **Advisory Committee Roundtable**: On the fourth year of the update, the AHMP project manager will reconvene the advisory committee updating membership, if necessary) and lead a tabletop exercise with the advisory committee to: collect the Annual Review Worksheet and any Mitigation Project Progress Reports and FEMA quarterly reports; determine hazards to be included in the 2024 AHMP; develop a new work plan; and begin the plan update process.

3 COMMUNITY PROFILE

3.1 PLANNING AREA

With approximately 4,760.72 square miles, Los Angeles County is geographically one of the largest counties in the country. As shown in **Figure 3-1**, the county stretches along 75 miles of the Pacific coast of Southern California and is bordered to the east by Orange County and San Bernardino County, to the north by Kern County, and to the west by Ventura County. Los Angeles County has two islands, Santa Catalina (75.00 square miles) and San Clemente (60.69 square miles), which are part of an eight-island group called the Channel Islands.

As shown in **Tables 3-1 – 3-6** and **Figures 3-2 – 3-6**, the county is divided into five supervisorial districts, each representing approximately 2 million people in 88 cities and approximately 140 communities or 122 county-wide statistical areas. The five supervisorial districts consist of 4,150 square miles, with 3,014.17 square miles located in the unincorporated areas. The remaining area of Los Angeles County is federal land, including the Los Padres National Forest and Angeles National Forest.

For the 2019 AHMP, the planning area is defined as Unincorporated Los Angeles County. However, the plan's risk assessment includes: Los Angeles County, Unincorporated Los Angeles County, and supervisorial districts 1-5. In addition, specific county-wide statistical area risk assessment information is provided in **Appendix C**.

Table 3-1. Los Angeles County Land Area

Entity	Square Miles
Los Angeles County	4,760.72
Unincorporated Los Angeles County	3,041.17
Supervisorial District 1	246.19
Supervisorial District 2	161.83
Supervisorial District 3	431.21
Supervisorial District 4	439.95
Supervisorial District 5	2,807.00

Table 3-2. Supervisorial District 1

City	County-wide Statistical Area
Azusa	Arcadia
Baldwin Park	Angeles National Forest
Bell	Avocado Heights
Bell Gardens	Azusa
Claremont	Bandini Islands

Table 3-2. Supervisorial District 1

City	County-wide Statistical Area
Commerce	Bassett
Cudahy	Charter Oak
El Monte	Claremont
Huntington Park	Covina
Industry	Covina (Charter Oak)
Irwindale	Duarte
La Puente	East Los Angeles
Maywood	El Monte
Montebello	Florence – Firestone
Monterey Park	Glendora
Pico Rivera	Hacienda Heights
Pomona	La Verne
Rosemead	Lynwood
South El Monte	North Whittier
South Gate	Padua Hills
Vernon	Pellissier Village
Walnut	Pomona
West Covina	Rowland Heights
	San Jose Hills
	South El Monte
	South San Gabriel
	Sunrise Village
	Valinda
	Walnut
	Walnut Park
	West Puente Valley
	West Whittier / Los Nietos
	Whittier
	Whittier Narrows

Table 3-3. Supervisorial District 2

City	County-wide Statistical Area
Carson	Athens Village
Compton	Athens-Westmont
Culver City	Del Aire
Gardena	Del Rey
Hawthorne	East Rancho Dominguez
Inglewood	El Camino Village
Lawndale	Florence – Firestone
Los Angeles (portion)	Hawthorne
Lynwood	Ladera Heights
	Lennox
	Lynwood
	Marina del Rey
	Rancho Dominguez
	Rosewood
	Rosewood/East Gardena
	Rosewood/West Rancho Dominguez
	View Park/Windsor Hills
	Walnut Park
	West Carsen
	West Rancho Dominguez
	Willowbrook
	Wiseburn

Table 3-4. Supervisorial District 3

City	County-wide Statistical Area
Agoura Hills	Angeles National Forest
Beverly Hills	Franklin Canyon
Calabasas	Marina del Rey
Hidden Hills	Miracle Mile
Malibu	Kagel/Lopez Canyons
San Fernando	Santa Monica Mountains
Santa Monica	Universal City
West Hollywood	West LA
Westlake Village	Westhills

Table 3-5. Supervisorial District 4

City	County-wide Statistical Area
Artesia	Cerritos
Avalon	Del Aire
Bellflower	East La Mirada
Cerritos	East Rancho Dominguez
Diamond Bar	East Whittier
Downey	El Camino Village
El Segundo	Hacienda Heights
Hawaiian Gardens	Harbor Gateway
Hermosa Beach	La Habra Heights
La Habra Heights	La Rambla
La Mirada	Lakewood
Lakewood	Lennox
Lomita	Long Beach
Long Beach	Lynwood
Los Angeles (portion)	Marina del Rey
Manhattan Beach	Palos Verdes Peninsula
Norwalk	Rancho Dominguez
Palos Verdes Estates	Rowland Heights
Paramount	San Clemente Island
Rancho Palos Verdes	Santa Catalina Island

Table 3-5. Supervisorial District 4

City	County-wide Statistical Area
Redondo Beach	South Whittier
Rolling Hills	Sunrise Village
Rolling Hills Estates	West Carson
Santa Fe Springs	West Whittier / Los Nietos
Signal Hill	Westfield/Academy Hills
Torrance	Whittier
Whittier	

Table 3-6. Supervisorial District 5

City	County-wide Statistical Area
Alhambra	Acton
Arcadia	Agua Dulce
Bradbury	Altadena
Covina	Anaverde
Duarte	Angeles National Forest
Glendale	Arcadia
Glendora	Azusa
La Canada – Flintridge	Bouquet Canyon
La Verne	Bradbury
Lancaster	Canyon Country
Monrovia	Castaic
Palmdale	Claremont
Pasadena	Covina
San Dimas	Covina (Charter Oak)
San Gabriel	Del Sur
San Marino	Desert View Highlands
Santa Clarita	Duarte
Sierra Madre	East Covina
South Pasadena	East Lancaster
Temple City	East Pasadena
Los Angeles City	Elizabeth Lake
Canoga Park (portion)	Glendora

Table 3-6. Supervisorial District 5

City	County-wide Statistical Area
Chatsworth (portion)	Hi Vista
Granada Hills (portion)	Kagel / Lopez Canyons
Hansen Dam (portion)	La Crescenta-Montrose
Lake View Terrace (portion)	La Verne
Mission Hills (portion)	Lake Hughes
Northridge (portion)	Lake Los Angeles
Olive View Hospital (Sylmar)	Lake Manor
Porter Ranch	Leona Valley
Shadow Hills	Littlerock
Sun Valley (portion)	Littlerock/Juniper Hills
Sunland	Littlerock/Pearblossom
Sylmar (portion)	Llano
Tujunga	Monrovia
West Hills (portion)	Newhall
	North Lancaster
	Northeast San Gabriel
	Palmdale
	Pearblossom/Llano
	Placerita Canyon
	Pomona
	Quartz Hill
	Roosevelt
	San Francisquito Canyon/Bouquet Canyon
	San Pasqual
	Sand Canyon
	Saugus
	Saugus/Canyon Country
	South Antelope Valley
	South Edwards
	Southeast Antelope Valley
	Stevenson Ranch
	Sun Village
	Twin Lakes/Oat Mountain

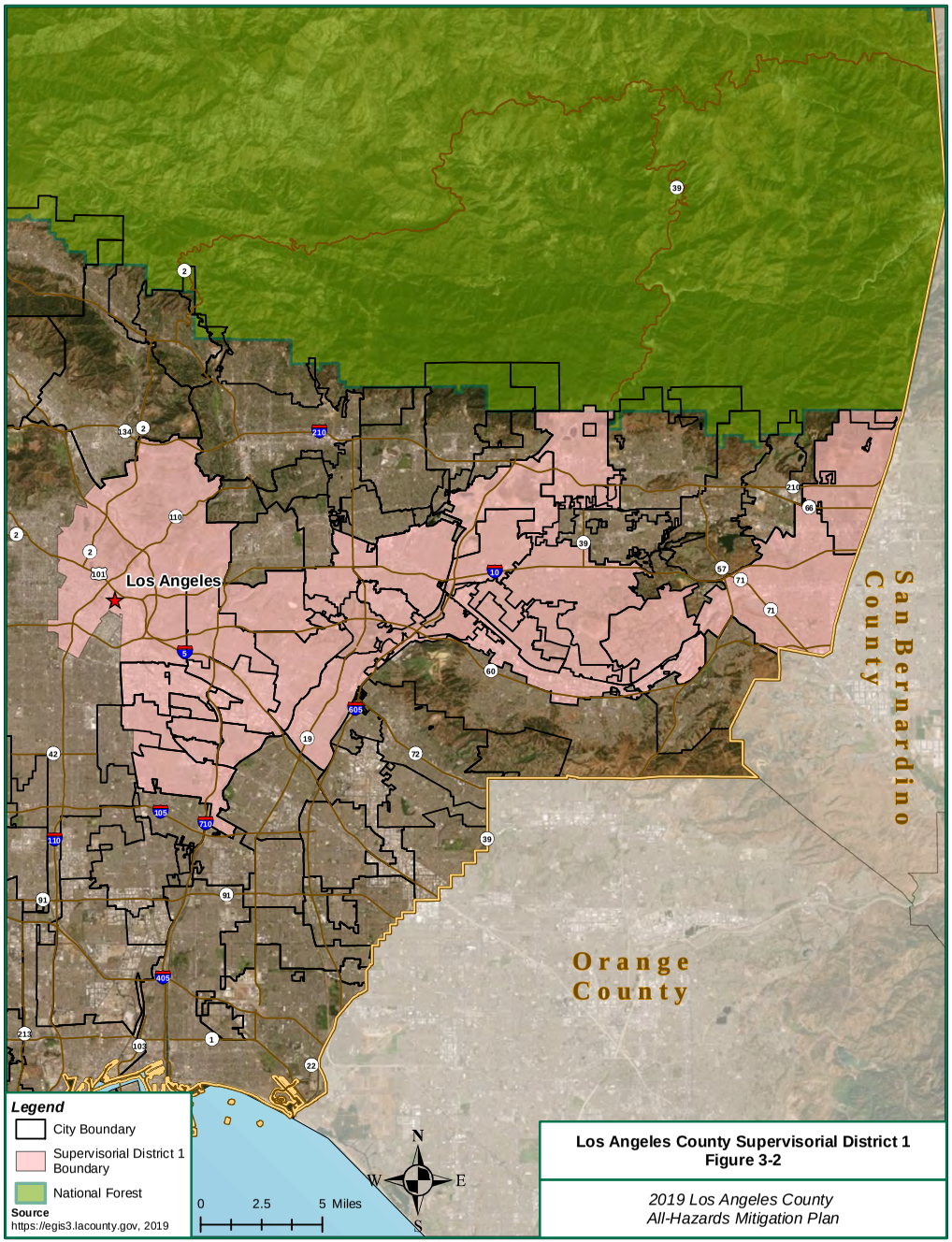
Table 3-6. Supervisorial District 5

City	County-wide Statistical Area
	Val Verde
	Valencia
	West Antelope Valley
	West Chatsworth
	White Fence Farms



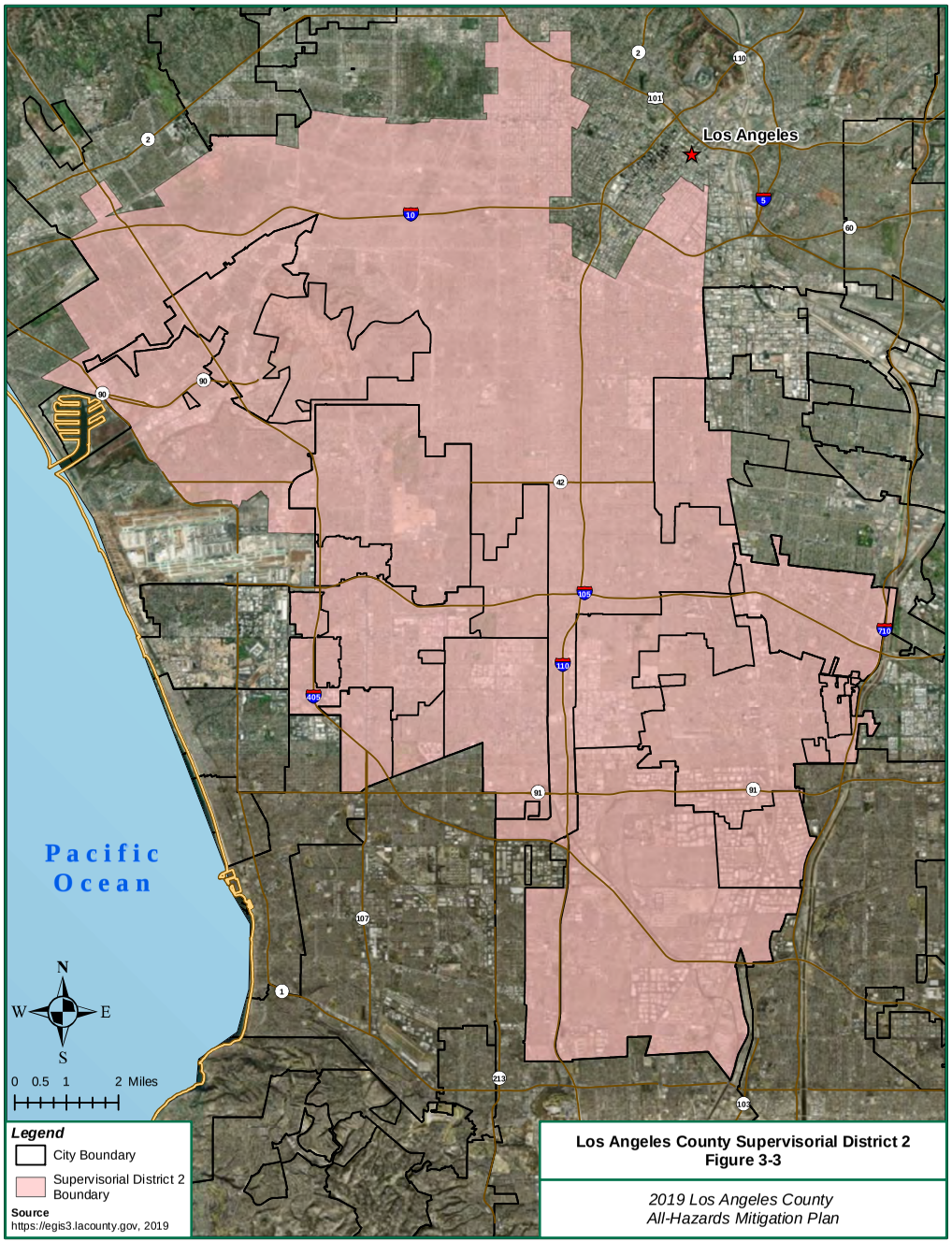
Los Angeles County
Figure 3-1

2019 Los Angeles County
All-Hazards Mitigation Plan



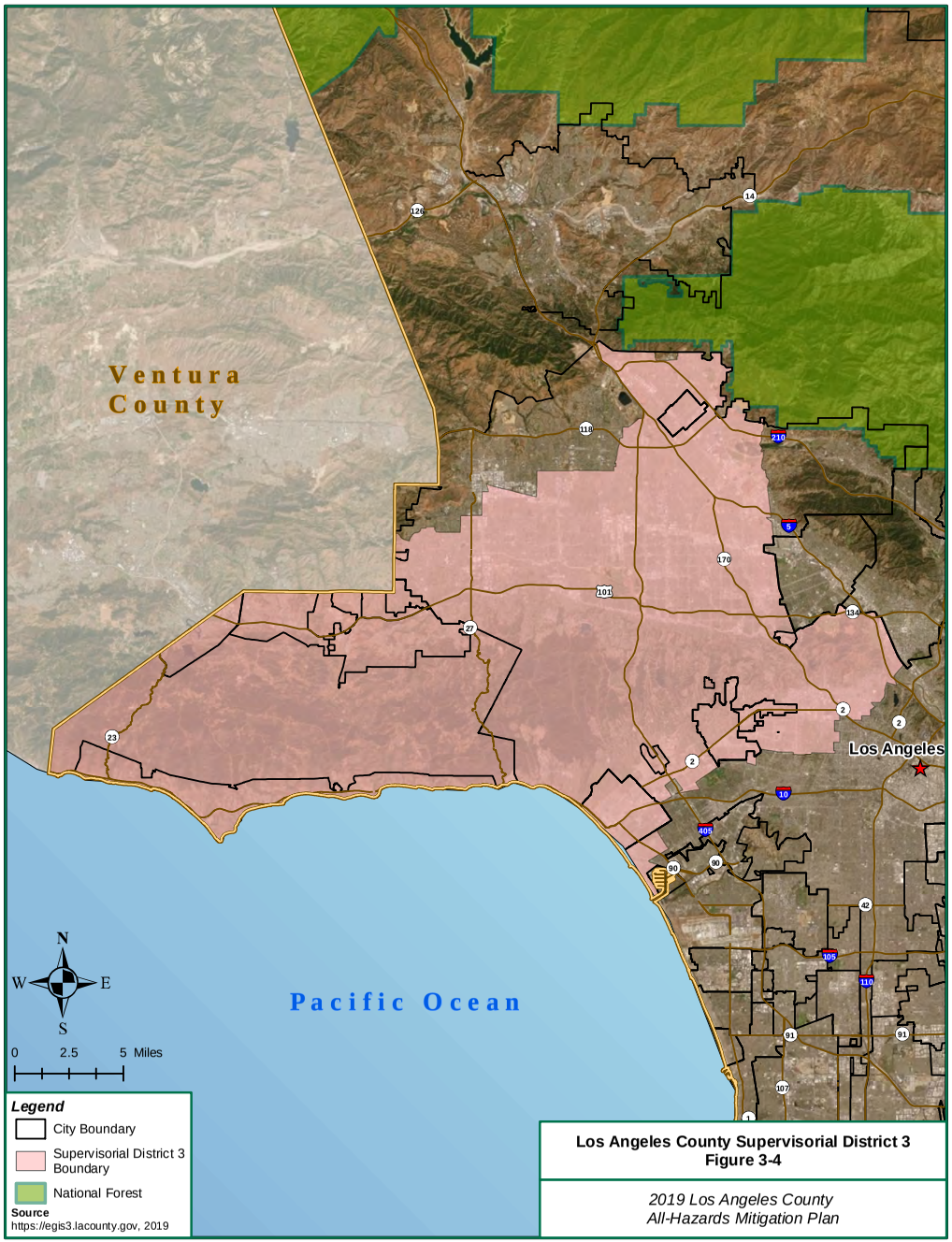
Los Angeles County Supervisorial District 1
Figure 3-2

2019 Los Angeles County
All-Hazards Mitigation Plan



Los Angeles County Supervisorial District 2
Figure 3-3

2019 Los Angeles County
All-Hazards Mitigation Plan



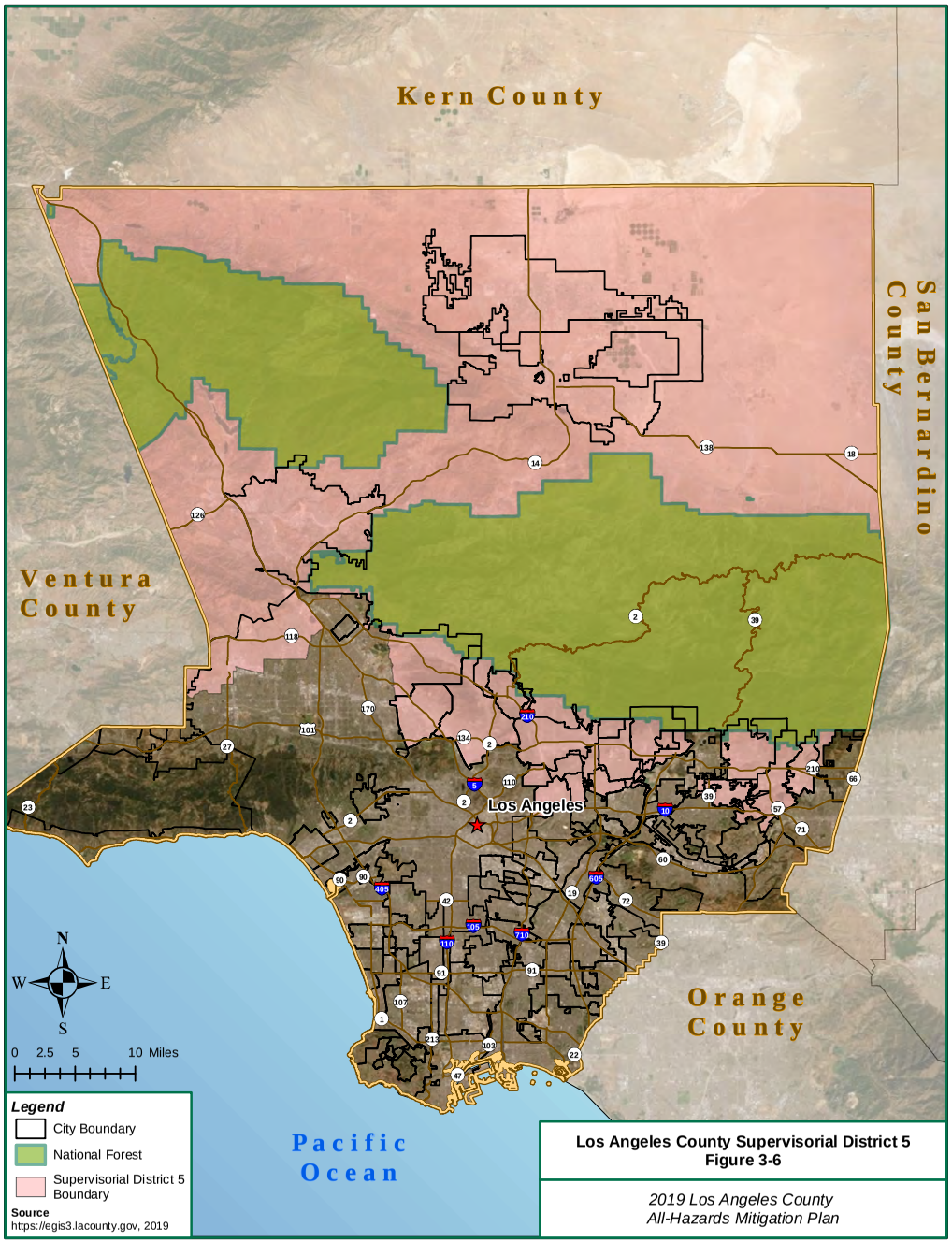
Los Angeles County Supervisorial District 3
Figure 3-4

2019 Los Angeles County
All-Hazards Mitigation Plan



Los Angeles County Supervisorial District 4
Figure 3-5

2019 Los Angeles County
All-Hazards Mitigation Plan



Los Angeles County Supervisorial District 5
Figure 3-6

2019 Los Angeles County
All-Hazards Mitigation Plan

3.2 POPULATION AND DEVELOPMENT TRENDS

Since the drafting of the 2014 AHMP, United States (U.S.) Census Bureau Intercensal Estimates from July 1, 2015, to July 1, 2018, show the number of people residing in Los Angeles County only grew from 10,097,037 to 10,105,518. While the county experienced population growth of 0.50 percent in 2015 and 0.23 percent in 2016, the county population fell by 0.02 percent in 2017 and 0.13 percent in 2018.

The California Department of Finance noted that the decline in population can be linked in part to a decline in birthrate. Researchers at the University of Southern California Lusk Center for Real Estate also suggest that one of the biggest reasons behind Los Angeles County's growth rate slip is due the lack of housing. Despite the city of Los Angeles adding between 15,000 and 17,000 units of housing each year from 2014 to 2018, housing has become prohibitively unaffordable, which has led many young Los Angeles County residents to move out-of-state or put down roots in nearby Inland Empire counties, where thousands of new jobs in distribution hubs and fulfillment centers have fueled more affordable housing development.

For the 2019 AHMP, population and residential buildings are not included in the risk assessment. As 2020 U.S. Census data become available, this information may be included in plan updates.

3.3 VULNERABLE POPULATIONS

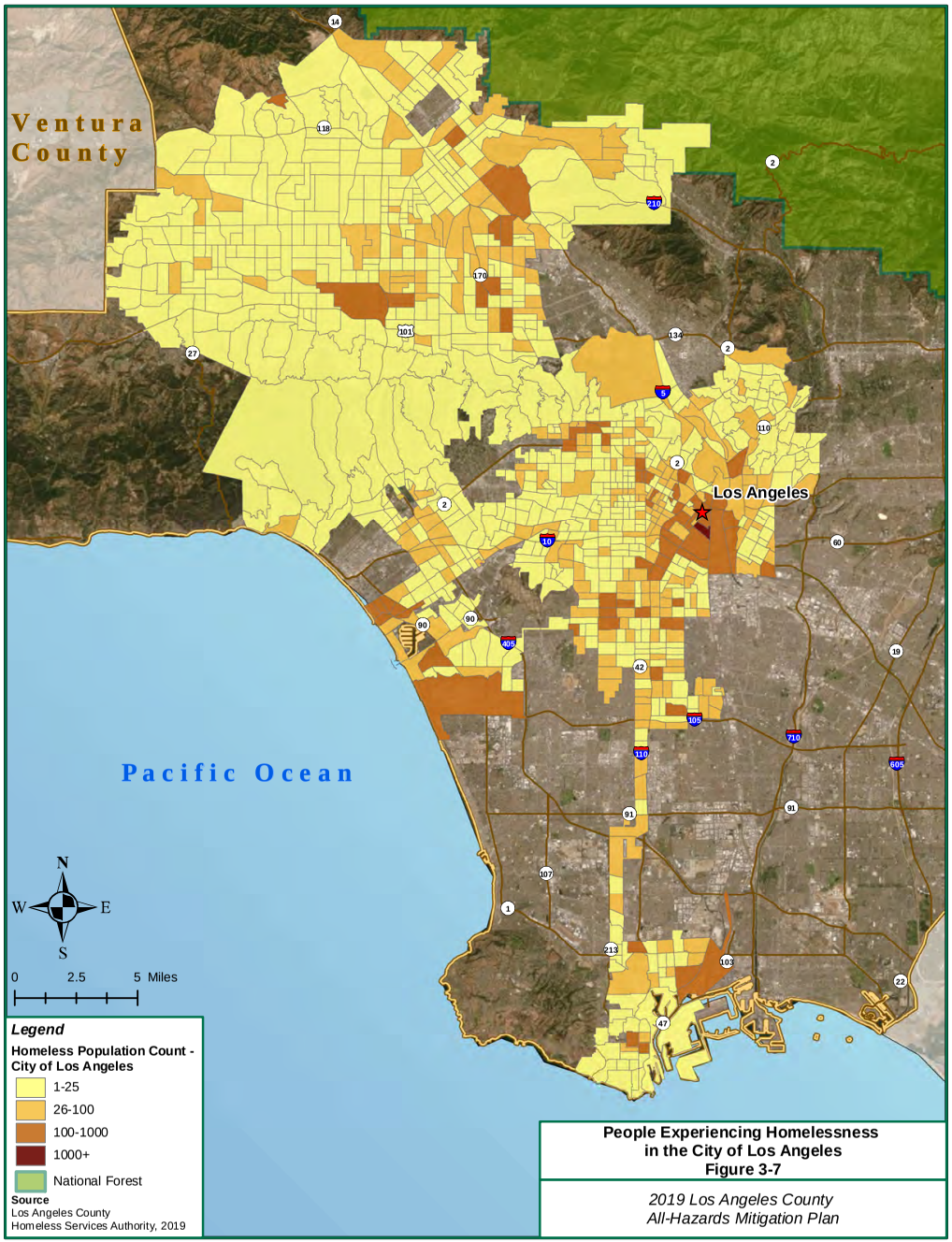
As noted by the Center for Disease Control (CDC), "Everyone must remain safe in an emergency. But for some, it's more difficult." Vulnerable or at-risk groups include people that may have difficulty communicating or accessing medical care, need help maintaining independence, require supervision, and need help accessing transportation.

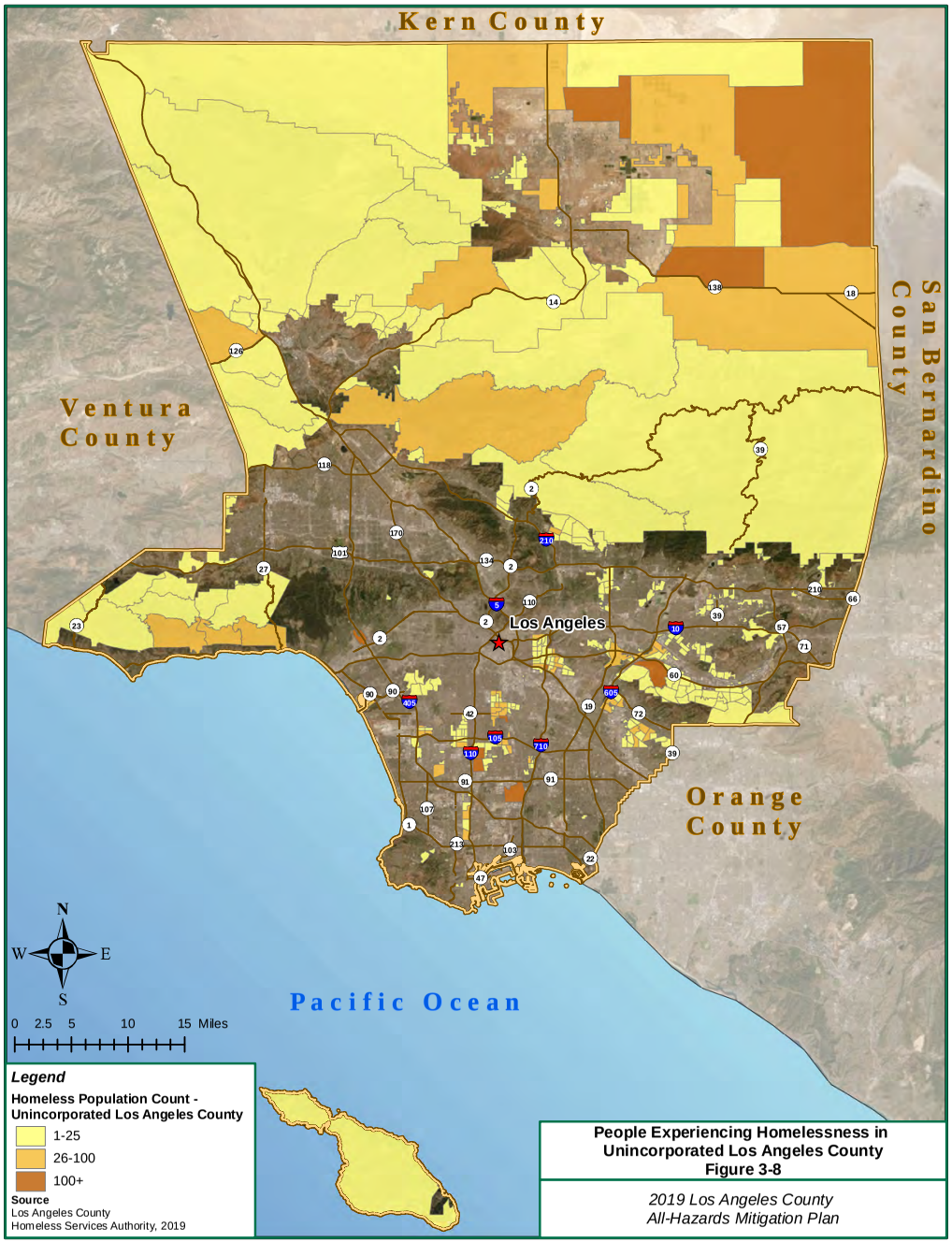
For the 2019 AHMP, vulnerable population groups addressed in the risk assessment include people experiencing homelessness. People experiencing homelessness have become a regional crisis as the number of this vulnerable population group has risen to nearly 60,000 in Los Angeles County alone. **Table 3-7** and **Figures 3-7 and 3-8** show the total point-in-time number of people experiencing homelessness in the city of Los Angeles and Unincorporated Los Angeles County, as captured for the 2019 Greater Los Angeles Homeless Count.

There are several other vulnerable groups at-risk to hazards in Los Angeles County; future updates of the AHMP will expand vulnerable population categories as the 2020 U.S. Census socioeconomic status, household composition and disability, minority status and language, and housing and transportation date becomes available.

Table 3-7. People Experiencing Homelessness

Entity	Total # of People Experiencing Homelessness (Sheltered and Unsheltered)
City of Los Angeles	32,931
Unincorporated Los Angeles County	5,881





3.4 CRITICAL FACILITIES

A critical facility provides services and functions essential to a community, especially during and after a disaster. Common types of critical facilities include: fire stations, police stations, hospitals, schools, water and waste water systems, and utilities. Critical facilities may also include places that can be used for sheltering or staging purposes, such as community centers and libraries. Critical facilities may also include large public gathering spots.

Los Angeles County does not currently maintain a centralized critical facilities database. For the 2019 AHMP, 915 major county-owned and county-related critical facilities were collected from various county department and agencies and also from the U.S. Department of Homeland Security's (DHS) Homeland Infrastructure-Foundation-Level Data site. Critical facility names and addresses were then geocoded to a location and the resulting geographic features were used for the risk assessment. The results of this process are shown in **Table 3-8** and **Figure 3-9** through **Figure 3-19**. Facility-specific information is provided in **Appendix B**. Some departments and agencies have multiple facilities at the same location; hence there are duplications of facility sites.

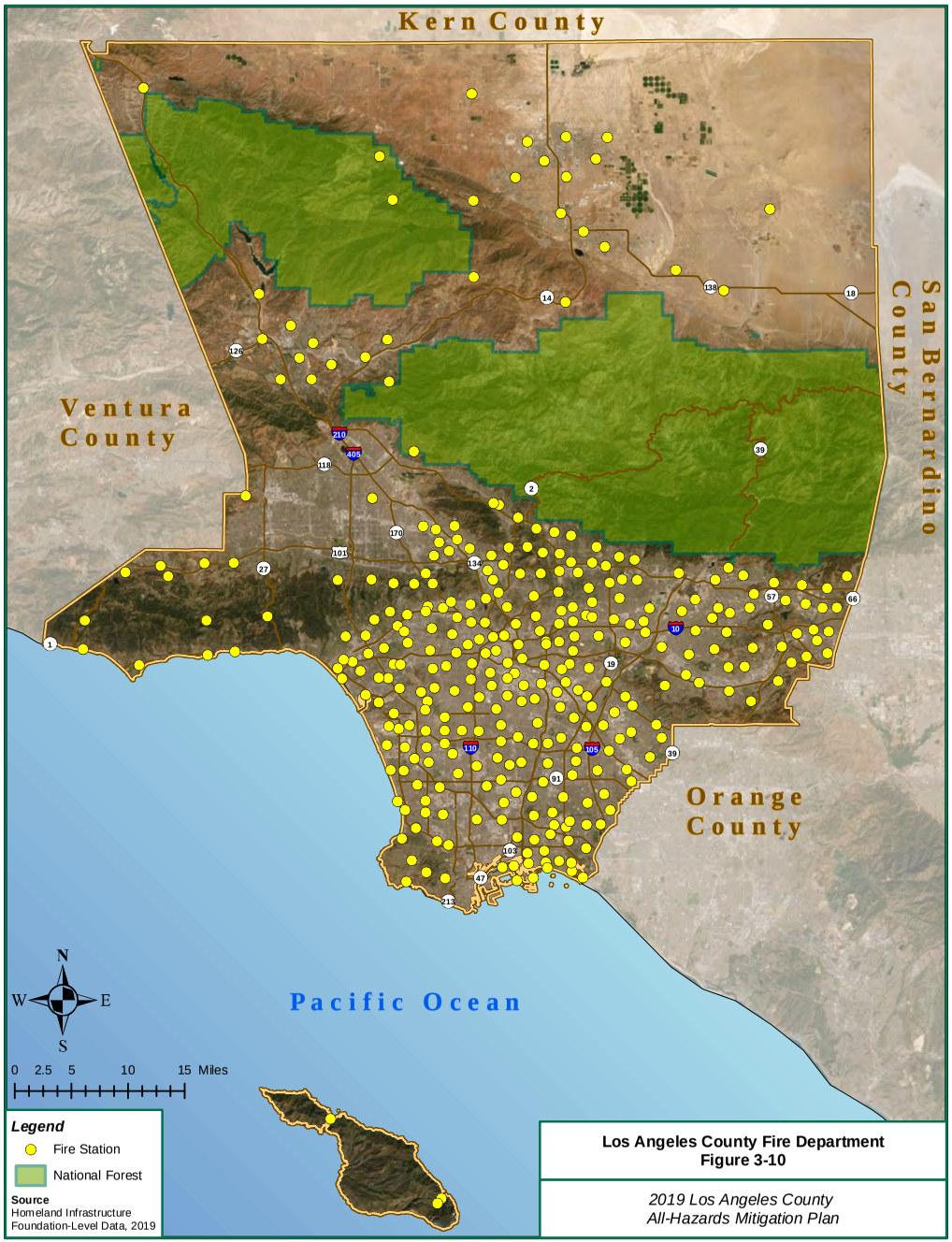
The County hopes to implement a coordinated data collection and database system for critical facilities; as such, future updates to this plan will likely include an expanded critical facilities list.

Table 3-8. Los Angeles County-Owned and County-Related Critical Facilities

Department / Agency	# of Facilities
Los Angeles County Animal Care & Control	7
Los Angeles County Fire Department	337*
Los Angeles County Health Services	29
Los Angeles County Library	85
LACMA & NHM	4
Los Angeles County Office of Education	37
Los Angeles County - Other (offices)	24
Los Angeles County Parks & Recreation	117
Los Angeles County Public Health	14
Los Angeles County Public Works	230
Los Angeles County Sheriff's Department	31

Note: The fire stations identified for this plan include those located within the 59 cities and all the unincorporated areas that the Los Angeles County Fire Department serves.

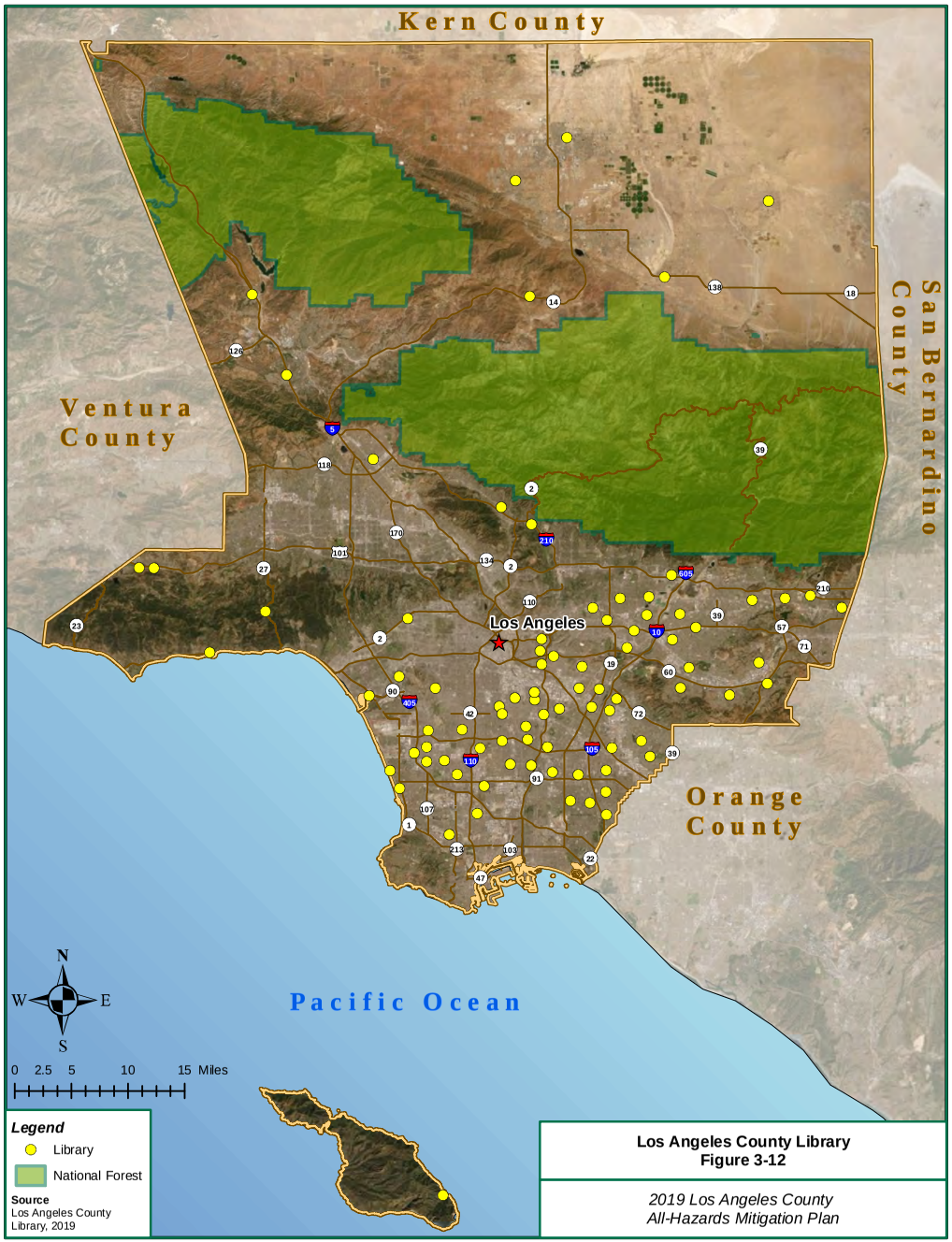

Kern County
San Bernardino County
Ventura County
Orange County
Pacific Ocean
N
W
E
S
0 2.5 5 10 15 Miles
Legend
Animal Shelter
National Forest
Source
Los Angeles County
Animal Care and Control, 2019
Los Angeles County Animal Care & Control
Figure 3-9
2019 Los Angeles County
All-Hazards Mitigation Plan


Kern County
San Bernardino County
Ventura County
Orange County
Pacific Ocean
N
W
E
S
0 2.5 5 10 15 Miles
Legend
Fire Station
National Forest
Source
Homeland Infrastructure
Foundation-Level Data, 2019
Los Angeles County Fire Department
Figure 3-10
2019 Los Angeles County
All-Hazards Mitigation Plan



Los Angeles County Department of Health Services
Figure 3-11

2019 Los Angeles County All-Hazards Mitigation Plan



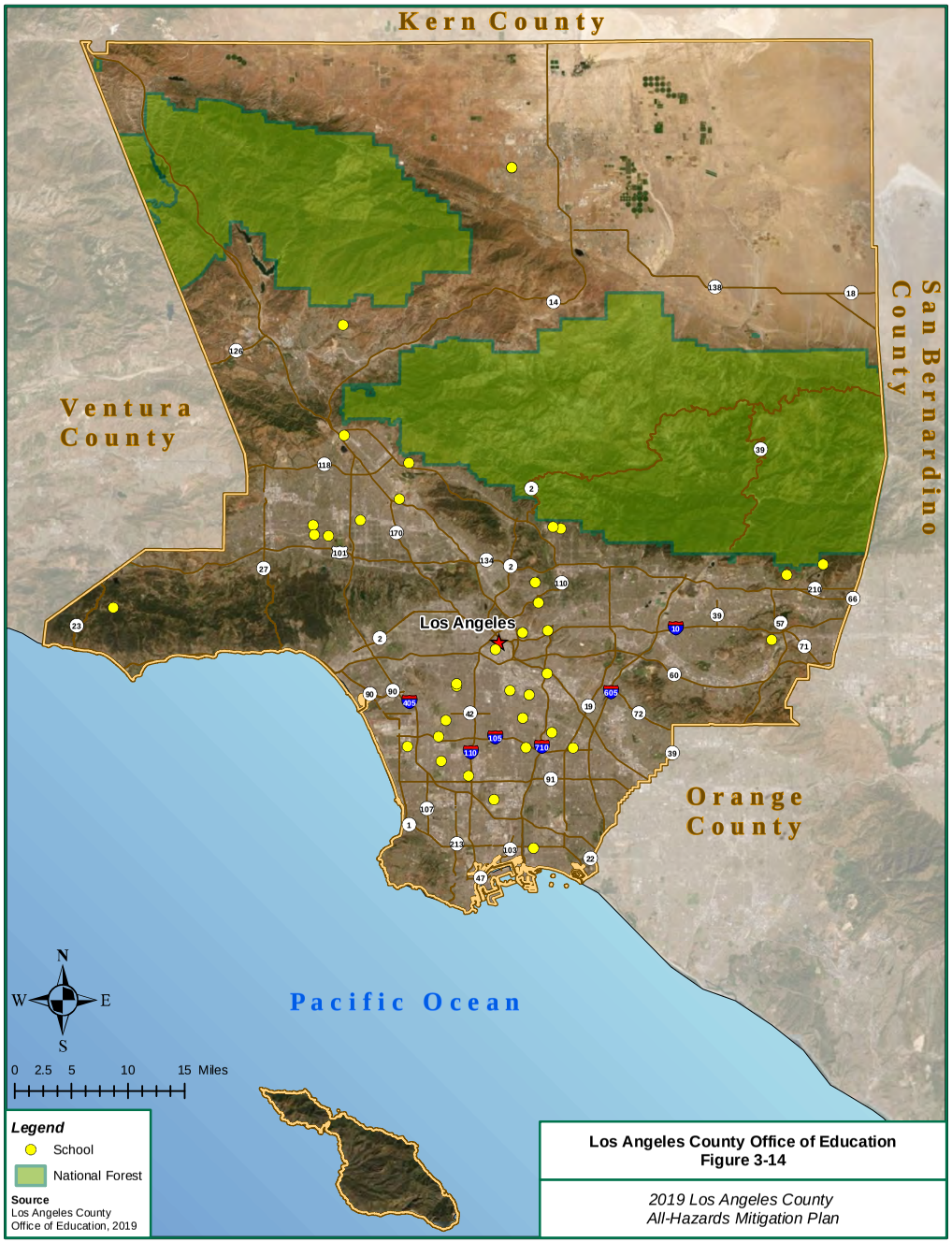
Los Angeles County Library
Figure 3-12

2019 Los Angeles County All-Hazards Mitigation Plan



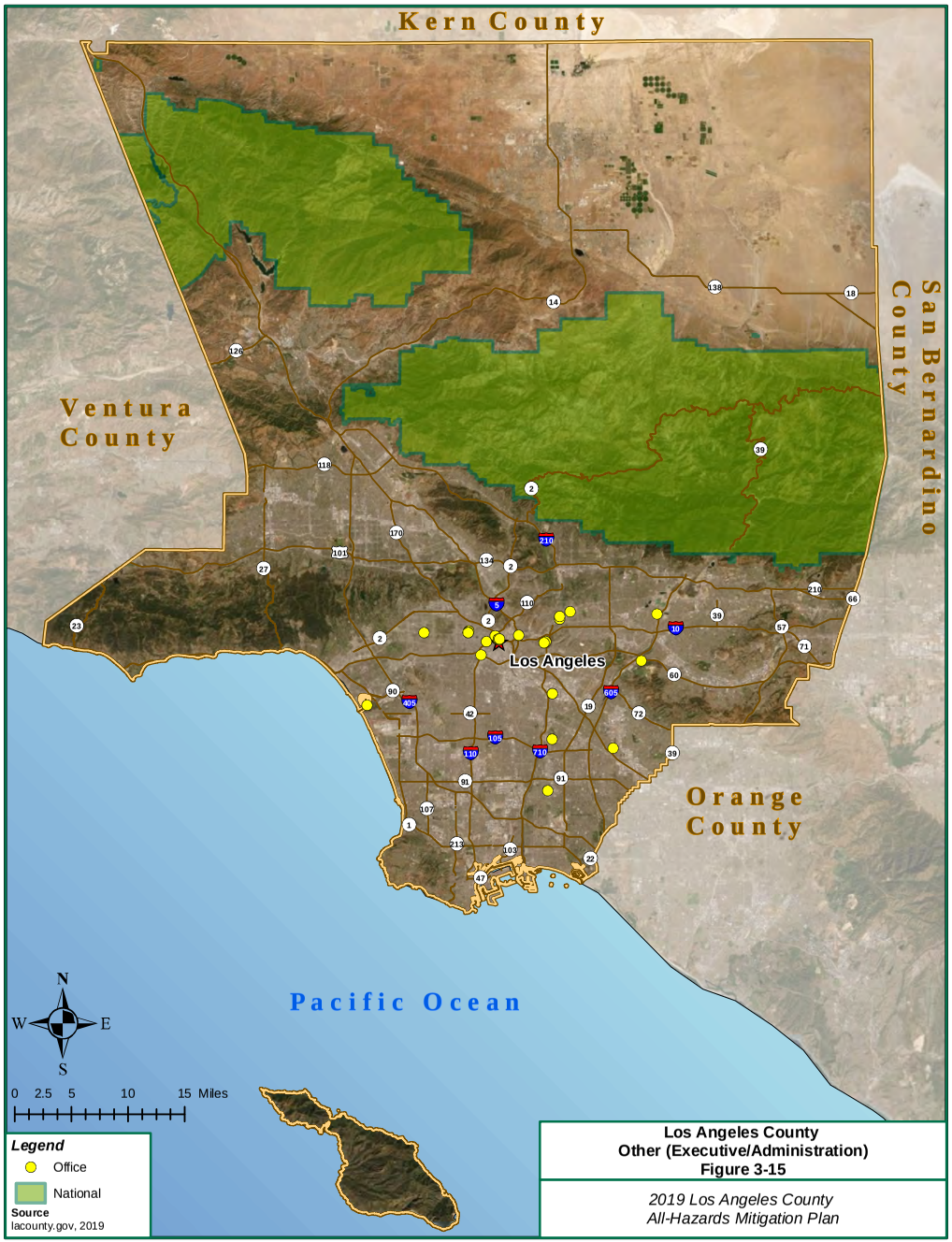
Los Angeles County Museum of Art and Museum of Natural History
Figure 3-13

2019 Los Angeles County All-Hazards Mitigation Plan



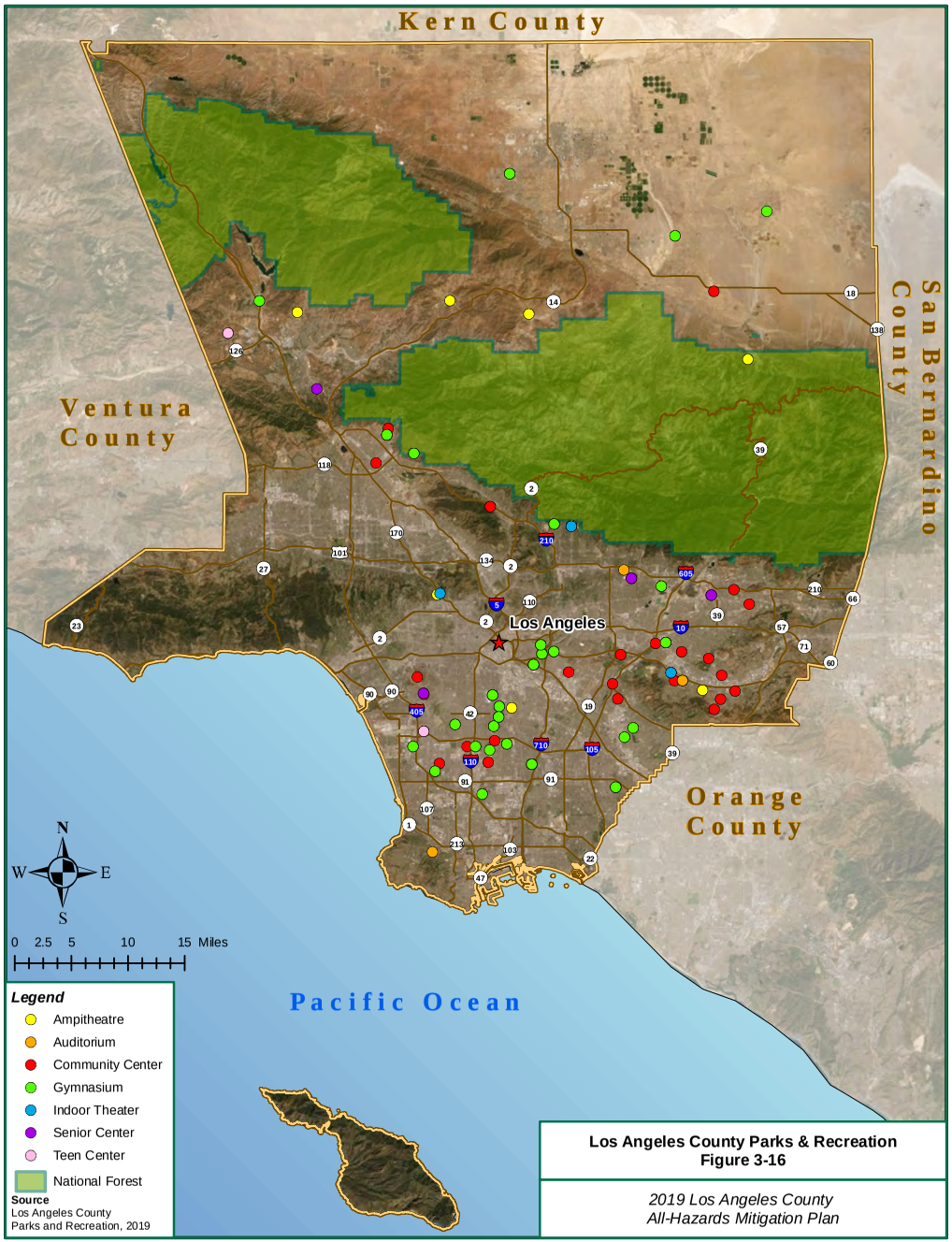
Los Angeles County Office of Education
Figure 3-14

2019 Los Angeles County All-Hazards Mitigation Plan



Los Angeles County
Other (Executive/Administration)
Figure 3-15

2019 Los Angeles County
All-Hazards Mitigation Plan



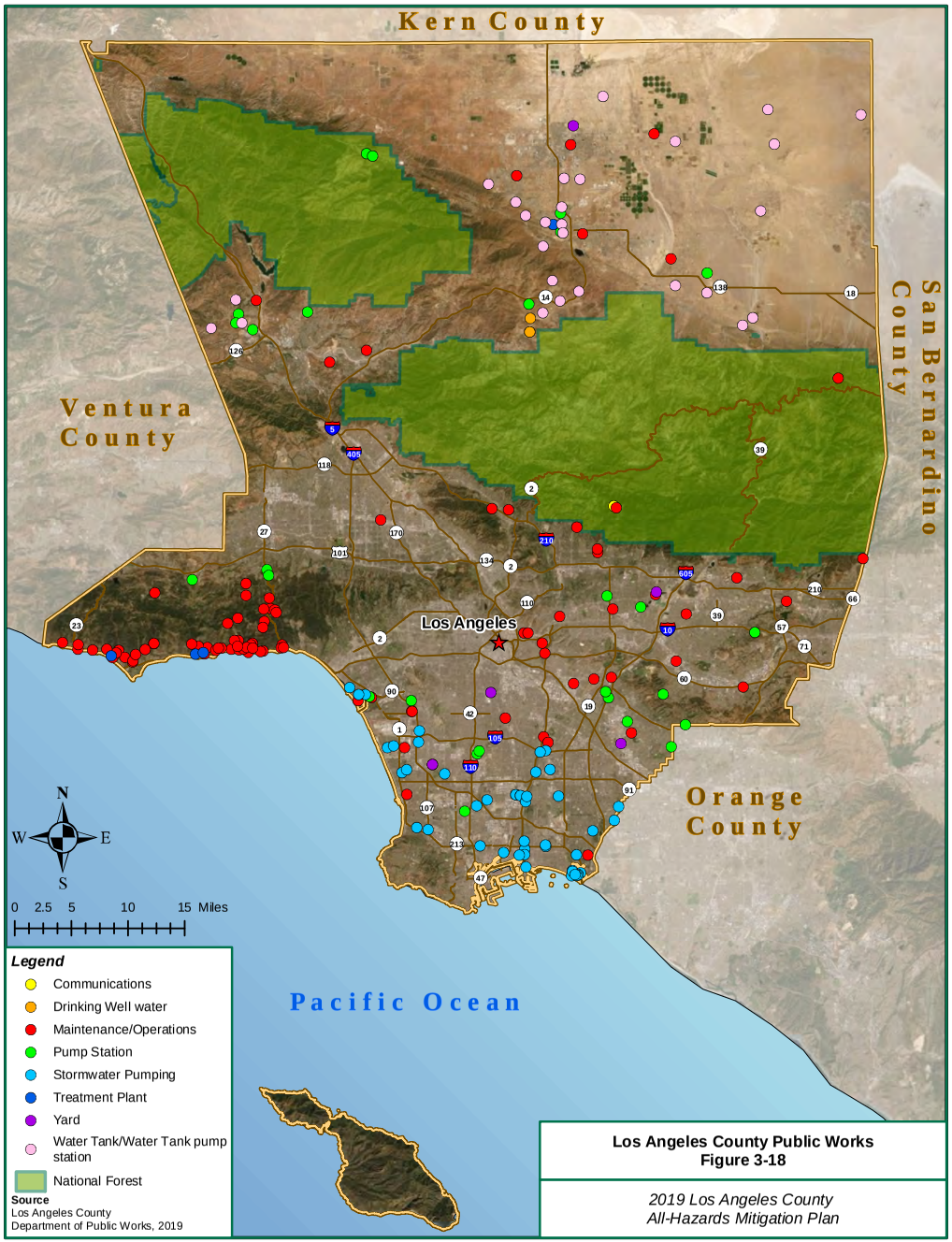
Los Angeles County Parks & Recreation
Figure 3-16

2019 Los Angeles County
All-Hazards Mitigation Plan



Department of Public Health
Figure 3-17

2019 Los Angeles County
All-Hazards Mitigation Plan



Los Angeles County Public Works
Figure 3-18

2019 Los Angeles County
All-Hazards Mitigation Plan



4 HAZARD IDENTIFICATION AND RISK ASSESSMENT

Section 4 – Hazard Identification and Risk Assessment addresses Element B of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans
Element B: Hazard Identification and Risk Assessment
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement § 201.6(c)(2)(ii))
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement § 201.6(c)(2)(i))
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))

For the 2019 AHMP, the AHMP project manager and consultant revisited the hazards addressed in the 2014 AHMP. It was determined that the primary focus of the 2019 AHMP should be natural hazards and secondary hazards, as a result of a natural hazard. In addition, it was decided that climate change should be included in the plan, as increasing surface temperatures will likely result in more droughts and subsequently the risk of wildfires. Therefore, climate change, dam failure, drought, earthquake, flood, landslide, tsunami, and wildfire are profiled in the 2019 AHMP.

Hazard identification consists of describing the nature of the hazard, disaster history, location, extent/severity, and probability of future events. Hazard identification profiles have been developed for each of the eight hazards addressed in **Section 4.1** through **Section 4.8**. Additionally, impact (i.e., risk assessment) tables have been created for each hazard. Quantitative impact tables were prepared using GIS analysis for climate change (sea level rise), dam failure, earthquake, flood, landslide, tsunami, and wildfire, while a qualitative impact table was prepared for drought. Impacts considered include: land area, vulnerable populations and critical facilities. Overall summary descriptions have been developed as well. NFIP insured structures are discussed in **Table 4-23**. **Appendix C** contains unincorporated area-specific and critical facility-specific impact tables.

According to the *Comprehensive Preparedness Guide* (CPG) *201: Threat and Hazard Identification and Risk Assessment Guide—Second Edition* (CPG 201) drought, earthquake, flood, landslide, tsunami, and wildfire are classified natural hazards, while dam failure is classified as a technological hazard (but is often a secondary hazard of other natural hazards). CPG 201 does not classify climate change. As such, the hazards profiled for this AHMP are discussed in alphabetical order and not by CPG 201 classification. **The order does not signify level of risk.**

4.1 CLIMATE CHANGE

Table 4-1. Climate Change Identification Profile

Profile	Description
Nature	Climate change is defined as the average statistics of weather, which includes temperature, precipitation, and seasonal patterns in a particular region. Climate change refers to the long-term and irrevocable shift in these weather-related patterns, either regionally or globally. The Earth and its natural ecosystem are very closely tied to the climate and any permanent climate change will lead to an imbalance in the existing ecosystem, impacting the way people live, the food they grow, their health, the wildlife, the availability of water, and much more. Research indicates that much of this warming is due to human activities, primarily burning fossil fuels and clearing forests, that release carbon dioxide (CO_2) and other gases into the atmosphere, trapping in heat that would otherwise escape into space. Once in the atmosphere, these heat-trapping emissions remain there for many years (for example, CO_2 lasts about 100 years. If left unchecked, by the end of the century, CO_2 concentrations could reach levels three times higher than pre-industrial times. According to most climatologists, the planet is starting to experience shifts in climate patterns and increased frequency of extreme weather events at both the global and local levels. Over the next century, increasing atmospheric greenhouse gas concentrations are expected to cause a variety of changes to local climate conditions, including sea level rise and storm surge in coastal areas, reduced mountain snow pack, increased riverine flooding, and more frequent, higher temperatures (leading to extreme heat events and wildfires), particularly inland, decreasing air quality, and extended periods of drought. These effects of climate change are expected to negatively impact water and electricity demand and supplies in Los Angeles County. Decreasing air quality and extreme heat days will degrade public health, as well as and increase wildfire risk. And low-lying water front areas may flood or be underwater from sea level rise.
Location	According to the National Climate Assessment, the entire Pacific coastal region, including Los Angeles County, has been affected by climate change.
History	The history of the scientific discovery of climate change began in the early 19th century, when ice ages and other natural changes in paleoclimate were first suspected and the natural greenhouse effect first identified. In the late 19th century, scientists first argued that human emissions of greenhouse gases could change the climate. Many other theories of climate change were advanced, involving forces from volcanism to solar variation. In the 1960s, the warming effect of carbon dioxide gas became increasingly convincing, although some scientists also pointed out that human activities, in the form of atmospheric aerosols (e.g., "pollution"), could have cooling effects as well. During the 1970s, scientific opinion increasingly favored the warming viewpoint. By the 1990s, as a result of improving fidelity of computer models and observational work confirming the Milankovitch theory of the ice ages, a consensus position formed: greenhouse gases were deeply involved in most climate changes, and human emissions were bringing serious global warming. Since the 1990s, scientific research on climate change has included multiple disciplines and has expanded, significantly increasing our understanding of causal relations, links with historic data, and ability to numerically model climate change. The most recent work has been summarized in the Assessment Reports by the Intergovernmental Panel on Climate Change (IPCC). Climate change is a significant and lasting change in the statistical distribution of weather patterns over periods ranging from decades to millions of years. It may be a change in average weather conditions, or in the distribution of weather around the average conditions (i.e., more or fewer extreme weather events). Climate change is caused by factors that include oceanic processes (such as oceanic circulation), biotic processes, variations in solar radiation received by Earth, plate

Table 4-1. Climate Change Identification Profile

Profile	Description
	tectonics and volcanic eruptions, and human-induced alterations of the natural world; these latter effects are currently causing global warming, and "climate change" is often used to describe human-specific impacts.
Extent / Severity	Over the next century, weather patterns that are considered extreme today are expected to become the norm. The average summer temperature will rise, and in inland areas 100-plus degree Fahrenheit (°F) days will occur more frequently. A temperature change map (**Figure 4-1**) produced by the California Nevada Climate Applications Program predict that the average temperature in the region is expected to rise between 2.5 and 8°F. Drier conditions will also make wildfires more frequent and intense. The National Oceanic and Atmospheric Administration has produced a sea level rise view that shows the impacts of predicted sea level rise. As shown in **Figure 4-2**, a sea level rise of just 3 feet above mean higher high tide (approximate year 2050 – 2060) will result in coastal flooding of 2.25 square miles of Los Angeles County and 0.03 square miles of unincorporated areas of Los Angeles County, while a sea level rise of 6 feet above mean higher high tide (approximate year 2100) will result in coastal flooding of 6.13 square miles of Los Angeles County and 0.15 square miles of unincorporated areas of Los Angeles County.
Recurrence Probability	The specific probability of the extent and frequency climate change induced impacts is uncertain and depends on various climate modeling assumptions. While there is some uncertainty about the rate of climate of change and the severity and frequency of extreme weather events, the IPCC, in its Fifth Assessment of Climate Change (2014), concluded that: …warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased…It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century.

Table 4-2. Climate Change Impact on Land Area

Entity	3 Ft. Sea Level Rise		6 Ft. Sea Level Rise	
	# of Sq. Miles	% of Sq. Miles	# of Sq. Miles	% of Sq. Miles
Los Angeles County	2.25	0.05	6.13	0.13
Unincorporated Los Angeles County	0.03	0.00	0.15	0.00
Supervisorial District 1	0.00	0.00	0.00	0.00
Supervisorial District 2	0.03	0.02	0.07	0.04
Supervisorial District 3	0.14	0.03	0.34	0.08
Supervisorial District 4	1.98	0.45	5.58	1.27
Supervisorial District 5	0.00	0.00	0.00	0.00

Table 4-3. Climate Change Impact on Vulnerable Populations – People Experiencing Homelessness

Entity	3 Ft. Sea Level Rise		6 Ft. Sea Level Rise	
	# of Homeless	% of Homeless	# of Homeless	% of Homeless
City of Los Angeles	51	0.15	126	0.38
Unincorporated Los Angeles County	0	0.00	2	0.04

Table 4-4. Climate Change Impact on County Critical Facilities

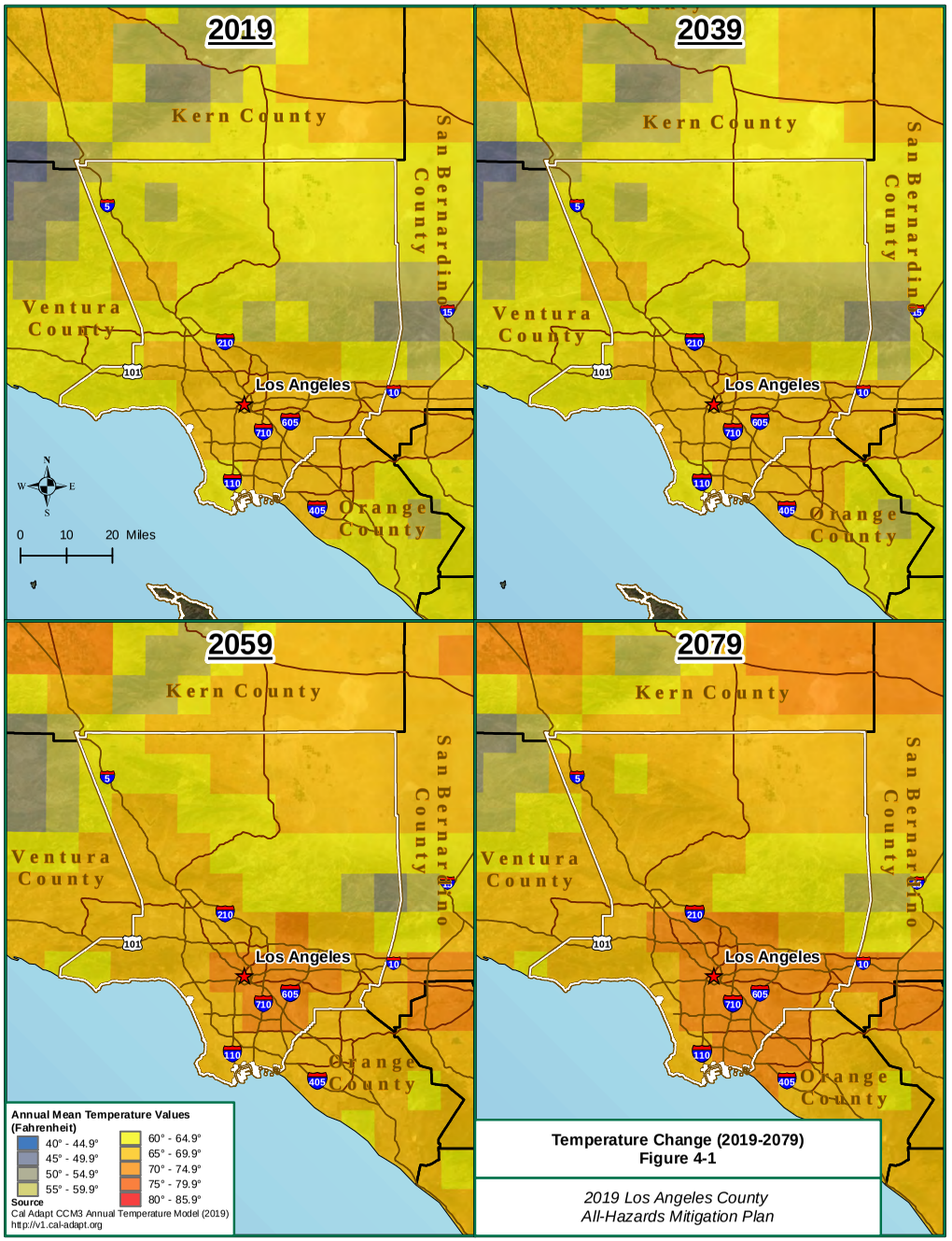
Department/ Agency	3 Ft. Sea Level Rise		6 Ft. Sea Level Rise	
	# of Facilities	% of Facilities	# of Facilities	% of Facilities
Los Angeles County Animal Care & Control	0	0.00	0	0.00
Los Angeles County Fire Department	1	0.00	5	1.4
Los Angeles County Health Services	0	0.00	0	0.00
Los Angeles County Library	0	0.00	0	0.00
LACMA & NHM	0	0.00	0	0.00
Los Angeles County Office of Education	0	0.00	0	0.00
Los Angeles County - Other (offices)	0	0.00	0	0.00
Los Angeles County Parks & Recreation	0	0.00	0	0.00
Los Angeles County Public Health	0	0.00	0	0.00
Los Angeles County Public Works	3	1.30	6	2.61
Los Angeles County Sheriff's Department	1	3.23	0	0.00

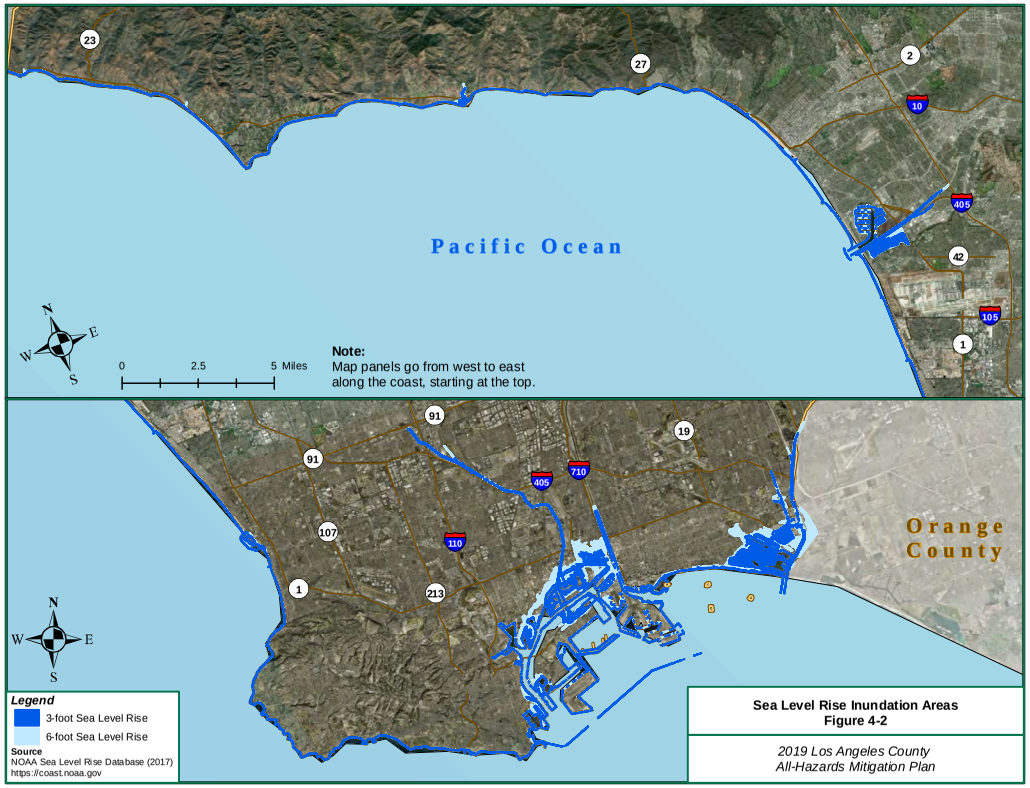
LACMA = Los Angeles County Museum of Art

NHM = Natural History Museum

Table 4-5. Overall Summary of Vulnerability to Climate Change

	Climate Change
Summary	Climate change will affect every person and every area of Los Angeles County. As noted above, the number of extreme heat days will rise, and inland county areas will experience days with temperatures in excess of 100°F more frequently. Extreme heat can trigger a variety of heat stress conditions, such as heat stroke. Higher temperatures can also contribute to the build-up of harmful pollutants and cause respiratory issues. Drier, hotter conditions will also make wildfires more frequent and intense, particularly in the High and Very High Fire Hazard Severity Zones (FHSZ). Wildfires can: burn homes, businesses, and critical facilities; interrupt transportation and utilities; and cause death to people and animals. In addition, mega storms that are linked to climate change will cause severe flooding in cities and form lakes in the Central Valley and Mojave Desert. Along the coast, deadly and destructive storm surges will push farther inland than they once did, which means more frequent nuisance flooding. Los Angeles County is addressing climate change through the implementation of the 2015 Community Climate Action Plan. The plan describes how the County will address the impacts of climate change by reducing greenhouse gas emissions from community activities in the unincorporated areas of Los Angeles County by at least 11% below 2010 levels by 2020. Additionally, in April 2019 the mayor of Los Angeles released the city's Green New Deal, which "sets aggressive goals for the city's sustainable future, tackles the climate emergency with accelerated targets… and sets L.A. on course to be carbon neutral by 2050."





4.2 DAM FAILURE

Table 4-6. Dam Failure Identification Profile

Profile	Description
Nature	Dam failure is the structural collapse of a dam that releases the water stored in the reservoir behind the dam. A dam failure is usually the result of the age of the structure, inadequate spillway capacity used in construction, or structural damage caused by an earthquake or flood. When a dam fails, a large quantity of water is suddenly released with a great potential to cause human casualties, economic loss, and environmental damage. This type of disaster is especially dangerous because it can occur suddenly, providing little warning and evacuation time for the people living downstream. The flows resulting from dam failure generally are much larger than the capacity of the downstream channels and therefore lead to extensive flooding. Flood damage occurs as a result of the momentum of the flood caused by the sediment-laden water flooding over the channel banks and impact debris carried by the flow.
Location	According to the California Department of Water Resource's Division of Safety of Dams (DSOD), there are 90 dams under State jurisdiction in Los Angeles County. A dam breach inundation map shows flooding that could result from a hypothetical failure of a dam or its critical appurtenant structure. In 2017, the California Legislature passed a law requiring all State jurisdictional dam owners, except for owners of low-hazard dams, to develop inundation maps approved by DSOD and emergency action plans approved by Cal OES. At the time of the drafting of this plan in early July 2019, 12 State jurisdictional dams in Los Angeles County had approved dam breach inundation maps, including: • Castaic Lake Dam: an earthen dam with a storage capacity of 323,700 acre-feet in Warm Springs Mountain • Pyramid Dam: an earthen and rock dam with a storage capacity of 178,700 acre-feet in Black Mountain • Chevy Chase 1290: an earthen dam with a storage capacity 17 acre-feet of in Pasadena • Elysian Dam: and earthen dam with a storage capacity of 167 acre-feet in Los Angeles • Lower San Fernando Dam: hydraulic fill dam with a storage capacity of 9,843 acre-feet in San Fernando • Eagle Rock Dam: an earthen dam with a storage capacity of 254 acre-feet in Pasadena • Santa Ynez Canyon Dam: an earthen dam with a storage capacity 356 acre-feet in Topanga • Devils Gate Dam: a gravity dam with a storage capacity of 2,600 acre-feet Pasadena • Palos Verdes Reservoir: an earthen dam with a storage capacity of 1,100 acre-feet in Torrance • Littlerock – Palmdale Dam: a roller-compacted concrete dam with a storage capacity of 4,600 acre-feet in Pacifico Mountain • Harold Reservoir: an earthen dam with a storage capacity of 3,870 acre-feet in Palmdale • Westlake Reservoir: an earthen dam with a storage capacity of 9,200 acre-feet in Westlake Village

Table 4-6. Dam Failure Identification Profile

Profile	Description
History	Los Angeles County was the scene of the worst dam failure in United States history. The St. Francis Dam was built in San Francisquito Canyon, approximately 40 miles northwest of downtown Los Angeles, in 1924. On the night of March 12-13, 1928, the dam catastrophically failed, releasing approximately 12.4 billion gallons of water. At least 411 people were killed. Subsequent investigations determined that the dam failed as a result of defective foundations that had been built upon an unstable rock formation. As a result of the disaster, the State of California increased dam safety legislation and oversight, and created a state Board of Registration for civil engineers to regulate the industry.
Extent / Severity	The Federal Guidelines for Inundation Mapping of Flood Risks Associated with Dam Incidents and Failures (FEMA P-946, July 2013) defines downstream hazards for dam incidents. Downstream hazards are based "solely on the potential downstream impacts to life and property should the dam fail when operating with a full reservoir." FEMA has developed three categories in increasing severity for downstream hazards: Low, Significant, and High. DSOD adds a fourth category of Extremely High. In Los Angeles County there are 40 dams that are classified as High, with the potential impact expected to cause loss of at least one human life, and 30 dams classified as Extremely High, with the potential impact expected to cause considerable loss of human life or result in an inundation area with a population of 1,000 or more. As noted in **Figure 4-3**, nine Extremely High hazard dams and three High hazard dams in the county have approved dam breach inundation maps for a total of 45.70 square miles (0.96 %) in Los Angeles County, and a total of 13.37 square miles (0.44 %) in the unincorporated areas of Los Angeles County.
Recurrence Probability	Dams fail for a variety of reasons, including Sub-standard construction materials/techniques, spillway design error, geological instability, poor maintenance, and earthquakes, and therefore recurrence probabilities are unknown. State jurisdiction dams are regulated by the DSOD and each dam undergoes inspection on an annual basis to ensure it is safe, performing as intended, and is not developing issues. However, in 2017, the United States Army Corps of Engineers (USACE) discovered that the Whittier Narrows Dam was structurally unsafe and that an intense storm could prematurely open the dam's massive spillway and flood the area below from Pico Rivera to Long Beach. The USACE has reclassified the dam as the agency's highest dam priority nationally because of the risk of "very significant loss of life and economic impacts." Construction on the dam is expected to start in 2021 and conclude by 2025.

Table 4-7. Dam Failure Impact on Land Area

Entity	Dam Breach Inundation	
	# of Sq. Miles	% of Sq. Miles
Los Angeles County	45.70	0.96
Unincorporated Los Angeles County	13.37	0.44
Supervisorial District 1	1.40	0.57
Supervisorial District 2	0.00	0.00
Supervisorial District 3	24.84	5.76
Supervisorial District 4	0.67	0.15
Supervisorial District 5	18.00	0.64

Table 4-8. Dam Failure Impact on Vulnerable Populations – People Experiencing Homelessness

Entity	Dam Breach Inundation	
	# of Homeless	% of Homeless
City of Los Angeles	1,193	3.62
Unincorporated Los Angeles County	13	0.22

Table 4-9. Dam Failure Impact on County Critical Facilities

Department / Agency	Dam Breach Inundation	
	# of Facilities	% of Facilities
Los Angeles County Animal Care & Control	1	14.29
Los Angeles County Fire Department	3	0.89
Los Angeles County Health Services	2	6.90
Los Angeles County Library	1	1.18
LACMA & NHM	0	0.00
Los Angeles County Office of Education	2	5.41
Los Angeles County - Other (offices)	0	0.00
Los Angeles County Parks & Recreation	2	1.71
Los Angeles County Public Health	0	0.00
Los Angeles County Public Works	1	0.43
Los Angeles County Sheriff's Department	3	9.68

Table 4-10. Overall Summary of Vulnerability to Dam Failure

	Dam Failure
Summary	There are 90 dams in Los Angeles County under State jurisdiction. Seventy dams are classified as High and Extremely High hazard and failure of these types of dams will cause loss of human life and/or result in an inundation area with a population of 1,000 or more. As of June 2017, all dams except those classified as Low hazard are required by the DSOD to have an Emergency Action Plan (EAP). An EAP identifies incidents that can lead to potential emergency conditions at a dam, identifies the areas that could be affected by the loss of a reservoir and specifies pre-planned actions to be followed to minimize property damage, potential loss of infrastructure and water resources, and potential loss of life due to failure or misoperation of a dam. EAPs also require dam breach inundation maps to be prepared. While the State regulates dams to prevent failure, safeguard life, and protect property, some researchers doubt that the "overall safety of aging federal flood control systems that were not designed with climate change in mind." They argue that as California experiences more intense storms, the aging dams in the area could fail and/or prematurely open and flood homes, schools, businesses, and roads. In 2016, Climate-Safe Infrastructure Bill (Assembly Bill [AB] 2800) became law and "established the Climate-Safe Infrastructure Working Group to develop recommendations to the California legislature on how to build and design our infrastructure to be safer for Californians in the face of growing climate extremes." The Working Group's 2018 report identified nearly 700 High hazard dams in California needing repairs and upgrades.

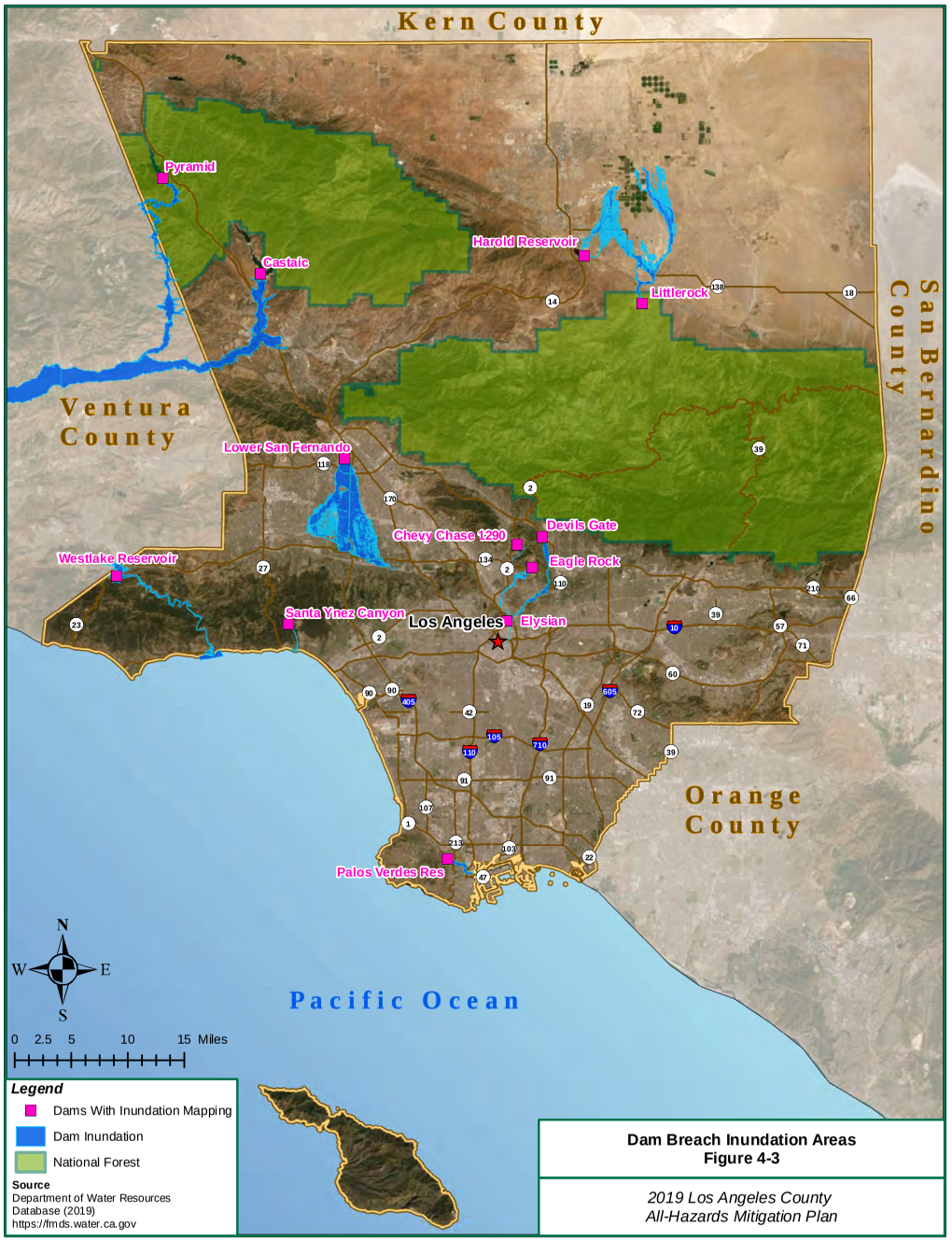


Table 4-11. Drought Identification Profile

Profile	Description
Nature	Drought is a normal, recurrent feature of virtually all climatic zones, including areas of both high and low rainfall, although characteristics will vary significantly from one region to another. Drought differs from normal aridity, which is a permanent feature of the climate in areas of low rainfall. Drought is the result of a natural decline in the expected precipitation over an extended period of time, typically one or more seasons in length. Other climatic characteristics, such as high temperature, high wind, and low relative humidity, impact the severity of drought conditions. Four common definitions for drought are provided as follows: • **Meteorological drought** is defined solely on the degree of dryness, expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales. • **Hydrological drought** is related to the effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels. • **Agricultural drought** is defined principally in terms of soil moisture deficiencies relative to water demands of plant life, usually crops. • **Socioeconomic drought** associates the supply and demand of economic goods or services with elements of meteorological, hydrologic, and agricultural drought. Socioeconomic drought occurs when the demand for water exceeds the supply as a result of weather-related supply shortfall. It may also be referred to as a water management drought. A drought's severity depends on numerous factors, including duration, intensity, and geographic extent, as well as regional water supply demands by humans and vegetation. Due to its multi-dimensional nature, drought is difficult to define in exact terms and poses difficulties in terms of comprehensive risk assessments. Drought differs from other natural hazards in three ways. First, the onset and end of a drought are difficult to determine due to the slow accumulation and lingering of effects of an event after its apparent end. Second, the lack of an exact and universally accepted definition adds to the confusion of its existence and severity. Third, in contrast with other natural hazards, the impact of drought is less obvious and may be spread over a larger geographic area. These characteristics have hindered the preparation of drought contingency or mitigation plans by many governments.
Location	The occurrence of drought is regional in nature and scope, which holds true for Los Angeles County. As such, when drought occurs it typically affects the entire county.
History	Drought is a cyclic part of the climate of California, occurring in both summer and winter, with an average recurrence interval between 3 and 10 years. Droughts in California over the past 100 years are listed as follows. The most recent drought from 2011 to 2015 was the driest 4-year period on record in California since recordkeeping began in 1895. • 1917-1921, Statewide except for central Sierra Nevada and north coast • 1922-1926, Statewide except for central Sierra Nevada • 1928-1937, Statewide • 1943-1951, Statewide • 1959-1962, Statewide • 1976-1977, Statewide, except for southwestern deserts • 1987-1992, Statewide • 2007-2009, Statewide, particularly the central coast • 2011-2015, Statewide

Table 4-11. Drought Identification Profile

Profile	Description
Extent / Severity	The National Drought Mitigation Center produces drought monitor maps for the United States. It classifies droughts into five categories: D0 is the least severe, with abnormally dry conditions; and D4 is the most severe, with exceptional drought conditions. California, including Los Angeles County, was in some form of drought for 376 consecutive weeks from December 20, 2011 until March 14, 2019. As of August 13, 2019, Los Angeles County remains free of drought.
Recurrence Probability	Researchers for California's Fourth Climate Change Assessment have noted that California has a "highly variable climate" with wet or dry periods that can span years and that are "heavily affected by extreme precipitation events." Furthermore, climate scientists also suggest the possibility of longer and more destructive droughts with climate change. As such, California is likely to experience long-term droughts at least every decade.

Table 4-12. Drought Impact

	Drought
Summary	Severe droughts can impact the region's agriculture, forests, hydropower, groundwater supply, recreation, aquatic ecosystems, as well as isolated communities that have limited water supply.

Table 4-13. Overall Summary of Vulnerability to Drought

	Drought
Summary	Climate scientists predict that Los Angeles County and the rest of southern California will get drier and northern California will get hotter. The resulting loss of snowpack in the Sierra Nevada will mean less water for all Californians – farmers, residents, utilities, and even hatchery fish. However, while drought cannot be controlled, according to the USGS, drought can be managed in two ways: through drought planning and in helping communities make the best day-to-day management decisions while the drought is taking place. During the drafting of this plan update, the Governor of California signed an executive order directing specific State agencies to develop a Water Resilience Portfolio to "ensure safe and dependable water supplies, flood protection and healthy waterways for the state's communities, economy and environment."

4.3 EARTHQUAKE

Table 4-14. Earthquake Identification Profile

Profile	Description
Nature	An earthquake is a sudden motion or trembling caused by a release of strain accumulated in or along the edge of Earth's tectonic plates. The effects of an earthquake can be felt far beyond the site of its occurrence. Earthquakes usually occur without warning and can cause massive damage and extensive casualties in a few seconds. Common effects of earthquakes are ground motion and shaking, surface fault ruptures, and ground failure. Ground motion is the vibration or shaking of the ground during an earthquake. When a fault ruptures, seismic waves radiate, causing the ground to vibrate. The severity of the vibration increases with the amount of energy released and decreases with distance from the causative fault or epicenter. Soft soils can amplify ground motions. In addition to ground motion, several secondary natural hazards can occur from earthquakes, such as the following: • **Surface Faulting**: Surface faulting is the differential movement of two sides of a fault at the Earth's surface. Displacement along faults, both in terms of length and width, varies but can be significant (e.g., up to 20 feet), as can the length of the surface rupture (e.g., up to 200 miles). Surface faulting can cause severe damage to linear structures, including railways, highways, pipelines, tunnels and dams. • **Liquefaction**: Liquefaction occurs when seismic waves pass through saturated granular soil, distorting its granular structure, and causing some of the empty spaces between granules to collapse. Liquefaction causes lateral spreads (i.e., horizontal movements of commonly 10 to 15 feet, but up to 100 feet), flow failures (i.e., massive flows of soil, typically hundreds of feet, but up to 12 miles), and loss of bearing strength (i.e., soil deformations causing structures to settle or tip). Liquefaction can cause severe damage to property. • **Landslides/Debris Flows**: Landslides/debris flows occur as a result of horizontal seismic inertia forces induced in the slopes by the ground shaking. The most common earthquake-induced landslides include shallow, disrupted landslides such as rock falls, rockslides, and soil slides. Debris flows are created when surface soil on steep slopes becomes totally saturated with water. Once the soil liquefies, it loses the ability to hold together and can flow downhill at very high speeds, taking vegetation and/or structures with it. Slide risks increase after an earthquake during a wet winter. The two most common measures of earthquake intensity used in the United States are the Modified Mercalli Intensity Scale, which measures felt intensity, and peak ground acceleration (PGA), which measures instrumental intensity by quantifying how hard the earth shakes in a given location. Magnitude (M) is measured by the amplitude of the earthquake waves recorded on a seismograph using a logarithmic scale.

Table 4-14. Earthquake Identification Profile

Profile	Description
Location	As in most of southern and coastal California, the potential for earthquake damage exists throughout Los Angeles County because of the number of active faults in and near the county. These faults are shown on the California Geological Survey (CGS) Fault Activity Map of California. Descriptions of the active faults are provided below. The locations of the active and potentially active faults are shown on **Figure 4-4.** Some of the more significant faults are described below: • **Malibu Coast fault system:** The Malibu Coast fault system includes the Malibu Coast, Santa Monica, and Hollywood faults. The system begins in the Hollywood area, extends along the southern base of the Santa Monica Mountains, and passes offshore a few miles west of Point Dume. The 1973 Point Mugu earthquake is believed to have originated on this fault system. • **Oak Ridge fault system:** The Oak Ridge fault system is a steep (65 degrees) southerly dipping reverse fault that extends from the Santa Susana Mountains westward along the southerly side of the Santa Clara River Valley and into the Oxnard Plain. The system is more than 50 miles long on the mainland and may extend an equal or greater distance offshore. Several recorded earthquake epicenters on land and offshore may have been associated with the Oak Ridge fault system. Portions of the system are zoned by the state as active. • **Pine Mountain thrust fault and Big Pine fault:** These two large faults occur in the mountainous portion of Ventura County north of the Santa Ynez fault; the faults are located 9 and 16 miles north of the city of Ojai, respectively. The Pine Mountain thrust fault is reported to have ruptured the ground surface for 30 miles along its length during the northern Ventura County earthquakes of November 1852. • **San Andreas fault:** San Andreas is the longest and most significant fault in California. Because of clearly established historical earthquake activity, this fault has been designated as active by the State of California. The last major earthquake on this fault near Ventura County was the Fort Tejon earthquake of 1857, which was estimated at magnitude (M) 8.0 and would have caused considerable damage if there had been structures in the southern part of the county. There is a 59 % chance that an M 6.7 quake or larger will occur on this fault in the next 30 years. • **San Cayetano–Red Mountain–Santa Susana fault system:** This fault system consists of a major series of north-dipping reverse faults that extend over 150 miles from Santa Barbara County into Los Angeles County. In this system, the San Cayetano fault is the greatest hazard to Ventura County; it is a major, north-dipping reverse fault that extends for 25 miles along the northern portion of the Ventura Basin. The San Fernando earthquake of 1971, described in the previous section, was caused by activity along this fault. • **Simi–Santa Rosa fault system:** This fault system extends from the Santa Susana Mountains westward along the northern margin of the Simi and Tierra Rejada valleys and along the southern slope and crest of the Las Posas Hills to their westerly termination. • **Ventura-Pitas Point fault:** The western half of this fault is known as the Pitas Point fault, and the eastern half is known as the Ventura fault. The Pitas Point fault extends offshore into the Pacific Ocean and is roughly 14 miles long. The Ventura fault extends into the communities of Ventura and Sea Cliff and runs roughly parallel to portions of U.S. 101 and State Route 126. The fault is roughly 12 miles long and is a left-reverse fault.

Table 4-14. Earthquake Identification Profile

Profile	Description
History	As shown in **Figure 4-5**, according to the USGS, 163 earthquakes M 5.0> have been recorded in southern California since 1769. Four of these earthquakes have been larger than M 7.0 including: • San Juan Capistrano Earthquake (M 7.5), December 8, 1812 • Kern County Earthquake (M 7.5), July 21, 1952 • West Ventura Earthquake (M 7.1), December 21, 1812 • Ridgecrest, (M 7.1), July 6, 2019 In Los Angeles County, significant earthquakes over the past 50 years include: • La Habra (M 5.1), March 28, 2014, resulting in a few injuries and $10 million dollars in damages • Chino Hills (M 5.5), July 29, 2008, resulting in 8 injuries and limited damages • Northridge (M 6.7), January 17, 1994, resulting in 57 deaths, 8,700 injuries and up to $40 billion dollars in damages. • Sierra Madre (M 5.6), June 28, 199, resulting in 1 death, 100+ injuries and up to $40 million dollars in damages. • Upland (M 5.7), February 28, 1990, resulting in 30 injuries and $12.7 million dollars in damages • Whitter (M 5.9), October 1, 1987, resulting in 8 deaths, 200 injuries and $358 million in damages • San Fernando (M 6.6), February 9, 1971, resulting in 58 – 65 deaths, 200 – 2,000 injuries and up to $553 million in damages
Extent / Severity	The strength of an earthquake's ground movement can be measured by PGA. PGA measures the rate in change of motion relative to the established rate of acceleration due to gravity (g = 980 centimeters per second, per second). PGA is used to project the risk of damage from future earthquakes by showing earthquake ground motions that have a specified probability (e.g., 10%, 5%, or 2%) of being exceeded in 50 years. The ground motion values are used for reference in construction design for earthquake resistance and can also be used to assess relative hazard between sites when making economic and safety decisions. In 2008, CGS developed an updated map of earthquake shaking potential for California. The map shows the relative intensity of ground shaking and damage in California from anticipated future earthquakes. Regions near major, active faults are shown in red and pink and experience stronger earthquake shaking more frequently. Regions that are distant from known, active faults are shown in orange and yellow and experience lower levels of shaking less frequently. **Figure 4-6** indicates the level of low-frequency shaking potential in Los Angeles County (in which local soil conditions have greater effect on low frequency). In Los Angeles County there are 3,041.91 (63.90%) square miles with violent low frequency shaking potential; and 711.01 square miles (14.93%) with extreme low frequency shaking potential. In unincorporated areas of Los Angeles County, there are 1,783.57 (58.65%) square miles with violent low frequency shaking potential; and 527.60 square miles (17.35%) with extreme low frequency shaking potential.

Table 4-14. Earthquake Identification Profile

Profile	Description
Recurrence Probability	Ongoing field and laboratory studies suggest the likely maximum magnitudes and recurrence intervals for the major local faults are as follows: • Chatsworth fault: M 6.0-6.8, unknown recurrence interval • Hollywood fault: M 5.8-6.5, recurrence interval approximately every 1600 years • Malibu Coast fault: M 6.7, recurrence interval 2,908 years • Newport-Inglewood fault: M 6.0-7.4, unknown recurrence interval • Oak Ridge fault: M 6.9, recurrence interval 299 years • Palos Verdes fault: M 6.0-7.0 or greater, unknown recurrence interval • Red Hill fault (aka Etiwanda Avenue fault): M 6.0-7.0, unknown recurrence interval • Raymond fault: M 6.0-7.0, recurrence interval approximately 4500 years • San Andreas fault: M 6.8-8.0, recurrence interval of 140 years on Mojave segment to 300 years • San Cayetano fault: M. 6.5-7.3, unknown recurrence interval • San Fernando fault: M 6.0-6.8, recurrence interval approximately every 200 years • San Jose fault: M 6.0-6.5, unknown recurrence interval • Santa Susana fault system: M 6.6, recurrence interval 138 years • Santa Monica fault: M 6.0-7.0, unknown recurrence interval • Sierra Madre fault: M 6.0-7.0, recurrence interval several thousand years • Simi–Santa Rosa fault: M 6.7, recurrence interval 933 years • Verdugo fault: M 6.0-6.8, unknown recurrence interval • Whittier fault: M 6.0-7.2, unknown recurrence interval

Table 4-15. Seismic Hazard Impact on Land Area

	Violent EQ Shaking		Extreme EQ Shaking	
Entity	# of Sq. Miles	% of Sq. Miles	# of Sq. Miles	% of Sq. Miles
Los Angeles County	3,041.91	63.90	711.01	14.93
Unincorporated Los Angeles County	1,783.57	58.65	527.60	17.35
Supervisorial District 1	244.34	99.25	0.00	0.00
Supervisorial District 2	161.74	99.94	0.00	0.00
Supervisorial District 3	379.41	87.99	41.73	9.68
Supervisorial District 4	305.40	69.42	0.00	0.00
Supervisorial District 5	1,950.78	69.50	669.26	23.84

EQ = earthquake

Table 4-16. Seismic Hazard Impact on Vulnerable Populations – People Experiencing Homelessness

Entity	Violent EQ Shaking		Extreme EQ Shaking	
	# of Homeless	% of Homeless	# of Homeless	% of Homeless
City of Los Angeles	31,037	94.25	1,827	5.55
Unincorporated Los Angeles County	5,328	90.60	361	6.14

EQ = earthquake

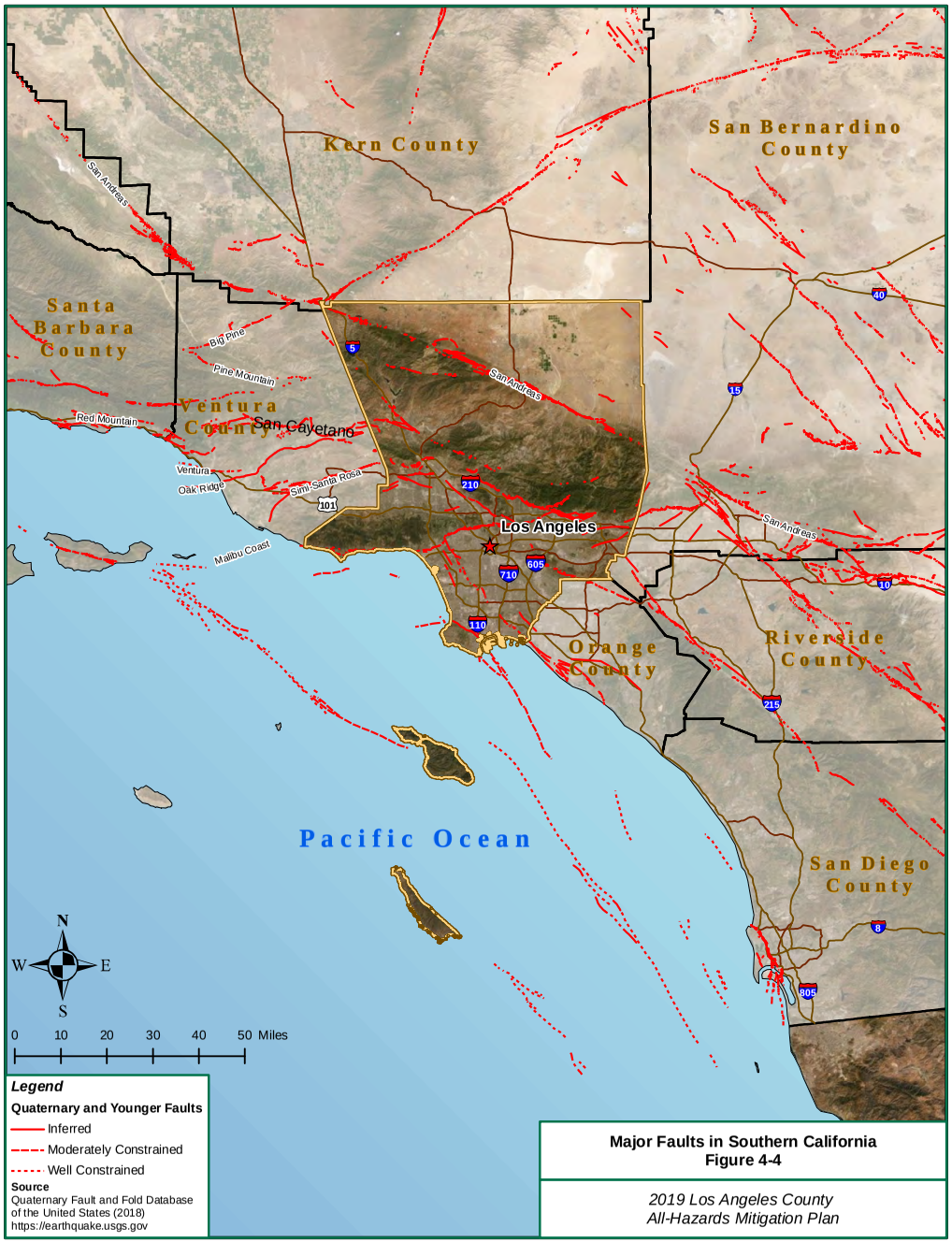
Table 4-17. Seismic Hazard Impact on County Critical Facilities

Department / Agency	Violent EQ Shaking		Extreme EQ Shaking	
	# of Facilities	% of Facilities	# of Facilities	% of Facilities
Los Angeles County Animal Care & Control	6	85.71	1	14.29
Los Angeles County Fire Department	314	93.18	19	5.64
Los Angeles County Health Services	24	82.76	5	17.24
Los Angeles County Library	79	92.94	5	5.88
LACMA & NHM	3	75.00	1	25.00
Los Angeles County Office of Education	32	86.49	5	13.51
Los Angeles County - Other (offices)	24	100.00	0	0.00
Los Angeles County Parks & Recreation	103	88.03	14	11.97
Los Angeles County Public Health	13	92.86	1	7.14
Los Angeles County Public Works	201	87.39	21	9.13
Los Angeles County Sheriff's Department	28	90.32	2	6.45

EQ = earthquake

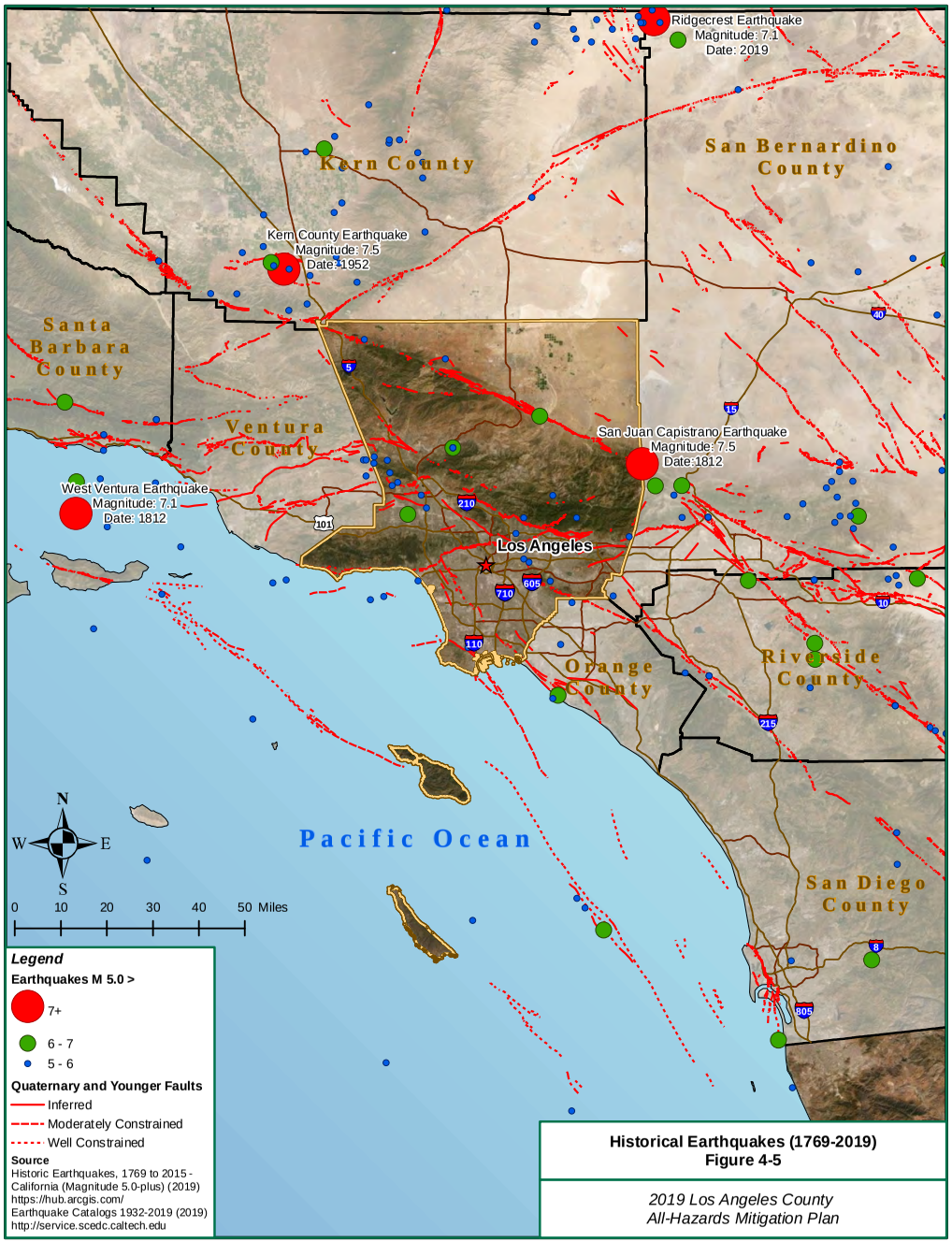
Table 4-18. Overall Summary of Vulnerability to Earthquakes

	Earthquake
Summary	Over 75% of unincorporated Los Angeles County is at risk to violent and extreme perceived shaking from future earthquakes. Violent perceived shaking can produce the potential for heavy damage. According to the USGS, this could mean that well-designed framed structures could be thrown out of plumb and substantial buildings could experience partial building collapse. In extreme shaking, the USGS notes that some well-built wooden structures could be destroyed, and most masonry and frame structures with foundations could be destroyed. Many people in California are looking to boost seismic regulations through the implementation of Assembly Bill (AB) 1857 and AB 2681. AB 1857 will instruct the California Building Standards Commission to increase minimum mandatory standards for most types of buildings in the state, such as apartments, office buildings, and commercial spaces, but would exempt single-family houses and duplexes, while AB 2681 will require cities and counties to create an inventory of potentially vulnerable buildings.



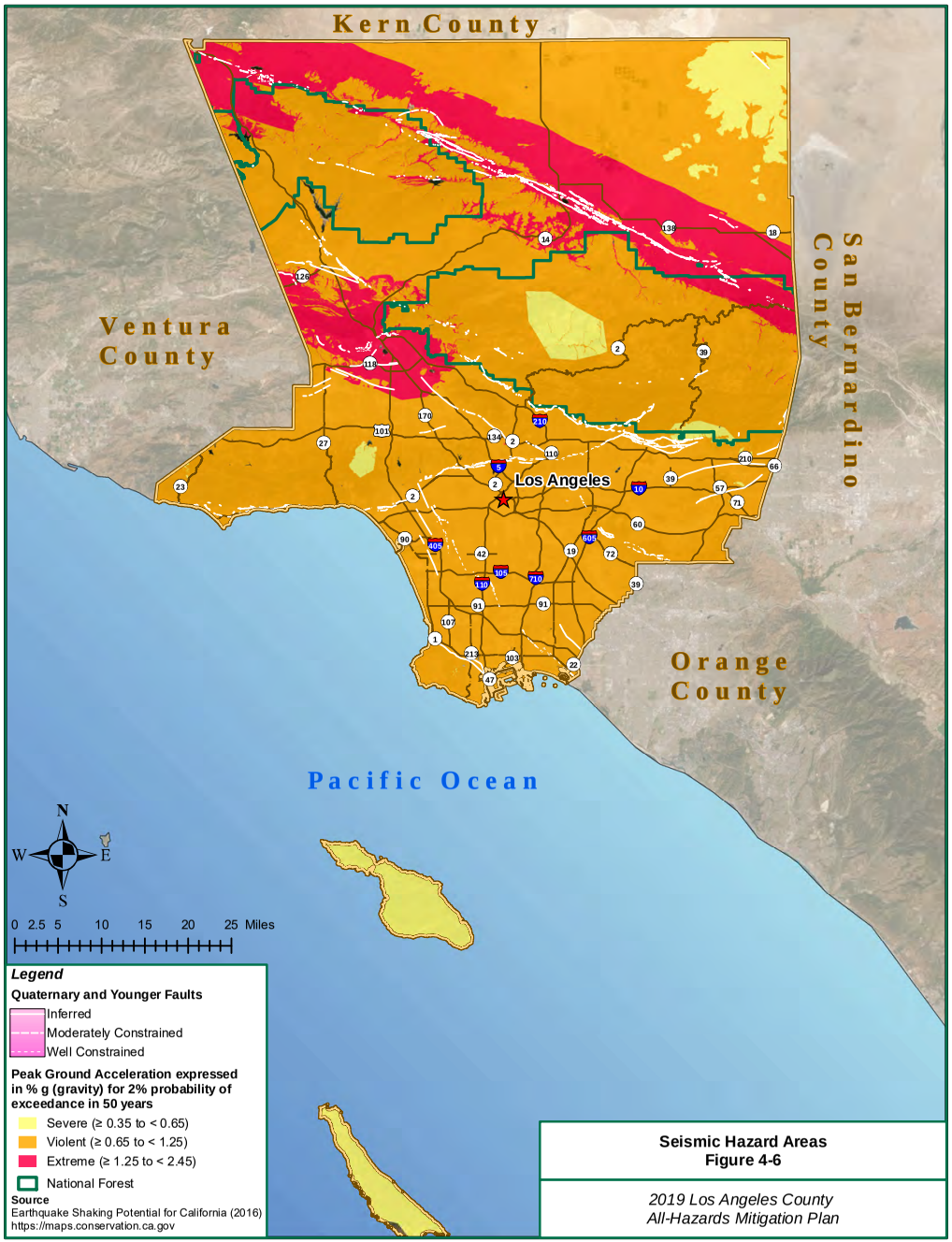
Major Faults in Southern California
Figure 4-4

2019 Los Angeles County
All-Hazards Mitigation Plan



Historical Earthquakes (1769-2019)
Figure 4-5

2019 Los Angeles County
All-Hazards Mitigation Plan



4.4 FLOOD

Table 4-19. Flood Identification Profile

Profile	Description
Nature	A flood occurs when the existing channel of a stream, river, canyon, or other watercourse cannot contain excess runoff from rainfall or snowmelt, resulting in overflow onto adjacent lands. In coastal areas, flooding may occur when high winds or tides result in a surge of seawater into areas that are above the normal high tide line. Secondary hazards from floods can include: • Erosion or scouring of stream banks, roadway embankments, foundations, footings for bridge piers, and other features. • Impact damage to structures, roads, bridges, culverts, and other features from high-velocity flow and from debris carried by floodwaters. Such debris may also accumulate on bridge piers and in culverts, increasing loads on these features or causing overtopping or backwater effects. • Destruction of crops, erosion of topsoil, and deposition of debris and sediment on croplands. • Release of sewage and hazardous or toxic materials when wastewater treatment plants are inundated, storage tanks are damaged, and pipelines are severed. In areas such as Los Angeles County that do not have extended periods of below-freezing temperatures or significant snowfall, floods usually occur during the season of highest precipitation or during heavy rainfalls after prolonged dry periods. Los Angeles County is dry during the late spring, summer, and early fall, and receives most of its rain during the winter months. The rainfall season extends from November through April, with approximately 95% of the annual rainfall occurring during this period. Los Angeles County averages only 15 inches of precipitation per year; less in along the coast and the dessert, and more in the foothills and mountains.
Location	Los Angeles County has an extensive flood control system (**Figure 4-7**) that has eliminated much of their flood hazards. However, major flood sources in Los Angeles County still include Ballona Creek, Los Angeles River, Malibu Creek, Pacific Ocean, Rio Hondo River, San Gabriel River and its tributaries, Santa Clara River, Topanga Canyon, and the Pacific Ocean. In the unincorporated areas of Los Angeles County, flooding sources include: • Little Rock and Big Rock Washes: Flooding occurs when the flows reach the valley floor where the channels flatten out. This allows the flows to spread over great distances, inundating the surrounding areas. • Antelope Valley: Flooding occurs when flows from the mountains reach the broad alluvial plan in the Antelope Valley are northerly from the mountains across the broad alluvial plain. During minor storms, much of the flow percolates into the ground. In major storms, flows reach the lake at the northern county limits, where flood flows pond until evaporated. • Foothills of Santa Clarita: Flooding and mudflows occur in the foothill areas during intense rainfall, usually following fires in the upstream watershed. • Coastline: Flooding is caused by waves generated by winter storms. The occurrence of such a storm event in combination with high astronomical tides and strong winds can cause a significant wave runup and allow storm waves to reach higher than normal elevations along the coastline.

Table 4-19. Flood Identification Profile

Profile	Description
History	The federal government has declared 13 flooding emergencies affecting Los Angeles County, including: • California Flood and Erosion (Disaster Declaration Number [DR]-15), February 5, 1954 • California Flooding (DR-47), December 23, 1955 • California Heavy Rainstorms, Flood (DR-82), April 4, 1958 • California Floods (DR-122), March 6, 1962 • California Severe Storms, Flooding (DR-138), October 24, 1962 • California Severe Storms, Heavy Rains, Flooding (DR-145), February 25, 1963 • California Flooding (DR-270), August 15, 1969 • California Winter Storms Flooding (DR-547), February 15, 1978 • Southern California Winter Storms (DR-615), February 7 and 21, 1980 • Coastal Storms (DR-812), December 21, 1988 • California Winter Storms (DR-935), February 12 and 19, 1992 • California Winter Storms (DR-979), January 7, 1993-February 19, 1993 • California Severe Winter Storms, Flooding, and Mudslides (DR-4305), January 18, 2017-January 23, 2017
Extent / Severity	The magnitude of flooding that is used as the standard for floodplain management in the United States is a flood with a probability of occurrence of 1% in any given year. This flood is also known as the 100-year flood (i.e., base flood). The 100-year flood, as well as the 500-year flood (0.2%), are considered Special Flood Hazard Areas (SFHA) and identified on FEMA's Digit Flood Insurance Rate Maps (DIFRM). The Los Angeles County DFIRM (**Figure 4-8)** identifies 4.19 square miles (0.09%) with a 1% annual chance of flooding, and 243.32 square miles (5.11%) with a 0.2% annual chance of flooding. In the unincorporated areas of Los Angeles County, there are 1.23 square miles (0.04%) with a 1% annual chance of flooding, and an additional 64.77 square miles (2.13 %) with a 0.2% annual chance of flooding.
Recurrence Probability	Floods can occur at any time but are most common with winter storms packed with subtropical moisture.

Table 4-20. Flood Impact on Land Area

	0.2% Annual Chance of Flooding		1% Annual Chance of Flooding	
Entity	# of Sq. Miles	% of Sq. Miles	# of Sq. Miles	% of Sq. Miles
Los Angeles County	243.32	5.11	4.19	0.09
Unincorporated Los Angeles County	64.77	2.13	1.23	0.04
Supervisorial District 1	27.14	11.02	0.90	0.37
Supervisorial District 2	19.32	11.94	0.20	0.12
Supervisorial District 3	4.38	1.01	1.31	0.30
Supervisorial District 4	80.06	18.20	0.32	0.07
Supervisorial District 5	112.39	4.00	1.45	0.05

Table 4-21. Flood Impact on Vulnerable Populations – People Experiencing Homelessness

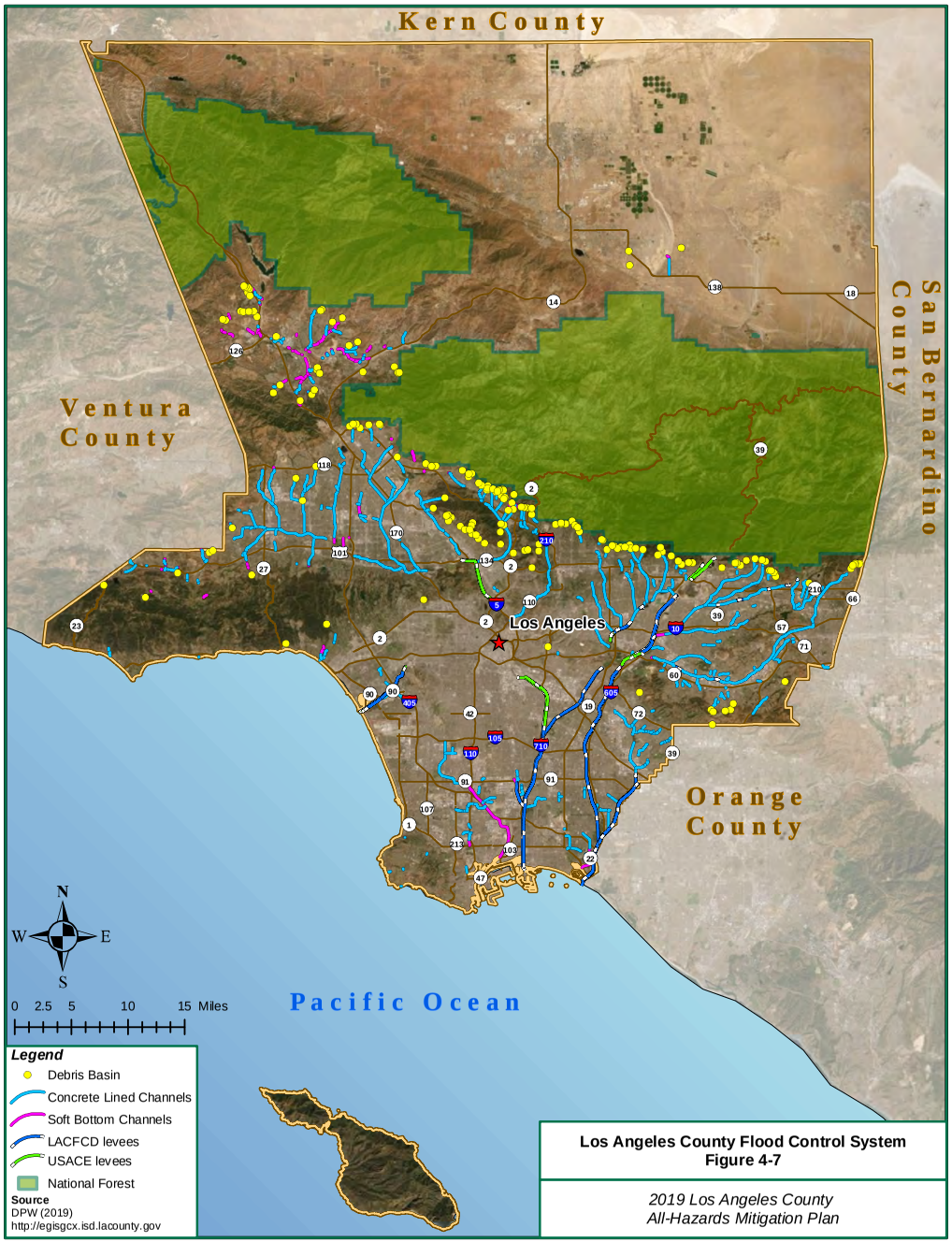
	0.2% Annual Chance of Flooding		1% Annual Chance of Flooding	
Entity	# of Homeless	% of Homeless	# of Homeless	% of Homeless
City of Los Angeles	1,601	4.86	87	0.26
Unincorporated Los Angeles County	170	2.88	0	0.00

Table 4-22. Flood Impact on County Critical Facilities

Department / Agency	0.2% Annual Chance of Flooding		1% Annual Chance of Flooding	
	# of Facilities	% of Facilities	# of Facilities	% of Facilities
Los Angeles County Animal Care & Control	2	28.57	0	0.00
Los Angeles County Fire Department	46	13.65	0	0.00
Los Angeles County Health Services	5	17.24	0	0.00
Los Angeles County Library	15	17.65	0	0.00
LACMA & NHM	0	0.00	0	0.00
Los Angeles County Office of Education	5	13.51	0	0.00
Los Angeles County - Other (offices)	2	8.33	0	0.00
Los Angeles County Parks & Recreation	8	6.84	0	0.00
Los Angeles County Public Health	0	0	0	0.00
Los Angeles County Public Works	41	17.38	1	0.43
Los Angeles County Sheriff's Department	5	16.13	0	0.000

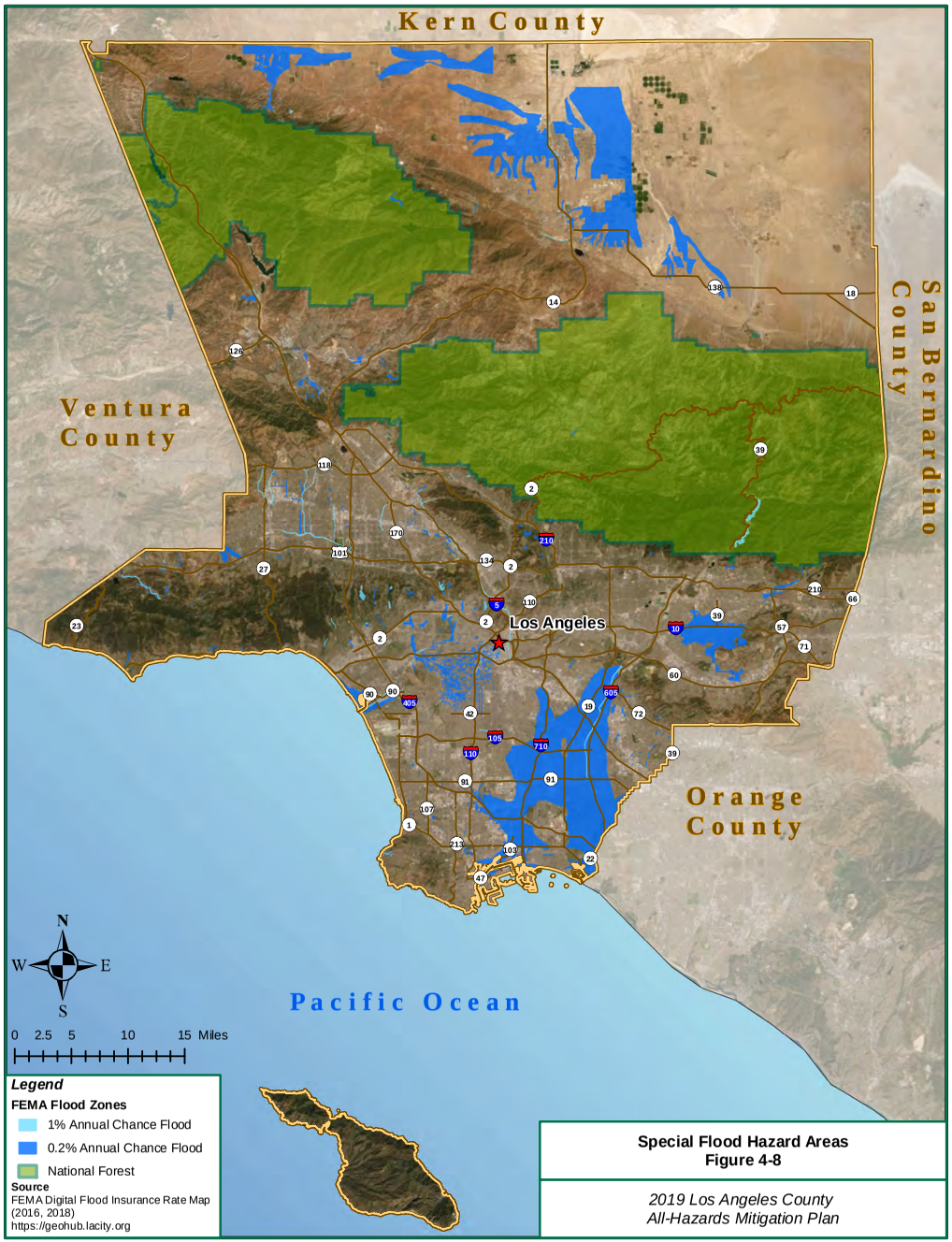
Table 4-23. Overall Summary of Vulnerability to Floods

	Flood
Summary	Los Angeles County has a long history of moderate to severe flooding during major storms. In the Los Angeles basin area, an extensive flood control system has eliminated much of this problem. However, in the less densely populated areas where relatively few flood controls have been constructed, flooding remains a problem. In areas with alluvial fans, flood flows discharge from the mountainous canyons in an uncontrolled manner onto the desert floor, thereby resulting in widespread damage to agricultural land, buildings, and infrastructure. In the foothill areas that experience intense rainfall, mudflows pose a risk to those downstream. Finally, along the coast, waves generated by winter storms in combination with high astronomical tides and strong winds can cause a significant wave runup, resulting in erosion and coastal flooding to low-lying portions of the shoreline. According to the Los Angeles County Public Works, there are 55 Repetitive Loss (RL) properties in 22 RL areas of unincorporated Los Angeles County as of the last submitted 2019 Community Rating System (CRS) Recertification. A Repetitive Loss (RL) property is any insurable building for which two or more claims of more than $1,000 were paid by the National Flood Insurance Program (NFIP) in any rolling 10-year period, since 1978. Updated location information about RL properties in the unincorporated areas of Los Angeles County were not available during the drafting of this plan. Data from 2011 showed that 26 RL properties were located in the SFHA. At the time, Los Angeles County Public Works stated, "the majority of the repetitive losses are associated with localized urban drainage flood problems, even for properties within a FEMA-designated flood zone." Los Angeles County Public Works oversees RL mitigation projects.



Los Angeles County Flood Control System
Figure 4-7

2019 Los Angeles County
All-Hazards Mitigation Plan



Special Flood Hazard Areas
Figure 4-8

2019 Los Angeles County
All-Hazards Mitigation Plan

4.5 LANDSLIDE

Table 4-24. Landslide Identification Profile

Profile	Description
Nature	Landslide is a general term for the dislodging and fall of a mass of soil or rocks along a sloped surface, or for the dislodged mass itself. The term is used for varying phenomena, including mudflows, mudslides, debris flows, rock falls, rockslides, debris avalanches, debris slides, and slump-earth flows. Landslides may result from a wide range of combinations of natural rock, soil, or artificial fill. The susceptibility of hillside and mountainous areas to landslides depends on variations in geology, topography, vegetation, and weather. Landslides may also occur because of indiscriminate development of sloping ground or the creation of cut-and-fill slopes in areas of unstable or inadequately stable geologic conditions. Additionally, landslides often occur together with other natural hazards, thereby exacerbating conditions, as described below: • Shaking due to earthquakes can trigger events ranging from rock falls and topples to massive slides. • Intense or prolonged precipitation that causes flooding can also saturate slopes and cause failures leading to landslides. • Wildfires can remove vegetation from hillsides, significantly increasing runoff and landslide potential. • Landslides into a reservoir can indirectly compromise dam safety; a landslide can even affect the dam itself. • Another type of landslide occurs in areas cut by perennial streams. As floodwaters erode channel banks, rivers have undercut clay-rich sedimentary rocks along their south bank, thereby destabilizing the ground and causing the ground above it to slide.
Location	In 2011, CGS created a deep-seated landslide grip map to show the relative likelihood of deep landslides in California. The map combines landslide inventory, geology, rock strength, slope, average annual rainfall and earthquake shaking potential layers to create classes of landslide susceptibility. As shown in **Figure 4-9**, the map shows areas of low landslide susceptibility, mainly, the Los Angeles Basin, to areas of high susceptibility, including the Santa Monica Mountains, the San Gabriel Mountains, the Sierra Pelona Mountains, the Baldwin Hills, the Puente Hills, and the Palos Verdes Hills.

Table 4-24. Landslide Identification Profile

Profile	Description
History	Like much of California, Los Angeles County has experienced landslides. Landslides in Los Angeles are generally trigged by intense and/or prolonged rainfall but can also occur after an earthquake. Notable recent landslides in Los Angeles County include: • January 1994, the Northridge earthquake triggered more than 11,000 landslides, with the majority concentrated in the Santa Susana Mountains and the mountains north of the Santa Clara River valley. Most of the triggered landslides were shallow highly disrupted falls and slides. However, the larger disrupted slides were reactivations of previously existing landslides. • March 1995, heavy rains weakened the geologically unstable Pacific Palisades bluffs. A 300-foot section gave way and buried part of Pacific Coast Highway under up to 30 feet of rain-soaked earth, rock, and debris. • March 2005, a slide near Sunset Mesa caused 20,000 cubic yards of debris to cover the Pacific Coast Highway. • January 2018, a hillside in Malibu gave way leaving a house uninhabitable. • December 2018, heavy rain on the Woolsey Fire burned hillsides created debris flows and mudslides in and around Malibu causing several road closures. • January 2019, sections of the Pacific Coast Highway near the Ventura County line were closed due to mudslides.
Extent / Severity	**Figure 4-9** shows deep seated landslide susceptibility areas in Los Angeles County. According to the Susceptibility to Deep-Seated Landslides grip map, there are 750.02 square miles (15.75%) of land in Los Angeles County located in the Classes IX and X. In the unincorporated areas of Los Angeles County, there are 577.63 square miles (18.99%) in this hazard area.
Recurrence Probability	Shallow landslides can occur at any time during the winter but are more likely happen when the ground is nearly saturated. According to the USGS, in Southern California "at least 10 inches of rainfall during the winter is needed to nearly saturate the ground. After this point, a rain burst of 0.2 to 0.25 in in one hour has been observed to trigger abundant shallow landslides." However, deep-seated landslides generally need deep infiltration of rainfall (which can take weeks or months to occur) to be triggered.

Table 4-25. Landslide Impact on Land Area

Entity	Deep Seated Landslide Class IX and X	
	# of Sq. Miles	% of Sq. Miles
Los Angeles County	750.02	15.75
Unincorporated Los Angeles County	577.63	18.99
Supervisorial District 1	17.29	7.02
Supervisorial District 2	2.73	1.68
Supervisorial District 3	114.61	26.58
Supervisorial District 4	105.12	23.89
Supervisorial District 5	509.31	18.14

Table 4-26. Landslide Impact on Vulnerable Populations – People Experiencing Homelessness

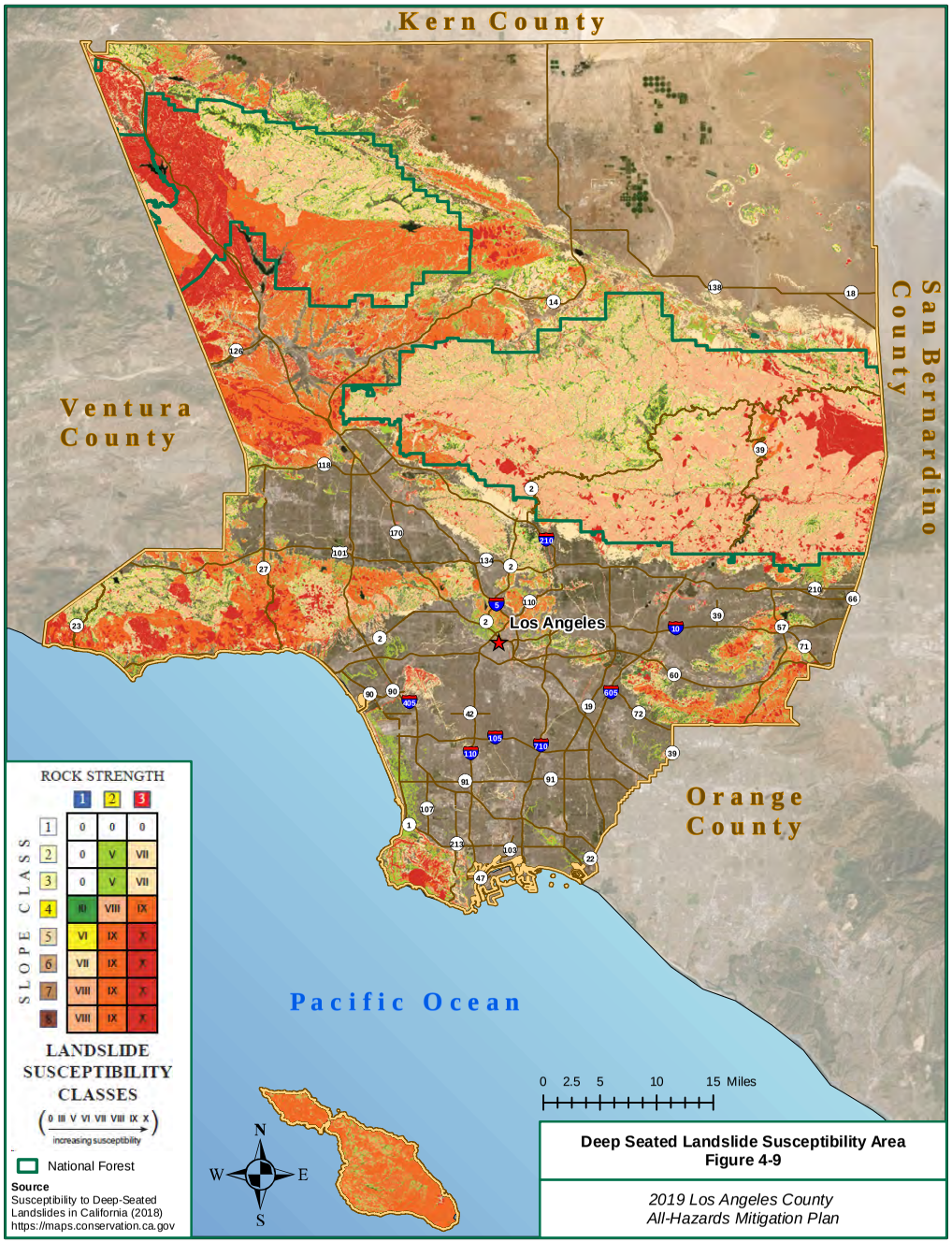
Entity	Deep Seated Landslide Class IX and X	
	# of Homeless	% of Homeless
City of Los Angeles	234	0.71
Unincorporated Los Angeles County	325	5.55

Table 4-27. Landslide Impact on County Critical Facilities

Department / Agency	Deep Seated Landslide Class IX and X	
	# of Facilities	% of Facilities
Los Angeles County Animal Care & Control	0	0.00
Los Angeles County Fire Department	7	2.08
Los Angeles County Health Services	0	0.00
Los Angeles County Library	0	0.00
LACMA & NHM	0	0.00
Los Angeles County Office of Education	1	2.70
Los Angeles County - Other (offices)	0	0.00
Los Angeles County Parks & Recreation	2	1.71
Los Angeles County Public Health	0	0.00
Los Angeles County Public Works	37	16.09
Los Angeles County Sheriff's Department	1	3.23

Table 4-28. Overall Summary of Vulnerability to Landslides

	Landslide
Summary	Areas prone to landslide include existing old landslides, base of slopes, base of minor drainage hollows, base or top of an old fill slope, base or top of a steep cut slope, and developed hillsides where leach field septic systems are used. In Los Angeles County, the majority of landslide-prone areas include the Santa Monica Mountains, the San Gabriel Mountains, the Sierra Pelona Mountains, the Baldwin Hills, the Puente Hills, and the Palos Verdes Hills. Landslides may: cause injury or death to those trapped; break utility lines; block/damage roadways; damage foundations, chimneys, or surrounding land; and lead to flash flooding and additional landsliding. In Los Angeles County, landslide risks are mitigated through the Hillside Management Area Ordinance & Hillside Design Guidelines (**Table 5-3**).



4.6 TSUNAMI

Table 4-29. Tsunami Identification Profile

Profile	Description
Nature	A tsunami is a series of traveling ocean waves of extremely long length, generated by disturbances associated primarily with earthquakes occurring below or near the ocean floor. Subduction zone earthquakes at plate boundaries often cause tsunamis. However, tsunamis can also be generated by underwater landslides or volcanic eruptions, the collapse of volcanic edifices, and—in very rare instances—large meteorite impacts in the ocean. In the deep ocean, a tsunami may have a length from wave crest to wave crest of 100 miles or more, but a wave height of only a few feet or less. Thus, the wave period can be up to several hours, and wavelengths can exceed several hundred miles. Therefore, tsunamis are unlike typical wind-generated swells on the ocean, which might have a period of about 10 seconds and a wavelength of up to 300 feet Tsunamis cannot be felt aboard ships and they cannot be seen from the air or the open ocean. In deep water, the waves may reach speeds exceeding 700 miles per hour. Tsunamis arrive as a series of successive crests (high water levels) and troughs (low water levels). These successive crests and troughs can occur anywhere from 5 to 90 minutes apart; however, they usually occur 10 to 45 minutes apart. Tsunamis not only affect beaches that are open to the ocean, but also bay mouths, tidal flats, and the shores of large coastal rivers. Tsunami waves can also diffract around land masses. Because tsunamis are asymmetrical, the waves may be much stronger in one direction than another, depending on the nature of the source and the surrounding geography. However, tsunamis do propagate outward from their source, so coasts in the shadow of affected land masses are safer.
Location	**Figure 4-10** shows tsunami evacuation area based on Maximum Phase as described in the California Tsunami Evacuation Playbook. This map illustrates coastal land areas that can become submerged due to tsunami run-up. The area of land subject to inundation is a factor of: • Distance of shoreline from the tsunami-generating event • Magnitude of the earthquake causing the event; duration and period of waves • Run-up elevations • Tidal level at time of occurrence • Location along shore and direction of shore in respect to propagated waves • Topography of the seabed In Los Angeles County, areas at risk to the maximum tsunami run up include the ports of Long Beach and Los Angeles, Catalina Island, and areas in the cities of Los Angeles, Long Beach, Manhattan Beach, Redondo Beach, Hermosa Beach, El Segundo, Palos Verdes, Santa Monica, and Malibu. In the unincorporated areas of Los Angeles County, the five coastal zones (i.e., Marin Del Rey, Santa Catalina Island, Santa Monica Mountains, San Clemente Island, and Ballona Wetlands Area A) are subject to inundation.

Table 4-29. Tsunami Identification Profile

Profile	Description
History	Between 1923 and 2011, 11 major tsunami events occurred in Los Angeles County, including: • April 13, 1923, a M 7.2 earthquake in Kamchatka caused a tsunami in Los Angeles. • August 30, 1930, a probable meteotsunami (i.e., a tsunami of meteorological origin) with a 10-foot run-up amplitude hit Santa Monica. • April 1, 1946, a M 8.8 earthquake in the Aleutian Islands caused tsunamis with run-up amplitudes ranging from 1 to 6 feet in Catalina Island, Los Angeles, and Long Beach, breaking ships from their moorings. • November 4, 1952, a M 9.0 earthquake in Kamchatka caused tsunamis with run-up amplitudes ranging from 1 to 2 feet in Santa Monica, Los Angeles, and Long Beach. • March 9, 1957, a M 8.6 earthquake in the Aleutian Islands caused tsunamis with run-up amplitudes ranging from 1 to 2 feet in Santa Monica, Los Angeles, and Long Beach. • May 22, 1960, a M 9.5 earthquake in Chile caused tsunamis with run-up amplitudes ranging from 2 to 5 feet in Catalina Island, Los Angeles, Long Beach, and Santa Monica. One person died, 800 small craft were unmoored, 200 boats were damaged, and 40 boats were sunk. The tsunamis resulting in $1 million dollars in damages. • March 28, 1964, a M 9.2 earthquake in Alaska caused tsunamis with run-up amplitudes ranging from 2 to 3 feet in Catalina Island, Los Angeles, Long Beach, and Santa Monica. One longshoreman was killed, 100 boats were unmoored, and 7 boats were sunk. The tsunamis caused approximately $350 thousand dollars in damages. • November 29, 1975, a M 7.1 earthquake in Hawaii caused a tsunami with a run-up amplitude of 4 feet in Catalina Island, damaging docks and boats. • September 29, 2009, a M 8.0 earthquake in Samoa caused a tsunami with a 1-foot run-up amplitude in Los Angeles. • February 27, 2010, a M 8.8 earthquake in Chile caused tsunamis with run-up amplitudes ranging from 1 to 3 feet in Catalina Island, Los Angeles, Long Beach, and Santa Monica, causing minor damage to docks and boats. • March 11, 2011, a M 9.0 earthquake in Japan caused tsunamis with run-up amplitudes ranging from 2 to 3 feet in Catalina Island, Los Angeles, Long Beach, Redondo Beach, and Santa Monica, damaging docks and boats.
Extent / Severity	**Figure 4-10** shows the maximum considered tsunami runup from a number of extreme tsunami sources. There are 43.35 square miles (0.91%) in Los Angeles County located in this hazard area. In the unincorporated areas of Los Angeles County there are 2.07 square miles (0.07%) at risk to a maximum tsunami runup.
Recurrence Probability	Based on the history of tsunami run-ups in the region and the history of earthquakes in the Pacific Rim, another tsunami event is likely to occur, although the extent and probability is unknown.

Table 4-30. Tsunami Impact on Land Area

Entity	Maximum Tsunami Inundation Area	
	# of Sq. Miles	% of Sq. Miles
Los Angeles County	43.35	0.91
Unincorporated Los Angeles County	2.07	0.07
Supervisorial District 1	0.00	0.00
Supervisorial District 2	0.12	0.08
Supervisorial District 3	2.65	0.61
Supervisorial District 4	18.00	4.09
Supervisorial District 5	0.00	0.00

Table 4-31. Tsunami Impact on Vulnerable Populations – People Experiencing Homelessness

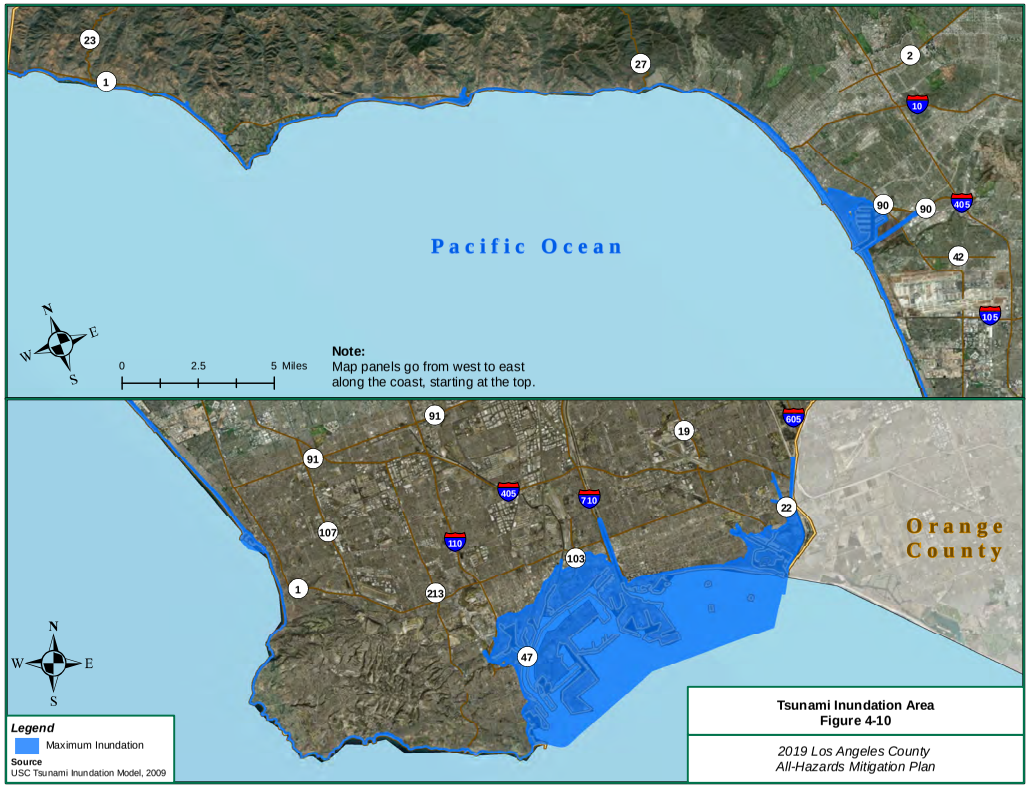
Entity	Maximum Tsunami Inundation Area	
	# of Homeless	% of Homeless
City of Los Angeles	622	1.89
Unincorporated Los Angeles County	20	0.34

Table 4-32. Tsunami Impact on County Critical Facilities

Department / Agency	Maximum Tsunami Inundation Area	
	# of Facilities	% of Square Facilities
Los Angeles County Animal Care & Control	0	0.00
Los Angeles County Fire Department	14	4.15
Los Angeles County Health Services	0	0.00
Los Angeles County Library	1	1.18
LACMA & NHM	0	0.00
Los Angeles County Office of Education	0	0.00
Los Angeles County - Other (offices)	1	4.17
Los Angeles County Parks & Recreation	0	0.00
Los Angeles County Public Health	0	0.00
Los Angeles County Public Works	15	6.52
Los Angeles County Sheriff's Department	1	3.23

Table 4-33. Overall Summary of Vulnerability to Tsunamis

	Tsunami
Summary	In Southern California, an earthquake could trigger an underwater avalanche or submarine landslide in the Santa Monica Bay and produce a tsunami that could inundate low-lying areas of Los Angeles County. In fact, according to researchers a locally generated tsunami could bring water as high as 5 feet in Marina del Rey, 7 feet in Manhattan Beach, 8 feet at the ports, and 11 feet in Redondo Beach. Such a tsunami could flood homes and destroy many small boats in nearby harbors, thereby creating dangerous debris. Researchers warn that California needs to be better prepared for tsunamis and while new deep-sea sensors have helped in tsunami detection, they are better suited for far-away tsunamis rather than local tsunamis. California OES and CGS lead Tsunami Preparedness Week in California annually. During this week, governmental agencies, such as Los Angeles County OEM, and community organizations, participate in exercises, test warning systems and response plans, and host community events to promote tsunami awareness.



4.7 WILDFIRE

Table 4-34. Wildfire Identification Profile

Profile	Description
Nature	Wildfires spread by consuming flammable vegetation. This fire type often begins unnoticed, spreads quickly, and is usually signaled by dense smoke that may be visible from miles around. Wildfires can be caused by human activities (e.g., unattended burns, campfires, or off-road vehicles without spark arresting muffles) or by natural events such as lightning. Wildfires often occur in forests or other highly vegetated areas. In addition, wildfires can be classified as forest, urban, interface or intermix fires, and prescribed burns. The following three factors contribute significantly to wildfire behavior and can be used to identify wildfire hazard areas: • Topography describes slope increases, which influences wildfire spread rate increases. South-facing slopes are also subject to more solar radiation, making them drier and thereby intensifying wildfire behavior. However, ridge tops may mark the end of wildfire spread since fire spreads more slowly or may even be unable to spread downhill. • Fuel is the type and condition of vegetation that plays a significant role in wildfire spread occurrence. Certain plant types are more susceptible to burning or will burn with greater intensity. Dense or overgrown vegetation increases the amount of combustible material available as fire fuel (referred to as the "fuel load"). The living-to-dead plant matter ratio is also important. Certain climate changes may increase wildfire risk significantly during prolonged drought periods, as both living and dead plant matter moisture content decreases. Both the horizontal and vertical fuel load continuity is also an important factor. • Weather is the most variable factor affecting wildfire behavior. Temperature, humidity, wind, and lightning can affect ignition opportunities and fire spread rate. Extreme weather, such as high temperatures and low humidity, can lead to extreme wildfire activity. Climate change increases fire to vegetation ignition susceptibility due to longer dry seasons. By contrast, cooling and higher humidity often signal reduced wildfire occurrence and easier containment. Wildfire frequency and severity sometimes result from other hazard impacts, such as lightning, drought, and infestations (e.g., damage caused by spruce-bark beetle infestations). If not promptly controlled, wildfires may grow into an emergency or disaster. Even small fires can threaten lives and resources and destroy improved properties. In addition to affecting people, wildfires may severely affect livestock and pets. Such events may require emergency water/food, evacuation, and shelter. Indirect wildfire effects can be catastrophic. In addition to stripping the land of vegetation and destroying forest resources, large, intense fires can harm the soil, waterways, and the land itself. Soil exposed to intense heat may lose its capability to absorb moisture and support life. Exposed soils erode quickly and exacerbate river and stream siltation; thereby increasing flood potential, harming aquatic life, and degrading water quality. Vegetation-stripped lands are more susceptible to increased debris flow hazards.
Location	Public Resources Code 4201 4204 and Government Code 51175 89 directed the California Department of Forestry and Fire Protection (Cal FIRE) to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. These FHSZ are represented as very high, high, or moderate. Specifically, the maps were created using data and models describing development patterns, potential fuels over a 30- to 50-year time horizon, expected fire behavior, and expected burn probabilities. The maps are divided into local responsibility areas (LRAs) and state responsibility areas (SRAs). LRAs generally include cities, cultivated agriculture lands, and portions of the desert. LRA fire protection is typically provided by city fire departments, fire protection districts, counties, and by Cal FIRE under contract to the local government. SRA is a

Table 4-34. Wildfire Identification Profile

Profile	Description
	legal term defining the area where the state has financial responsibility for wildfire protection. The Los Angeles County Fire Department is one of six contract counties, which has executed a contract with the State of California to provide wildland fire protection on SRA. **Figure 4-11** displays the areas of Los Angeles County most susceptible to wildfires and indicates areas of local or state responsibility. Very high FHSZs are generally located in mountainous or hillside areas, including the Santa Monica Mountains, San Gabriel Mountains, Palos Verdes Hills, and Puente Hills.
History	As shown in **Figure 4-12**, wildfires are a common occurrence in Los Angeles County. Some of the county's most destructive fires have occurred since 2000, including: • The Grand Prix Fire started on October 21, 2003 and burned a total of 50,618 acres between Claremont and Lytle Creek. The fire destroyed 136 homes and was ruled "accidental but human-initiated." • The Simi Fire started on October 25, 2003 and burned a total of 107,570 acres between Simi Hills and southeastern Simi Valley, in eastern Ventura County and western Los Angeles County, California. It destroyed 37 homes and 278 out buildings. The cause of the fire remains unknown. • The Day Fire started on October 30, 2006 and burned a total of 161,816 acres. The fire primarily burned the Los Padres National Forest. The cause of the fire was human-ignited debris. • The Ranch Fire started on October 20, 2007 and burned a total of 58,410 acres near Townsend Peak in the Angeles National Forest. The cause of the fire was equipment. • The Station Fire started on September 22, 2009 and burned a total of 160,883 acres in the Angeles National Forest. The Station Fire is the largest recorded fire in Los Angeles County. It destroyed 89 residences and another 120 buildings of significance. Two firefighters were killed. The cause of the fire was arson. • The Woolsey Fire started November 8, 2018 and burned a total of 96,949 acres in Los Angeles and Ventura counties including Thousand Oaks, Agoura Hills, Calabasas, the Santa Monica Mountains, Malibu, and West Hills. A total of 1,643 structures were destroyed and 3 people were killed.
Extent / Severity	As shown on the Cal FIRE FHSZ maps, in Los Angeles County, there are 386.06 square miles (8.11%) located in the very high LRA FHSZ, 625.01 square miles (13.13%) in the very high SRA FHSZ, and 132.77 square miles (2.79%) in the high SRA FHSZ. In the Unincorporated Los Angeles County, this includes: 23.53 square miles (0.77%) of very high LRA FHSZ; 610.94 square miles (20.09%) of very high SRA FHSZ; and 132.06 square miles (4.34%) of high SRA FHSZ.
Recurrence Probability	The climate in Los Angeles County is characterized as Mediterranean dry-summer featuring cool, wet winters and warm, dry summers. High moisture levels during the winter rainy season significantly increase the growth of plants. However, the vegetation is dried during the long, hot summers, decreasing plant moisture content and increasing the ratio of dead fuel to living fuel. As a result, fire susceptibility increases dramatically, particularly in late summer and early autumn. In addition, the presence of chaparral, a drought-resistant variety of vegetation that is dependent on occasional wildfires, is expected in Mediterranean dry-summer climates. The history of plant succession in Los Angeles County is important in predicting fire susceptibility. For several years after a fire has occurred, easily flammable herbaceous species thrive and increase the likelihood of new fires. When woody species become re-established, they contribute to a lower overall level of fire susceptibility for approximately 10 years. However, after this period, the slow aging plant

Table 4-34. Wildfire Identification Profile

Profile	Description
	community becomes ever more likely to burn because of increased levels of dead plant material and lowered plant moisture levels. Additionally, a local meteorological phenomenon, known as the Santa Ana winds, contributes to the high incidence of wildfires in Los Angeles County. These winds originate during the autumn months in the hot, dry interior deserts to the north and east of Los Angeles County. They often sweep west into the county, bringing extremely dry air and high wind speeds that further desiccate plant communities during the period of the year when the constituent species have very low moisture content. The effect of these winds on existing fires is particularly dangerous; the winds can greatly increase the rate at which fires spread. Based on the conditions described above and the history of occurrence in the past, future events are very likely to occur. In the past, fires burning more than 1,000 acres have occurred about every 1 to 3 years. The extent of future events will depend on specific conditions at the time of the fire.

Table 4-35. Wildfire Impact on Land Area

Entity	Very High LRA FHSZ		High SRA FHSZ		Very High SRA FHSZ	
	# of Sq. Miles	% of Sq. Miles	# of Sq. Miles	% of Sq. Miles	# of Sq. Miles	% of Sq. Miles
Los Angeles County	386.06	8.11	132.77	2.79	625.01	13.13
Unincorporated Los Angeles County	23.54	0.77	132.06	4.34	610.94	20.09
Supervisorial District 1	31.42	12.76	0.00	0.00	1.13	0.46
Supervisorial District 2	3.25	2.01	0.00	0.00	0.00	0.00
Supervisorial District 3	140.58	32.60	0.01	0.00	92.18	21.38
Supervisorial District 4	45.78	10.41	1.11	0.25	86.61	19.69
Supervisorial District 5	164.90	5.87	131.65	4.69	444.99	15.85

Table 4-36. Wildfire Impact on Vulnerable Populations – People Experiencing Homelessness

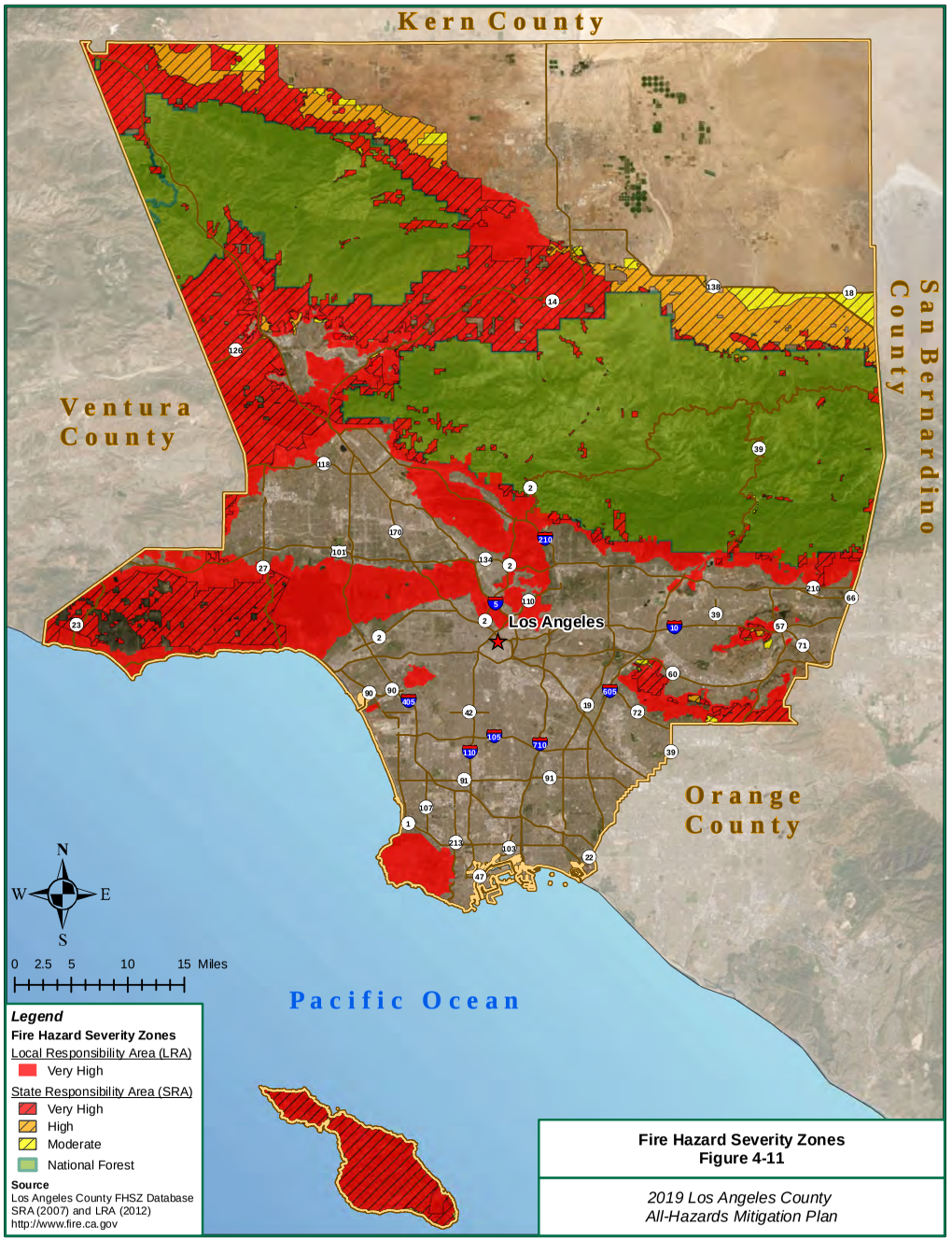
Entity	Very High LRA FHSZ		High SRA FHSZ		Very High SRA FHSZ	
	# of Homeless	% of Homeless	# of Homeless	% of Homeless	# of Homeless	% of Homeless
City of Los Angeles	1,291	3.92	0	0.00	0	0.00
Unincorporated Los Angeles County	88	1.49	58	0.99	465	7.91

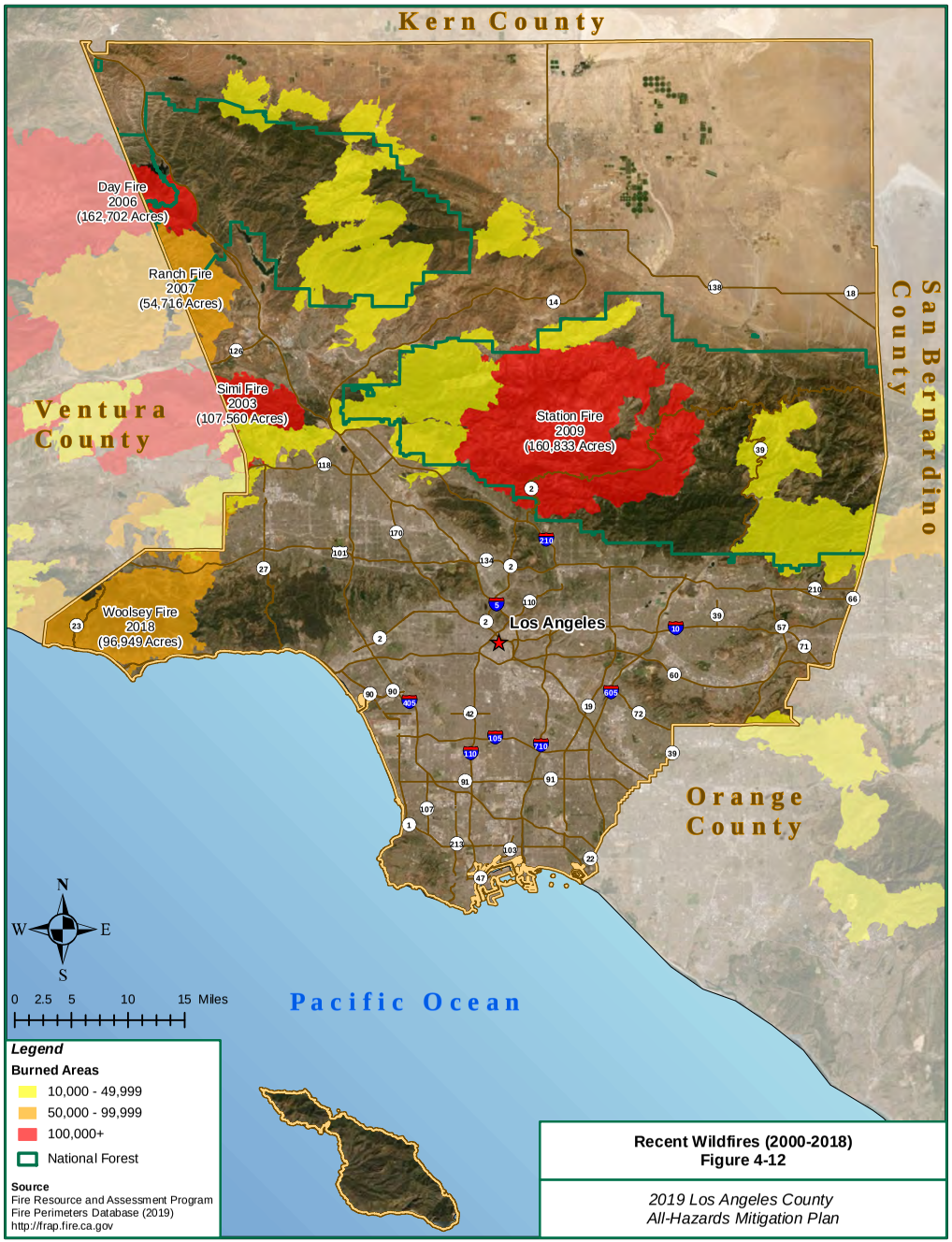
Table 4-37. Wildfire Impact on County Critical Facilities

Department / Agency	Very High LRA FHSZ		High SRA FHSZ		Very High SRA FHSZ	
	# of Facilities	% of Facilities	# of Facilities	% of Facilities	# of Facilities	% of Facilities
Los Angeles County Animal Care & Control	1	14.29	0	0.00	1	14.29
Los Angeles County Fire Department	39	11.57	1	0.30	14	4.15
Los Angeles County Health Services	1	3.45	0	0.00	0	0.00
Los Angeles County Library	7	8.24	1	1.18	2	2.35
LACMA & NHM	1	25.00	0	0.00	0	0.00
Los Angeles County Office of Education	3	8.11	0	0.00	3	8.11
Los Angeles County - Other (offices)	0	0.00	0	0.00	0	0.00
Los Angeles County Parks & Recreation	13	11.11	1	0.85	12	10.26
Los Angeles County Public Health	52	22.61	4	1.74	41	17.83
Los Angeles County Public Works	0	0.00	0	0.00	0	0.00
Los Angeles County Sheriff's Department	3	9.68	1	3.23	3	9.68

Table 4-38. Overall Summary of Vulnerability to Wildfires

	Wildfire
Summary	Wildfires are not only capable of burning down vegetation, homes, critical facilities, and infrastructure, but they can also cause loss of life to humans and animals, soil erosion, debris flows, air pollution, serious health problems, and restriction of access to recreational areas. The areas in Los Angeles County that are most susceptible to wildfires are generally located in mountainous or hillside areas, including the Santa Monica Mountains, San Gabriel Mountains, Palos Verdes Hills, and Puente Hills. However, the areas that pose greatest risk to people are generally along the wildland-urban interface (WUI) or intermix. These areas are the transition zones between wildlands and human development and often where areas of housing and vegetation commingle. According to researchers at the United States Forest Service, fires in the WUI areas have not deterred redevelopment. In fact, according to the same researchers, there is a push to return the area to "normal" as soon as possible. California has the strictest fire regulations in the country, which supersede any type of local regulations. However, the rules do not apply to existing homes built before 1991, with the average home in California built decades prior. And unlike earthquakes and floods, there is not a retrofit type of program to encourage homeowners to bring their homes up to current fire requirements.





Recent Wildfires (2000-2018)
Figure 4-12

2019 Los Angeles County
All-Hazards Mitigation Plan

5 MITIGATION STRATEGY

Section 5 – Mitigation Strategy addresses Element C of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans
Element C: Mitigation Strategy
C1. Does the Plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement § 201.6(c)(3))
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement § 201.6(c)(3)(i))
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))

5.1 AUTHORITIES, POLICIES, PROGRAMS, AND RESOURCES

Los Angeles County's existing authorities, policies, programs and resources available for hazard mitigation are listed in **Table 5-1** through **Table 5-3**. These tables have been updated since the 2014 AHMP to reflect any changes in human, technical, financial, legal, and regulatory resources.

Table 5-1 Human and Technical Resources for Hazard Mitigation

Staff/Personnel	Department / Agency	Principal Activities Related to Hazard Mitigation
Planner(s), engineer(s) and technical staff with knowledge of land development, land management practices, and human-caused and natural hazards.	Los Angeles County Department of Regional Planning	Develops and maintains the Los Angeles County 2035 General Plan, including the safety element. Develops area plans based on the Los Angeles County 2035 General Plan, to provide more specific guidance for the development of more specific areas. Reviews private development projects and proposed capital improvements projects and other physical projects involving property for consistency and conformity with the Los Angeles County 2035 General Plan. Anticipates and acts on the need for new plans, policies, and code changes. Applies the approved plans, policies, code provisions, and other regulations to proposed land uses.
Engineer(s), Building Inspectors/Code Enforcement Officers or other professional(s), and technical staff trained in construction requirements	Los Angeles County Public Works	Oversees the effective, efficient, fair, and safe enforcement of the 2017 County of Los Angeles Building Code.
Engineers, construction project managers, and supporting technical staff	Los Angeles County Public Works	Provides direct or contract civil, structural, and mechanical engineering services, including contract, project, and construction management.
Engineer(s), project manager(s), technical staff, equipment operators, and maintenance and construction staff	Los Angeles County Public Works	Maintains and operates of a wide range of local equipment and facilities and assists members of the public. This includes providing sufficient clean fresh water, reliable sewer services, street maintenance, storm drainage systems, street cleaning, street lights and traffic signals.
Floodplain Administrator	Los Angeles County Public Works	Enforces the floodplain management ordinance, ensures that new development proposals do not increase flood risk, and that new developments are not located below the 100-year flood level. In addition, the floodplain administrator is responsible for planning and managing flood risk reduction projects throughout the county.
Emergency Manager	Los Angeles County Chief Executive Office – Office of Emergency Management	Maintains and updates the Los Angeles County Operational Area Emergency Response Plan for the unincorporated areas of the county. In addition, coordinates local response and relief activities in the Emergency Operation Center, and works closely with local, state, and federal partners to support planning and training and to provide information and coordinate assistance.

Table 5-1 Human and Technical Resources for Hazard Mitigation

Staff/Personnel	Department / Agency	Principal Activities Related to Hazard Mitigation
Procurement Services Manager	Internal Services Department	Provides a full range of municipal financial services, administers several licensing measures, and functions as the county's procurement services manager.
Comptroller	Los Angeles County Auditor - Controller	Provides financial services including grant financial services.
District Attorney	Los Angeles County District Attorney	Provides legal services for the county.
Fire Chief	Los Angeles County Fire Department	Provides fire protection services including response, fire prevention, and mitigation activities for the county.
Sheriff	Los Angeles County Sheriff Department	Provides law enforcement services in the county.

Table 5-2. Financial Resources for Hazard Mitigation

Type	Administrator	Purpose	Amount
General Fund	Chief Executive Office	Program operations and specific projects.	Variable.
General Obligation Bonds	Los Angeles County Auditor-Controller	General obligation bonds are appropriately used for the construction and/or acquisition of improvements to real property broadly available to residents and visitors. Such facilities include but are not limited to: libraries, hospitals, parks, public safety facilities, and cultural and educational facilities.	Variable.
Special Tax and Revenue Bonds	Comptroller	Revenue bonds are used to finance capital projects that: 1) have an identified budgetary stream for repayment (e.g., specified fees, tax receipts); 2) generate project revenue but rely on a broader pledge of general fund revenues to reduce borrowing costs; or 3) finance the acquisition and installation of equipment for the local jurisdiction's general governmental purposes.	Variable.
Vegetation Management Program	Cal FIRE	Cost-sharing program between Cal FIRE and private land owners, which focuses on the use of prescribed fire, mechanical, biological, and chemical means addressing wildland fire fuel hazards and other resource management issues on SRA and LRA lands	Project-specific.
Wildfire Emergency and Mitigation Funds	Cal FIRE	Administers funding from the FEMA, Bureau of Land Management, and U.S. Forest Service for certain types of wildfire emergency and mitigation funding	Project-specific.
California Residential Mitigation Program	California Earthquake Authority	Created by the California Earthquake Authority and the Governor's Office of Emergency Services, Earthquake Brace + Bolt: Funds to Strengthen Your Foundation is the first incentive program offered by the California Residential Mitigation Program.	Project-specific.
Public Health Emergency Preparedness Cooperative Agreement.	Center for Disease Control	Funds are intended to upgrade state and local public health jurisdictions' preparedness and response to bioterrorism, outbreaks of infectious diseases, and other public health threats and emergencies.	Grant award based on specific projects as they are identified.

Table 5-2. Financial Resources for Hazard Mitigation

Type	Administrator	Purpose	Amount
Hazard Mitigation Grant Program	FEMA	Supports pre- and post-disaster mitigation plans and projects. Available to California communities after a presidentially declared disaster has occurred in California, administered by Cal OES.	Grant award based on specific projects as they are identified.
Pre-Disaster Mitigation grant program	FEMA	Supports pre-disaster mitigation plans and projects. Available on an annual basis as a nationally competitive grant, administered by Cal OES.	Grant award based on specific projects as they are identified.
Flood Mitigation Assistance grant program	FEMA	Mitigates repetitively flooded structures and infrastructure. Available on an annual basis, distributed to California communities, administered by Cal OES.	Grant award based on specific projects as they are identified.
Homeland Security Preparedness Technical Assistance Program	FEMA/DHS	Build and sustain preparedness technical assistance activities in support of the four homeland security mission areas (i.e., prevention, protection, response, recovery) and homeland security program management.	Grant award based on specific projects as they are identified.
Assistance to Firefighters Grant Program	FEMA/U.S. Fire Administration	Provides equipment, protective gear, emergency vehicles, training, and other resources needed to protect the public and emergency personnel from fire and related hazards. Available to fire departments and nonaffiliated emergency medical services providers.	Grant awards based on specific projects as they are identified.
Land and Water Conservation Funds	U.S. Department of the Interior	Supports the protection of federal public lands and waters and voluntary conservation on private land.	Project-specific.
Community Action for a Renewed Environment	U.S. Environmental Protection Agency (EPA)	Through financial and technical assistance offers an innovative way for a community to organize and take action to reduce toxic pollution (e.g., stormwater) in its local environment. Through this program, a community creates a partnership that implements solutions to reduce releases of toxic pollutants and minimize people's exposure to them.	Grant award based on specific projects as they are identified.
Clean Water State Revolving Fund	U.S. EPA	A loan program that provides low-cost financing to eligible entities on state and tribal lands for water quality projects, including all types of non-point source, watershed protection or restoration, estuary management projects, and more traditional municipal wastewater treatment projects.	Variable.

Table 5-2. Financial Resources for Hazard Mitigation

Type	Administrator	Purpose	Amount
Community Block Grant Program Entitlement Communities Grants	U.S. Department of Housing and Urban Development	Acquisition of real property, relocation and demolition, rehabilitation of residential and non-residential structures, construction of public facilities and improvements, such as water and sewer facilities, streets, neighborhood centers, and the conversion of school buildings for eligible purposes.	Grant award based on specific projects as they are identified.

Table 5-3. Legal and Regulatory Resources for Hazard Mitigation

Name	Description	Hazards Addressed	Emergency Management	Potential to Affect Development
Los Angeles County 2035 General Plan (2015)	Describes hazard areas and lists goals and policies to reduce the potential risk of death, injuries, and economic damage resulting from natural and human-caused hazards.	Seismic and geotechnical, flood and inundation hazards, and fire hazards.	Mitigation, Preparedness, Response	Yes
Comprehensive Floodplain Management Plan (2016)	Reviews existing floodplain management programs in the county and recommends enhancements to them through 35 mitigation actions.	Flood	Mitigation	Yes
Los Angeles County Fire Department 2018 Strategic Fire Plan	Identifies and prioritizes pre-fire and post-fire management strategies and tactics meant to reduce the loss of values at risk in Los Angeles County.	Wildfire	Preparedness, Mitigation	Yes
Greater Los Angeles County Region Integrated Regional Water Management Plan (2014)	Identifies a comprehensive set of solutions to achieve the several objectives over the 25-year planning horizon including reducing flood risk in flood prone areas by either increasing protection or decreasing needs using integrated flood management approaches and adapting to and mitigate against climate change vulnerabilities.	Flood, Climate Change	Mitigation	Yes
Unincorporated County Community Climate Action Plan 2020 (2015)	Provides a roadmap for successfully implementing greenhouse gas reduction measures in the County. It is a component of the General Plan Air Quality Element, the Community Climate Action Plan actions are closely tied to many of the goals, policies, and programs of the General Plan, as well as to several other existing programs in the County.	Climate Change	Mitigation	Yes
County of Los Angeles Local Coastal Programs	Requires coastal cities and counties to establish coastal resource conservation and development programs.	Climate change, flood	Prevention, Mitigation	Yes
Los Angeles County Floodplain Management Ordinance	Promotes the public health, safety, and general welfare. Additionally, aims to minimize public and private losses due to flood conditions in specific areas by legally enforceable regulations applied uniformly throughout the community to all publicly and privately owned land in flood prone, mudslide (i.e., mudflow) or flood related erosion areas.	Flood	Mitigation	Yes

Table 5-3. Legal and Regulatory Resources for Hazard Mitigation

Name	Description	Hazards Addressed	Emergency Management	Potential to Affect Development
Hillside Management Area Ordinance & Hillside Design Guidelines	Required for development in Hillside Management Areas, which are defined as areas with 25% or greater natural slopes. The guidelines include specific and measurable design techniques that can be applied to residential, commercial, industrial, and other types of projects.	Landslide	Mitigation	Yes
Los Angeles County Fuel Modification Code	Requires the review aspects such as structure location and type of construction, topography, slope, amount and arrangement of vegetation, and overall site settings for a new structure or an addition that is equal to or greater than 50% of the existing square footage. The objective of this approval plan process is to create defensible space necessary for effective fire protection of homes in the FHSZs.	Wildfire	Preparedness, Mitigation	Yes
California Fire Plan	Requires the County of Los Angeles Fire Plan Unit to implement the California Fire Plan, a statewide framework for minimizing costs and losses from wildland fires. The Fire Plan Unit uses a GIS platform to identify high hazard\high value areas and communities at risk in the wildland-urban interface.	Wildfire	Preparedness, Mitigation	Yes
Los Angeles County Brush Clearance Program	Legally declares both improved and unimproved properties a public nuisance, and where necessary, requires the clearance of hazardous vegetation. These measures create "Defensible Space" for effective fire protection of property, life, and the environment. The Brush Clearance Program is a joint effort between the County of Los Angeles Fire Department and the County of Los Angeles Department of Agricultural Commissioner/Weights and Measures, Weed Hazard, and Pest Abatement Bureau (Weed Abatement Division).	Wildfire	Mitigation	No

5.2 NFIP PARTICIPATION

The NFIP aims to reduce the impact of flooding to residential and non-residential buildings. It does so by providing insurance to property owners and by encouraging communities to adopt and enforce floodplain management regulations. Los Angeles County entered the NFIP in 1980, and the first Los Angeles County DFIRM was issued on December 2, 1980. The Los Angeles County Public Works enforces the county's floodplain management ordinance and participate in FEMA's Community Assisted Visits, which occur on a 3- to 5-year cycle. According to Los Angeles County Public Works, as of September 30, 2018, there are 1,553 floodplain policies in force in the unincorporated areas of Los Angeles County.

Los Angeles County also participates in the CRS program. The CRS program is a voluntary program for communities that engage in community floodplain management activities, which exceed the minimum NFIP standards. CRS communities benefit from reduced insurance rates and improved floodplain management programs. Los Angeles County is currently a Class 7 CRS community; therefore, homeowners who live in the SFHA can receive a 5 to 15 percent discount on their flood insurance policy.

5.3 MITIGATION GOALS

Mitigation goals are defined as general guidelines that explain what a community wants to achieve in terms of hazard and loss prevention. Goal statements are typically long-range, policy-oriented statements representing community-wide vision. For the 2019 AHMP, the overarching goal is for Los Angeles County to be a disaster resilient community. A disaster resilient community is able to prepare for, respond to, and recover from adverse hazards and disasters. According to laresilience.org, "in the resilience framework, less emphasis is placed on traditional, individually-focused preparedness efforts… building community resilience is really about making communities stronger."

5.4 POTENTIAL MITIGATION ACTIONS AND PROJECTS

Mitigation actions and projects help achieve the goals of the AHMP. For the 2019 AHMP, potential mitigation actions to be considered are listed below in **Table 5-4** and include the following hazard mitigation categories: education and awareness; natural systems protection; structure and infrastructure projects; preparedness and response; and local plans and regulations. This list addresses every hazard profiled in this plan and is based on the plan's risk assessment as well as lessons learned from recent disasters. It was developed using: FEMA success stories and best management practices; FEMA job aids; local and regional plans and reports; and input from subject matter experts and pertinent Los Angeles County departments and agencies.

Table 5-4. Potential Mitigation Actions and Projects

Red Flag Warning Public Outreach	
Project Description	Create an online and offline public outreach campaign for Red Flag Warnings. Include information about: what is a Red Flag Warning; what land may be closed; and what individuals should do to be prepared as well as what activities should be avoided. Tailor outreach material to various target groups, including people experiencing homelessness, the elderly, the young, and non-English speaking residents.

Table 5-4. Potential Mitigation Actions and Projects

Type of Project	Education and Awareness Programs
Hazard(s) Mitigated	Wildfire
Project Source	Red Flag Working Group, LA County Homeless Initiatives
Pros	Education can help reduce the risk of human-caused fires Public outreach is generally low-cost Public outreach to homeless individuals can help built rapport with county agencies
Cons	Maybe difficult to reach some target groups
Vegetation Management Program	
Project Description	Continue to implement the County's Vegetation Management Program. The Los Angeles County Fire Department Vegetation Management Unit works closely with the Fire Plan Unit and the Air and Wildland Division's Prescribed Fire Office to implement projects. The Vegetation Management Unit provides the State and County with required paperwork for prescribed burning, mechanical, biological and chemical treatment methods used in project areas.
Type of Project	Natural Systems Protection
Hazard(s) Mitigated	Wildfire
Project Source	Los Angeles County Fire Department
Pros	Program has been implemented in Los Angeles County for the last 40 years and are generally cost effective Can be used selectively to treat the most vulnerable areas
Cons	Often requires ongoing maintenance Can cause soil disturbance and increase sedimentation and erosion Prescribed fire and chemical application methods require close supervision
Fireproof Coating of Critical Assets	
Project Description	Fireproof coat critical facilities in Very High FHSZs which will allow structures to extend their strength in the event of a fire.
Type of Project	Structure and Infrastructure Projects
Hazard(s) Mitigated	Wildfire
Project Source	Los Angeles County Public Works
Pros	Generally cost-effective and non-toxic
Cons	None
Auxiliary Power for Critical Facilities	
Project Description	Determine which critical facilities need and do not have auxiliary power in order to remain functional during de-energization or "Public Safety Power Shut-Offs" and/or general loss of power and install auxiliary power systems. Auxiliary power systems may include back-up generators, local Solar Photovoltaic plus storage, and microgrids.
Type of Project	Structure and Infrastructure Projects
Hazard(s) Mitigated	Wildfire specifically, but also applies to all hazards

Table 5-4. Potential Mitigation Actions and Projects

Project Source	Los Angeles County Public Works
Pros	Provides emergency power to keep critical facilities operational and functional
Cons	Diesel generators can be expensive to operate and contribute to air pollution
Earthquake-Resistant Ductile Iron Pipes Replacement	
Project Description	Continue to replace aging critical pipes in extreme or violent shaking hazard areas and Class IX and X landslide hazard areas to improve seismic reliability/safeguard critical water distribution lines against the potential destructive impacts of large-scale earthquakes and accompanying landslides. Los Angeles County Public Works completed its' first earthquake-resistant ductile iron pipe replacement pilot program in 2013.
Type of Project	Structural and Infrastructure Projects
Hazard(s) Mitigated	Landslides, Earthquakes
Project Source	Los Angeles County Public Works
Pros	Improves water reliability Restores those without service more rapidly
Cons	None
Watershed Ecosystem Restoration	
Project Description	Modernize existing flood control retention facilities to improve flood protection, water quality and ecological health. Potential projects include: Arroyo Seco and Compton Creek.
Type of Project	Natural Systems Protection
Hazard(s) Mitigated	Climate Change, Flood, Tsunami
Project Source	County of Loss Angeles Repetitive Property Loss Area Analysis Progress Report (2017 – 2018), OurWaterLA
Pros	Reduces the risk of flooding to the surrounding neighborhoods Provides new recreational space and safety amenities
Cons	Additional studies needed to determine best approaches
Green Streets	
Project Description	Implement the Green Street Master Plan with the goal of identifying 110 feasible sites. A green street is a stormwater management approach that incorporates vegetation, soil, and engineered systems (e.g., permeable pavements) to slow, filter, and cleanse stormwater runoff from impervious surfaces. In addition to the traditional green street approach, incorporate "complete streets" design strategies to provide more room for emergency response vehicles and create defensible space in plaza areas and around buildings.
Type of Project	Natural Systems Protection, Preparedness and Response
Hazard(s) Mitigated	Stormwater/Flood, Climate Change
Project Source	Los Angeles County Public Works, U.S. EPA
Pros	Protects water quality in rivers and streams by removing pollutants

Table 5-4. Potential Mitigation Actions and Projects

	Replenishes groundwater supplies Absorbs carbon Improves air quality and neighborhood aesthetics Improves pedestrian and bicycle safety
Cons	Requires selected site suitability to do utility conflicts, and geotechnical and environmental characteristics
Coordinated Data Collection and Database Systems	
Project Description	Create coordinated data collection and database system in which intake and assessment information can be entered in real time and can support multiple users at the same time. Components can include critical facilities and vulnerable populations.
Type of Project	Preparedness and Response
Hazard(s) Mitigated	All hazards
Project Source	Los Angeles County OEM
Pros	Coordinated systems
Cons	Different data collection needs may require parallel databases
Brush Clearance Program	
Project Description	Expand the County's Brush Clearance Program to include a grant fundable mitigation component for qualified low-income and/or elderly homeowners that have properties that are found to be non-compliant. Instead of warning property owners and imposing infractions for inadequate fire hazard reduction, Los Angeles County will work with the homeowner to develop and implement a fire reduction plan.
Type of Project	Natural Systems Protection, Preparedness and Response
Hazard(s) Mitigated	Wildfire
Project Source	Los Angeles County Fire Department
Pros	Proactive, not reactive approach to working with homeowners to reducing wildfire fuel hazards
Cons	Often requires ongoing maintenance
Wildland Urban-Interface Ordinance	
Project Description	Codifying development standards to guide development in the WUI areas that face a severe threat of wildfires.
Type of Project	Local Plans and Regulations
Hazard(s) Mitigated	Wildfire
Project Source	Draft Safety Element Update for Los Angeles County 2035 General Plan, Los Angeles County Sustainability Plan
Pros	Additional review of development in WUIs will enable best practices are incorporated in the project design.
Cons	Additional regulations may be perceived as too burdensome by property owners.

Table 5-4. Potential Mitigation Actions and Projects

Urban Forest Management Plan	
Project Description	Create Urban Forest Management Plan for Los Angeles County with a well-defined scope that includes s comprehensive tree inventory, assessment of tree health, identification of shade-poor neighborhoods, cost-benefit analysis of tree vs shade-structure interventions, urban forest financing plan, and a plan for sustainable management.
Type of Project	Local Plans and Regulations
Hazard(s) Mitigated	Climate Change, Drought
Project Source	Los Angeles County Sustainability Plan (Los Angeles County Chief Sustainability Office), A Greater L.A. Climate Action Framework (L.A. Regional Collaborative for Climate Action and Sustainability, and Los Angeles County 2035 General Plan
Pros	Extreme heat is the greatest health threat to Los Angeles County residents. Providing shade will help mitigate the effects of extreme heat in disadvantaged neighborhoods. Residents from these communities may not have private vehicles and encounter problems traveling to cooling centers; they may also have limited access to air conditioning.
Cons	The inability of residents to pay for water to establish newly planted trees may hinder the establishment of an urban forest. County-wide water conservation measures during times of drought may also conflict with efforts to establish and maintain an urban forest. In such situations, shade structures may fulfill the same needs.
Community Wildfire Protection Plans	
Project Description	Continue to work with communities to develop Community Wildfire Protection Plans (CWPP). CWPPs enable communities to plan how they will reduce the risk of wildfire by identifying strategic sites and methods for fuel reduction projects across the landscape and jurisdictional boundaries.
Type of Project	Local Plans and Regulations
Hazard(s) Mitigated	Wildfire
Project Source	Los Angeles County Fire Department 2018 Strategic Fire Plan
Pros	Opportunity to establish a localized definition and boundary for the WUI. Priority funding is often given to projects and treatment areas identified in a CWPP.
Cons	May be difficult to get collaboration from stakeholders.

5.5 MITIGATION ACTION PLANS

A mitigation action plan is a prioritized list of proposed mitigation projects and actions that a community hopes to implement to reduce its' risks and vulnerabilities. The 2019 AHMP mitigation action plan, as shown in **Table 5-5 and Table 5-6**, is prioritized into Tier 1 and Tier 2 activities:

- Tier 1 activities are essential to remedy or prevent a major health/safety hazard. They meet FEMA HMA grant criteria, including project eligibility, benefit-cost, and performance period.
- Tier 2 activities are important in building a culture and practice of disaster resilience that will prevent new risks. They do not necessarily require and/or meet FEMA HMA grant criteria (but may qualify for other state and federal funds).

Table 5-5. Tier 1 Mitigation Action Plan

Project Name	Implementation Details
Red Flag Warning Public Outreach	Department/Agency: LAHSA, Los Angeles County OEM, Los Angeles County Fire Department, and Los Angeles County Sheriff's Department Potential Funding Source: FEMA grants Performance Period: 6 months development, implementation prior to every summer/fall
Vegetation Management Program	Department/Agency: Los Angeles County Fire Department Potential Funding Source: Cal FIRE, FEMA grants Performance Period: Ongoing
Fireproof Coating of Critical Facilities	Department/Agency: Los Angeles County Public Works, Los Angeles County Fire Department Potential Funding Source: Cal FIRE, FEMA grants Performance Period: 1-3 years
Auxiliary Power for Critical Facilities	Department/Agency: Los Angeles County Public Works Potential Funding Source: FEMA grants Performance Period: Ongoing
Earthquake-Resistant Ductile Iron Pipes Replacement	Department/Agency: Los Angeles County Public Works Potential Funding Source: FEMA grants Performance Period: Ongoing
Brush Clearance Program	Department/Agency: Los Angeles County Fire Department Potential Funding Source: Cal FIRE, FEMA grants Performance Period: Ongoing
Community Wildfire Protection Plans	Department / Agency: Los Angeles County Fire Department Potential Funding Source: Cal FIRE, FEMA grants Performance Period: Ongoing

Table 5-6. Tier 2 Mitigation Action Plan

Project Name	Implementation Details
Watershed Ecosystem Restoration	Department/Agency: Los Angeles County Public Works Potential Funding Source: U.S. EPA, U.S. Department of Interior grants Performance Period: 3-5 years
Green Streets	Department/Agency: Los Angeles County Public Works Potential Funding Source: U.S. EPA grants Performance Period: 3-5 years
Coordinated Data Collection & Database Systems	Department/Agency: Los Angeles County OEM Potential Funding Source: County funds Performance Period: 1-2years, Ongoing
Wildland Urban-Interface Ordinance	Department/Agency: Los Angeles County Department of Regional Planning, Los Angeles County Fire Department Potential Funding Source: County funds Performance Period: 6 months – 1 year
Urban Forest Management Plan	Department/Agency: Los Angeles County Department of Regional Planning, Los Angeles County Fire Department Potential Funding Source: County funds Performance Period: 1-2 years

5.6 PLAN INTEGRATION

The AHMP project manager will be the lead in working with Los Angeles County departments and agencies to ensure that elements of the 2019 AHMP are incorporated into other relevant county planning documents as they are created or updated.

As such, the AHMP project manager will work with:

- The Los Angeles County Public Works to incorporate the flood risk assessment and flood mitigation actions into the county's Comprehensive Floodplain Management Plan. The Comprehensive Floodplain Management Plan is currently being updated and is expected to be completed in 2021.
- The Los Angeles County Department of Regional Planning to ensure that the 2019 AHMP's hazard profiles and mitigation projects and actions align with those addressed in the General Plan's Safety Element. The Safety Element is currently being updated and is expected to be completed in 2021.
- The Los Angeles County OEM to ensure that the hazard profiles are included in the Los Angeles County Threat and Hazard Identification Risk Assessment and the Los Angeles County Operational Area Emergency Response Plans and Annexes as they are updated.

6 PLAN REVIEW, EVALUATION, AND IMPLEMENTATION

Section 4 – Plan Review, Evaluation, and Implementation addresses Element D of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans
Element D: Plan Review, Evaluation, and Implementation
D1. Was the plan revised to reflect changes in development? (Requirement § 201.6(d)(3))
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement § 201.6(d)(3))
D3. Was the plan revised to reflect changes in priorities? Requirement §201.6(d)(3))

6.1 CHANGES IN DEVELOPMENT

As noted in **Section 3.2**, the slowing population growth is in part due to the lack of housing. Most economists agree that building new housing is key to addressing the state's housing crisis. During the drafting of the 2019 AHMP, nearly 28,000 units were under construction in Los Angeles County. In the city of Los Angeles, developers have targeted properties in older neighborhoods, rather than undeveloped land in the city's outskirts. However, as the State of California pushes for greater growth in order to meet the governor's goal of 3.5 million new units by 2025, there is growing concern that without land-use restrictions, new development will occur in fire-prone and other hazard areas of the county. These concerns are addressed within the 2019 AHMP mitigation strategy.

6.2 PROGESS IN LOCAL MITIGATION EFFORTS

The 2014 AHMP Mitigation Actions Matrix was reviewed by each of the coordinating agencies identified on the matrix in order to determine mitigation action status. Mitigation actions that were identified as not having been implemented or deferred were considered for **Table 5-4**. Mitigation actions that were identified as completed are shown in **Table 6-1.**

In addition, the consultant reviewed the County of Los Angeles Floodplain Management Plan 2018 Progress Report to determine mitigation action status. Flood mitigation actions that were listed as "no progress" were considered for **Table 5-4**. Relevant flood mitigation actions that were listed as "project complete" are shown in **Table 6-1**.

Table 6-1. Completed Local Mitigation Efforts

Coordinating Agency	Project Description
Los Angeles County Department of Coroner	Purchased equipment to set up an off-site mobile morgue. This equipment was incorporated into the business continuity plan in case the main facility is unusable and would help to avoid unnecessary exposure of employees or the public to biological, radiological, or chemical agents.
Los Angeles County Department of Regional Planning	Updated building codes on January 1, 2017.

Table 6-1. Completed Local Mitigation Efforts

Coordinating Agency	Project Description
Los Angeles County Public Works	Continue the seismic upgrade to improve water reliability through earthquake-resistant pipe installation. The work took place on Reseda Boulevard from Roscoe to Strathern; Etiwanda Avenue from Roscoe to Strathern; Cantara Street from Reseda to Etiwanda; and Strathern Street from Reseda to Etiwanda.
Los Angeles County Public Works	In October 2017, the Los Angeles County Public Works mailed 3,551 copies of "Are You Prepared for A Flood?" brochure to property owners and residents in Special Flood Hazard Areas, County Floodways, and possible gaps in floodplain mapping (i.e., areas with possible flood hazards that are not on FEMA or County maps). The County of Los Angeles' National Flood Insurance Program (NFIP) website links were checked and updated. Previously, brochures were distributed to the Malibu, Rosemead, and Castaic Public Libraries. Brochures were distributed to additional public libraries closer to the floodplains including Topanga, Altadena, Duarte, and San Dimas.
Los Angeles County Public Works	In addition to the outreach efforts mentioned in Initiative No. 1 above, the Los Angeles County Public Works mailed 226 copies of CDs containing County of Los Angeles and FEMA publications to all property owners and residents in RL properties and properties in the RL areas.
Los Angeles County Public Works	In December 2017, the Los Angeles County Public Works mailed a letter and outreach materials to owners of critical facilities located in FEMA's-designated Special Flood Hazard Areas. Critical facilities that received outreach materials include schools, hospitals, fire stations, and health care facilities.
Los Angeles County Public Works	County of Los Angeles Office of Emergency Management, Fire Department, Sheriff's Department, and Public Works' Disaster Service Group participated in emergency preparedness events such as Los Angeles County's Preparation throughout this reporting period. Participants at the fair provided attendees with information and resources for preparation, such as the "Are You Prepared for a Flood?", "ALERT LA COUNTY" brochure, "Homeowner's Guide for Flood, Debris, and Erosion Control," and the "Emergency Survival Guide."

6.3 CHANGES IN PRIORITIES

The 2014 AHMP's Mitigation Action Matrix was prioritized using a number ranking system to determine a project's priority. For the 2019 AHMP, mitigation actions were prioritized into two separate groups, which both helped achieve meeting the goal of disaster resiliency. As noted in **Section 5.3**, resilient communities are able to minimize any disaster, making the return to normal life as soon and as effortless as possible. As such, the first part (i.e., first priority) of this goal is to ensure that life-safety needs are addressed as soon as possible. The second part (i.e., second priority) is to implement plans, policies, and programs to reduce current risks and prevent new/future ones.

7 PLAN ADOPTION

Section 6 – Plan Adoption addresses Element E of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans
Element E: Plan Adoption
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5)) E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))

7.1 FORMAL ADOPTION

[To be completed] The 2019 AHMP was formally adopted by the Los Angeles County Board of Supervisors via resolution on [To be completed]. A scanned copy of the resolution is included as **Figure 7-2**. It will also be kept on file with Los Angeles County OEM and additional be sent to Cal OES and FEMA.

ADOPTION RESOLUTION

APPENDIX A – PLANNING PROCESS

From: Stephanie Kim
Sent: Tuesday, August 20, 2019 2:44 PM
To: XXX@monosheriff.org; XXX@ocsd.org; XXX@rivco.org; XXX@ontarioca.gov; XXX@inyocounty.us; XXX@co.imperial.ca.us; XXX@laquintaca.gov; XXX@sbcoem.org; XXX@mono.ca.gov; XXX@lcf.ca.gov; XXX@sa.ocgov.com; XXX@rivco.org; XXX@cbcity.org; XXX@inyocounty.us; XXX@cityofbishop.com; XXX@sandiego.gov; XXX@rivco.org; XXX@octa.net; XXX@sbcsd.org; XXX@sandiego.gov; XXX@octa.net; XXX@rcoe.us; XXX@dgs.ca.gov; XXX@sbcsd.org; XXX@lawa.org; XXX@rivco.org; XXX@lausd.net; XXX@inyocounty.us; XXX@octa.net; XXX@ranchomirageca.gov; XXX@rivco.org; XXX@inyocounty.us; XXX@sbccd.edu; XXX@morongo-nsn.gov; XXX@noaa.gov; XXX@cityofredlands.org; XXX@morongo-nsn.gov; XXX@coachella.org; XXX@ocsd.org; XXX@sbcsd.org; XXX@cityoftemecula.org; XXX@santabarbaraca.gov; XXX@mwdh2o.com; XXX@sbcsd.org; XXX@kerncountyfire.org
Cc: XXX@ceooem.lacounty.gov
Subject: Los Angeles County Hazard Mitigation Plan Update

Dear Stakeholders,

We are reaching out to let you know that the Los Angeles County Office of Emergency Management is in the process of updating its' All-Hazards Mitigation Plan. I'm attaching our public outreach flyer for your information. We will send out an additional email when our draft plan goes out to public comment later this fall. If you have any questions or would like to be part of the plan update process, please contact me!

Emily Montanez

emontanez@ceooem.lacounty.gov

(323) 980-2813

Stephanie Kim
Academic Intern
LA County CEO Office of Emergency Management

2019 County of Los Angeles All-Hazards Mitigation Plan

The Los Angeles County Office of Emergency Management is updating the County's All-Hazards Mitigation Plan! Over the next few months, we will re-assess risks posed by natural disasters and review and revise existing strategies as well as develop new ones to protect life and property future events.

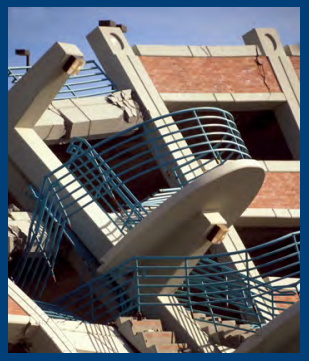
Natural disasters addressed in our plan include: climate change, dam failure, drought, flood, earthquake, landslide, tsunami, and wildfire.

Once our plan is completed and approved by FEMA, the County will be re-eligible to apply for and receive certain types of non-emergency disaster assistance, including funding for mitigation projects identified in our plan.

To learn more about hazard mitigation planning, please visit: **https://www.fema.gov/hazard-mitigation-planning**.

To learn more about our plan and/or participate in our planning process, please visit our website **lacounty.gov/emergency** or our Twitter account **@ReadyLACounty**.







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Plan de Mitigación para Todos los Peligros del Condado de Los Ángeles 2019

¡La Oficina de Manejo de Emergencias del Condado de Los Ángeles está actualizando el Plan de Mitigación para Todos los Peligros del Condado! En los próximos meses, reevaluaremos los riesgos debidos a los desastres naturales y repasaremos y revisaremos las estrategias existentes, y también desarrollaremos otras nuevas para proteger vidas y propiedades antes de que ocurran incidentes futuros.

Los riesgos discutidos en nuestro plan incluyen: cambios climáticos, falla de presas, sequías, inundaciones, terremotos, deslizamientos de tierra, tsunami e incendios forestales.

Una vez que FEMA complete y apruebe nuestro plan, el Condado volverá a ser elegible para solicitar y recibir ciertos tipos de asistencia por desastre que no sea de emergencia, incluyendo la financiación para proyectos de mitigación identificados en nuestro plan.

Para obtener más información sobre la planificación de mitigación de riesgos, por favor visite: **https://www.fema.gov/hazard-mitigation-planning**.

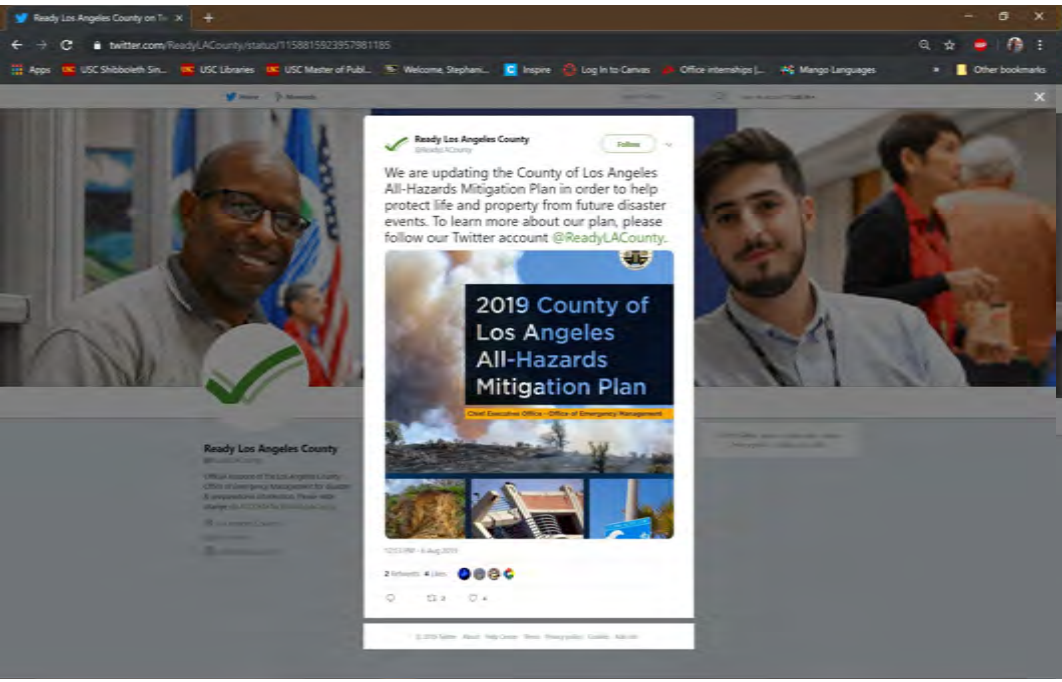
Para obtener más información sobre nuestro plan y / o participar en nuestro proceso de planificación, visite nuestro sitio web **lacounty.gov/emergency** o nuestra cuenta de Twitter **@ReadyLACounty**.

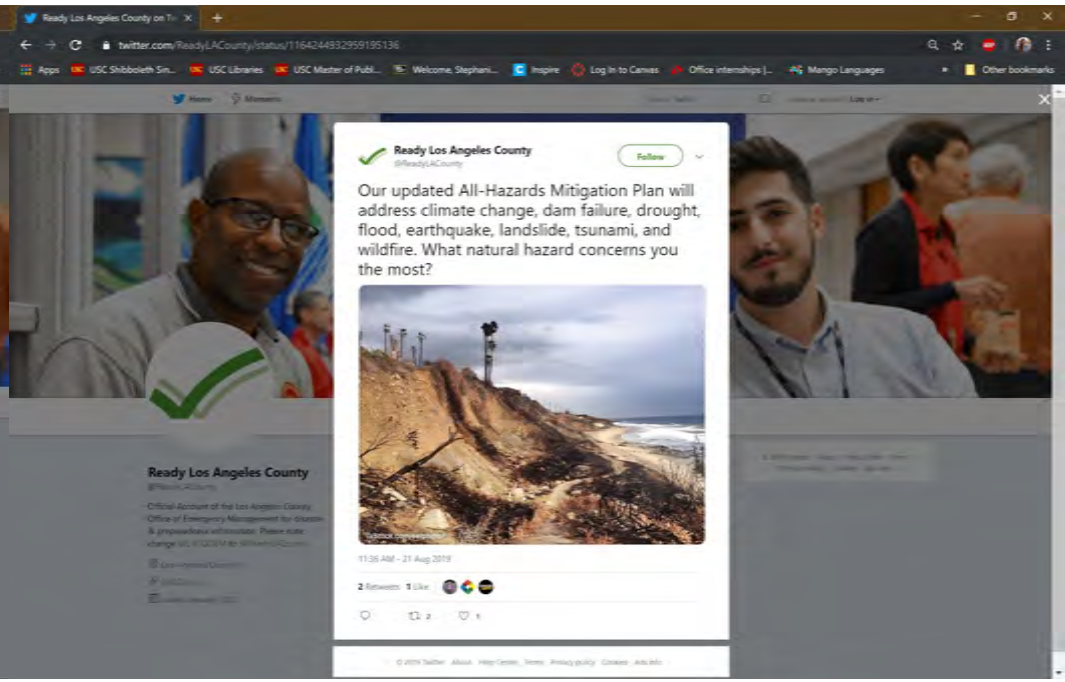


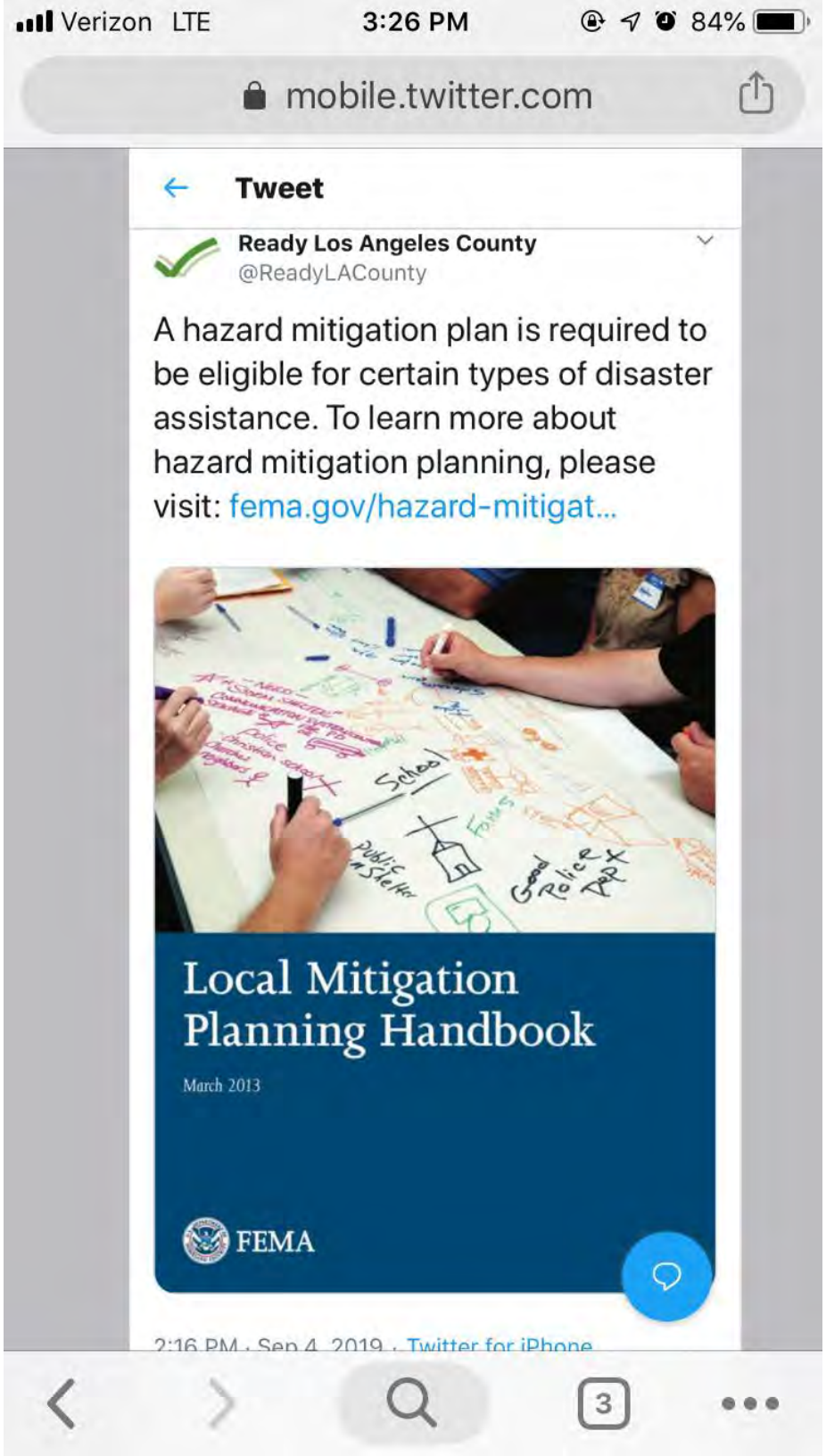




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Ready Los Angeles County
Follow
We are updating the County of Los Angeles All-Hazards Mitigation Plan in order to help protect life and property from future disaster events. To learn more about our plan, please follow our Twitter account @ReadyLACounty.
2019 County of Los Angeles All-Hazards Mitigation Plan
Chief Executive Office - Office of Emergency Management


Ready Los Angeles County
Follow
Our updated All-Hazards Mitigation Plan will address climate change, dam failure, drought, flood, earthquake, landslide, tsunami, and wildfire. What natural hazard concerns you the most?



2019 AHMP - Annual Review Worksheet				
HMP Section	**Questions**	**Yes**	**No**	**Comments**
PLANNING PROCESS	Has your County department/agency (or other type of organization) done any public outreach activities regarding the AHMP or a mitigation project? If yes, please describe.			
	Has your County department/agency (or other type of organization) integrated any of the AHMP's elements into other plans or policies? If yes, please describe.			
HAZARD IDENTIFICATION	Has a disaster occurred in this reporting period that affected your department/agency (or other type of organization)?			
	Do you know of new hazard studies, reports and/or mapping available for Los Angeles County? If so, what are they?			
RISK ASSESSMENT	Does your County department/agency have any new critical assets that should be included in the 2024 AHMP risk assessment?			
	Have there been changes in development trends that could create additional risks?			
MITIGATION STRATEGY	Are there different or additional resources (financial, technical, and human) that are now available for mitigation planning?			
	Should new mitigation actions be added?			

2019 AHMP - Annual Review Worksheet				
HMP Section	**Questions**	**Yes**	**No**	**Comments**
PLANNING PROCESS	Has your County department/agency (or other type of organization) done any public outreach activities regarding the AHMP or a mitigation project? If yes, please describe.			
	Has your County department/agency (or other type of organization) integrated any of the AHMP's elements into other plans or policies? If yes, please describe.			
HAZARD IDENTIFICATION	Has a disaster occurred in this reporting period that affected your department/agency (or other type of organization)?			
	Do you know of new hazard studies, reports and/or mapping available for Los Angeles County? If so, what are they?			
RISK ASSESSMENT	Does your County department/agency have any new critical assets that should be included in the 2024 AHMP risk assessment?			
	Have there been changes in development trends that could create additional risks?			
MITIGATION STRATEGY	Are there different or additional resources (financial, technical, and human) that are now available for mitigation planning?			
	Should new mitigation actions be added?			

2019 AHMP - Mitigation Project Progress Report			
Progress Report Period From (date):		**To (date):**	
Project Title:			
Project ID:			
Description of Project:			
Implementing Department/Agency:			
Supporting Department/Agencies:			
Contact Name:			
Contact E-mail:			
Contact Number:			
Grant/Finance Administrator:			
Total Project Cost:			
Anticipated Cost Overrun/Underrun:			
Date of Project Approval:			
Project Start Date:			
Anticipated Completion Date:			
Summary of Progress of Project for this Reporting Period			
1. What was accomplished during this reporting period?			
2. What obstacles, problems, or delays did the project encounter, if any?			
3. How were the problems resolved?			

APPENDIX B – COMMUNITY PROFILE

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Animal Care & Control	Agoura Animal Care Center
Animal Care & Control	Baldwin Park Animal Care Center
Animal Care & Control	Carson Animal Care Center
Animal Care & Control	Castaic Animal Care Center (Castaic)
Animal Care & Control	Downey Animal Care Center
Animal Care & Control	Lancaster County Animal Care Center
Animal Care & Control	Palmdale Animal Care Center
Fire Department	Bob Hope Airport Fire Department
Fire Department	City of Alhambra Fire Department - Training Facility
Fire Department	City of Alhambra Fire Department Station 71 - Headquarters
Fire Department	City of Alhambra Fire Department Station 72 - Southeast District
Fire Department	City of Alhambra Fire Department Station 73 - Northwest
Fire Department	City of Alhambra Fire Department Station 74 - Southwest
Fire Department	City of Arcadia Fire Department Station 105
Fire Department	City of Arcadia Fire Department Station 106 - Headquarters
Fire Department	City of Arcadia Fire Department Station 107
Fire Department	City of Avalon Fire Department
Fire Department	City of Beverly Hills Fire Department Station 1 - Headquarters
Fire Department	City of Beverly Hills Fire Department Station 2
Fire Department	City of Beverly Hills Fire Department Station 3
Fire Department	City of Burbank Fire Department Station 11 - Headquarters
Fire Department	City of Burbank Fire Department Station 12
Fire Department	City of Burbank Fire Department Station 13
Fire Department	City of Burbank Fire Department Station 14
Fire Department	City of Burbank Fire Department Station 15
Fire Department	City of Burbank Fire Department Station 16
Fire Department	City of Compton Fire Department Station 1 - Headquarters
Fire Department	City of Compton Fire Department Station 2
Fire Department	City of Compton Fire Department Station 3
Fire Department	City of Compton Fire Department Station 4
Fire Department	City of Downey Fire Department Station 1 - Headquarters
Fire Department	City of Downey Fire Department Station 2
Fire Department	City of Downey Fire Department Station 3
Fire Department	City of Downey Fire Department Station 4
Fire Department	City of Glendale Fire Department Station 21
Fire Department	City of Glendale Fire Department Station 22
Fire Department	City of Glendale Fire Department Station 23
Fire Department	City of Glendale Fire Department Station 24
Fire Department	City of Glendale Fire Department Station 25
Fire Department	City of Glendale Fire Department Station 26
Fire Department	City of Glendale Fire Department Station 27
Fire Department	City of Glendale Fire Department Station 28
Fire Department	City of Long Beach Fire Department - Beach Operations
Fire Department	City of Long Beach Fire Department - Headquarters
Fire Department	City of Long Beach Fire Department Station 1
Fire Department	City of Long Beach Fire Department Station 10
Fire Department	City of Long Beach Fire Department Station 11
Fire Department	City of Long Beach Fire Department Station 12
Fire Department	City of Long Beach Fire Department Station 13
Fire Department	City of Long Beach Fire Department Station 14
Fire Department	City of Long Beach Fire Department Station 15
Fire Department	City of Long Beach Fire Department Station 16
Fire Department	City of Long Beach Fire Department Station 17
Fire Department	City of Long Beach Fire Department Station 18
Fire Department	City of Long Beach Fire Department Station 19

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Fire Department	City of Long Beach Fire Department Station 2
Fire Department	City of Long Beach Fire Department Station 20
Fire Department	City of Long Beach Fire Department Station 21
Fire Department	City of Long Beach Fire Department Station 22
Fire Department	City of Long Beach Fire Department Station 24
Fire Department	City of Long Beach Fire Department Station 3
Fire Department	City of Long Beach Fire Department Station 4
Fire Department	City of Long Beach Fire Department Station 5
Fire Department	City of Long Beach Fire Department Station 6
Fire Department	City of Long Beach Fire Department Station 7
Fire Department	City of Long Beach Fire Department Station 8
Fire Department	City of Long Beach Fire Department Station 9
Fire Department	City of Los Angeles Fire Department Station 1
Fire Department	City of Los Angeles Fire Department Station 10
Fire Department	City of Los Angeles Fire Department Station 108
Fire Department	City of Los Angeles Fire Department Station 109
Fire Department	City of Los Angeles Fire Department Station 11
Fire Department	City of Los Angeles Fire Department Station 12
Fire Department	City of Los Angeles Fire Department Station 13
Fire Department	City of Los Angeles Fire Department Station 14
Fire Department	City of Los Angeles Fire Department Station 15
Fire Department	City of Los Angeles Fire Department Station 16
Fire Department	City of Los Angeles Fire Department Station 17
Fire Department	City of Los Angeles Fire Department Station 19
Fire Department	City of Los Angeles Fire Department Station 2
Fire Department	City of Los Angeles Fire Department Station 20
Fire Department	City of Los Angeles Fire Department Station 21
Fire Department	City of Los Angeles Fire Department Station 25
Fire Department	City of Los Angeles Fire Department Station 26
Fire Department	City of Los Angeles Fire Department Station 27
Fire Department	City of Los Angeles Fire Department Station 29
Fire Department	City of Los Angeles Fire Department Station 3
Fire Department	City of Los Angeles Fire Department Station 33
Fire Department	City of Los Angeles Fire Department Station 34
Fire Department	City of Los Angeles Fire Department Station 35
Fire Department	City of Los Angeles Fire Department Station 37
Fire Department	City of Los Angeles Fire Department Station 4
Fire Department	City of Los Angeles Fire Department Station 41
Fire Department	City of Los Angeles Fire Department Station 42
Fire Department	City of Los Angeles Fire Department Station 43
Fire Department	City of Los Angeles Fire Department Station 44
Fire Department	City of Los Angeles Fire Department Station 46
Fire Department	City of Los Angeles Fire Department Station 47
Fire Department	City of Los Angeles Fire Department Station 5
Fire Department	City of Los Angeles Fire Department Station 50
Fire Department	City of Los Angeles Fire Department Station 51
Fire Department	City of Los Angeles Fire Department Station 52
Fire Department	City of Los Angeles Fire Department Station 56
Fire Department	City of Los Angeles Fire Department Station 57
Fire Department	City of Los Angeles Fire Department Station 58
Fire Department	City of Los Angeles Fire Department Station 59
Fire Department	City of Los Angeles Fire Department Station 6
Fire Department	City of Los Angeles Fire Department Station 61
Fire Department	City of Los Angeles Fire Department Station 62
Fire Department	City of Los Angeles Fire Department Station 64

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Fire Department	City of Los Angeles Fire Department Station 65
Fire Department	City of Los Angeles Fire Department Station 66
Fire Department	City of Los Angeles Fire Department Station 67
Fire Department	City of Los Angeles Fire Department Station 68
Fire Department	City of Los Angeles Fire Department Station 7
Fire Department	City of Los Angeles Fire Department Station 71
Fire Department	City of Los Angeles Fire Department Station 76
Fire Department	City of Los Angeles Fire Department Station 80
Fire Department	City of Los Angeles Fire Department Station 82
Fire Department	City of Los Angeles Fire Department Station 9
Fire Department	City of Los Angeles Fire Department Station 92
Fire Department	City of Los Angeles Fire Department Station 94
Fire Department	City of Los Angeles Fire Department Station 95
Fire Department	City of Los Angeles Fire Department Station 97
Fire Department	City of Los Angeles Fire Department Station 99
Fire Department	City of Monterey Park Fire Department Station 61 - Headquarters
Fire Department	City of Monterey Park Fire Department Station 62
Fire Department	City of Monterey Park Fire Department Station 63
Fire Department	City of Santa Fe Springs Fire Department Station 1 - Headquarters
Fire Department	City of Santa Fe Springs Fire Department Station 2
Fire Department	City of Santa Fe Springs Fire Department Station 3
Fire Department	City of Santa Fe Springs Fire Department Station 4
Fire Department	City of Santa Monica Fire Department - Training Facility
Fire Department	City of Santa Monica Fire Department Station 1 - Headquarters
Fire Department	City of Santa Monica Fire Department Station 2
Fire Department	City of Santa Monica Fire Department Station 3
Fire Department	City of Santa Monica Fire Department Station 5
Fire Department	City of Vernon Fire Department Station 2
Fire Department	City of Vernon Fire Department Station 3
Fire Department	City of Vernon Fire Department Station 4
Fire Department	City of West Covina Fire Department Station 1
Fire Department	City of West Covina Fire Department Station 2
Fire Department	City of West Covina Fire Department Station 3
Fire Department	City of West Covina Fire Department Station 4
Fire Department	City of West Covina Fire Department Station 5
Fire Department	Culver City Fire Department Station 1 - Headquarters
Fire Department	Culver City Fire Department Station 2
Fire Department	Culver City Fire Department Station 3
Fire Department	La Verne Fire Department Station 1 - Headquarters
Fire Department	La Verne Fire Department Station 2
Fire Department	Los Angeles County Fire Department - HQ/Heliport/Training Facility
Fire Department	Los Angeles County Fire Department Station 1
Fire Department	Los Angeles County Fire Department Station 10
Fire Department	Los Angeles County Fire Department Station 101
Fire Department	Los Angeles County Fire Department Station 102
Fire Department	Los Angeles County Fire Department Station 103
Fire Department	Los Angeles County Fire Department Station 104
Fire Department	Los Angeles County Fire Department Station 105
Fire Department	Los Angeles County Fire Department Station 106
Fire Department	Los Angeles County Fire Department Station 107
Fire Department	Los Angeles County Fire Department Station 11
Fire Department	Los Angeles County Fire Department Station 110
Fire Department	Los Angeles County Fire Department Station 111
Fire Department	Los Angeles County Fire Department Station 112
Fire Department	Los Angeles County Fire Department Station 114

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Fire Department	Los Angeles County Fire Department Station 115
Fire Department	Los Angeles County Fire Department Station 116
Fire Department	Los Angeles County Fire Department Station 117
Fire Department	Los Angeles County Fire Department Station 118
Fire Department	Los Angeles County Fire Department Station 119
Fire Department	Los Angeles County Fire Department Station 12
Fire Department	Los Angeles County Fire Department Station 120
Fire Department	Los Angeles County Fire Department Station 121
Fire Department	Los Angeles County Fire Department Station 122
Fire Department	Los Angeles County Fire Department Station 123
Fire Department	Los Angeles County Fire Department Station 124
Fire Department	Los Angeles County Fire Department Station 125
Fire Department	Los Angeles County Fire Department Station 126
Fire Department	Los Angeles County Fire Department Station 127
Fire Department	Los Angeles County Fire Department Station 129
Fire Department	Los Angeles County Fire Department Station 130
Fire Department	Los Angeles County Fire Department Station 131
Fire Department	Los Angeles County Fire Department Station 132
Fire Department	Los Angeles County Fire Department Station 134
Fire Department	Los Angeles County Fire Department Station 135
Fire Department	Los Angeles County Fire Department Station 14
Fire Department	Los Angeles County Fire Department Station 140
Fire Department	Los Angeles County Fire Department Station 141
Fire Department	Los Angeles County Fire Department Station 144
Fire Department	Los Angeles County Fire Department Station 145
Fire Department	Los Angeles County Fire Department Station 146
Fire Department	Los Angeles County Fire Department Station 147
Fire Department	Los Angeles County Fire Department Station 148
Fire Department	Los Angeles County Fire Department Station 149
Fire Department	Los Angeles County Fire Department Station 15
Fire Department	Los Angeles County Fire Department Station 151
Fire Department	Los Angeles County Fire Department Station 152
Fire Department	Los Angeles County Fire Department Station 153
Fire Department	Los Angeles County Fire Department Station 154
Fire Department	Los Angeles County Fire Department Station 155
Fire Department	Los Angeles County Fire Department Station 156
Fire Department	Los Angeles County Fire Department Station 157
Fire Department	Los Angeles County Fire Department Station 158
Fire Department	Los Angeles County Fire Department Station 159
Fire Department	Los Angeles County Fire Department Station 16
Fire Department	Los Angeles County Fire Department Station 160
Fire Department	Los Angeles County Fire Department Station 161
Fire Department	Los Angeles County Fire Department Station 162
Fire Department	Los Angeles County Fire Department Station 163
Fire Department	Los Angeles County Fire Department Station 164
Fire Department	Los Angeles County Fire Department Station 165
Fire Department	Los Angeles County Fire Department Station 166
Fire Department	Los Angeles County Fire Department Station 167
Fire Department	Los Angeles County Fire Department Station 168
Fire Department	Los Angeles County Fire Department Station 169
Fire Department	Los Angeles County Fire Department Station 17
Fire Department	Los Angeles County Fire Department Station 170
Fire Department	Los Angeles County Fire Department Station 171
Fire Department	Los Angeles County Fire Department Station 172
Fire Department	Los Angeles County Fire Department Station 173

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Fire Department	Los Angeles County Fire Department Station 18
Fire Department	Los Angeles County Fire Department Station 181
Fire Department	Los Angeles County Fire Department Station 182
Fire Department	Los Angeles County Fire Department Station 183
Fire Department	Los Angeles County Fire Department Station 184
Fire Department	Los Angeles County Fire Department Station 185
Fire Department	Los Angeles County Fire Department Station 186
Fire Department	Los Angeles County Fire Department Station 187
Fire Department	Los Angeles County Fire Department Station 188
Fire Department	Los Angeles County Fire Department Station 19
Fire Department	Los Angeles County Fire Department Station 2
Fire Department	Los Angeles County Fire Department Station 20
Fire Department	Los Angeles County Fire Department Station 21
Fire Department	Los Angeles County Fire Department Station 22
Fire Department	Los Angeles County Fire Department Station 23
Fire Department	Los Angeles County Fire Department Station 24
Fire Department	Los Angeles County Fire Department Station 25
Fire Department	Los Angeles County Fire Department Station 26
Fire Department	Los Angeles County Fire Department Station 27
Fire Department	Los Angeles County Fire Department Station 28
Fire Department	Los Angeles County Fire Department Station 29
Fire Department	Los Angeles County Fire Department Station 3
Fire Department	Los Angeles County Fire Department Station 30
Fire Department	Los Angeles County Fire Department Station 31
Fire Department	Los Angeles County Fire Department Station 32
Fire Department	Los Angeles County Fire Department Station 33
Fire Department	Los Angeles County Fire Department Station 34
Fire Department	Los Angeles County Fire Department Station 35
Fire Department	Los Angeles County Fire Department Station 36
Fire Department	Los Angeles County Fire Department Station 37
Fire Department	Los Angeles County Fire Department Station 38
Fire Department	Los Angeles County Fire Department Station 39
Fire Department	Los Angeles County Fire Department Station 4
Fire Department	Los Angeles County Fire Department Station 40
Fire Department	Los Angeles County Fire Department Station 41
Fire Department	Los Angeles County Fire Department Station 42
Fire Department	Los Angeles County Fire Department Station 43
Fire Department	Los Angeles County Fire Department Station 44
Fire Department	Los Angeles County Fire Department Station 45
Fire Department	Los Angeles County Fire Department Station 47
Fire Department	Los Angeles County Fire Department Station 48
Fire Department	Los Angeles County Fire Department Station 49
Fire Department	Los Angeles County Fire Department Station 5
Fire Department	Los Angeles County Fire Department Station 50
Fire Department	Los Angeles County Fire Department Station 51
Fire Department	Los Angeles County Fire Department Station 53
Fire Department	Los Angeles County Fire Department Station 54
Fire Department	Los Angeles County Fire Department Station 55
Fire Department	Los Angeles County Fire Department Station 56
Fire Department	Los Angeles County Fire Department Station 57
Fire Department	Los Angeles County Fire Department Station 58
Fire Department	Los Angeles County Fire Department Station 59
Fire Department	Los Angeles County Fire Department Station 6
Fire Department	Los Angeles County Fire Department Station 60
Fire Department	Los Angeles County Fire Department Station 61

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Fire Department	Los Angeles County Fire Department Station 62
Fire Department	Los Angeles County Fire Department Station 63
Fire Department	Los Angeles County Fire Department Station 64
Fire Department	Los Angeles County Fire Department Station 65
Fire Department	Los Angeles County Fire Department Station 66
Fire Department	Los Angeles County Fire Department Station 67
Fire Department	Los Angeles County Fire Department Station 68
Fire Department	Los Angeles County Fire Department Station 69
Fire Department	Los Angeles County Fire Department Station 7
Fire Department	Los Angeles County Fire Department Station 70
Fire Department	Los Angeles County Fire Department Station 71
Fire Department	Los Angeles County Fire Department Station 72
Fire Department	Los Angeles County Fire Department Station 73
Fire Department	Los Angeles County Fire Department Station 74
Fire Department	Los Angeles County Fire Department Station 75
Fire Department	Los Angeles County Fire Department Station 76
Fire Department	Los Angeles County Fire Department Station 77
Fire Department	Los Angeles County Fire Department Station 78
Fire Department	Los Angeles County Fire Department Station 79
Fire Department	Los Angeles County Fire Department Station 8
Fire Department	Los Angeles County Fire Department Station 80
Fire Department	Los Angeles County Fire Department Station 81
Fire Department	Los Angeles County Fire Department Station 82
Fire Department	Los Angeles County Fire Department Station 83
Fire Department	Los Angeles County Fire Department Station 84
Fire Department	Los Angeles County Fire Department Station 85
Fire Department	Los Angeles County Fire Department Station 86
Fire Department	Los Angeles County Fire Department Station 87
Fire Department	Los Angeles County Fire Department Station 88
Fire Department	Los Angeles County Fire Department Station 89
Fire Department	Los Angeles County Fire Department Station 90
Fire Department	Los Angeles County Fire Department Station 91
Fire Department	Los Angeles County Fire Department Station 92
Fire Department	Los Angeles County Fire Department Station 94
Fire Department	Los Angeles County Fire Department Station 95
Fire Department	Los Angeles County Fire Department Station 96
Fire Department	Los Angeles County Fire Department Station 97
Fire Department	Los Angeles County Fire Department Station 98
Fire Department	Los Angeles County Fire Department Station 99
Fire Department	Manhattan Beach Fire Department Station 1 - Headquarters
Fire Department	Manhattan Beach Fire Department Station 2
Fire Department	Montebello Fire Department Station 1 - Headquarters
Fire Department	Montebello Fire Department Station 2
Fire Department	Montebello Fire Department Station 3
Fire Department	Pasadena Fire Department Station 31
Fire Department	Pasadena Fire Department Station 32
Fire Department	Pasadena Fire Department Station 33
Fire Department	Pasadena Fire Department Station 34
Fire Department	Pasadena Fire Department Station 36
Fire Department	Pasadena Fire Department Station 37
Fire Department	Pasadena Fire Department Station 38
Fire Department	Pasadena Fire Department Station 39
Fire Department	Redondo Beach Fire Department Station 1 - Headquarters
Fire Department	Redondo Beach Fire Department Station 2
Fire Department	Redondo Beach Fire Department Station 3

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Fire Department	San Gabriel Fire Department Station 1 - Headquarters
Fire Department	San Gabriel Fire Department Station 2
Fire Department	San Marino Fire Department
Fire Department	Sierra Madre Volunteer Fire Department
Fire Department	South Pasadena Fire Department
Fire Department	The City of El Segundo Fire Department Station 1 - Headquarters
Fire Department	The City of El Segundo Fire Department Station 2
Fire Department	Torrance Fire Department Fire Station 1 - Headquarters
Fire Department	Torrance Fire Department Fire Station 2
Fire Department	Torrance Fire Department Fire Station 3
Fire Department	Torrance Fire Department Fire Station 4
Fire Department	Torrance Fire Department Fire Station 5
Fire Department	Torrance Fire Department Fire Station 6
Fire Department	Vernon Fire Department
Health Services	Antelope Valley Health Center
Health Services	Bellflower Health Center
Health Services	Central Public Health Center
Health Services	Curtis R. Tucker Health Center
Health Services	Dollarhide Health Center
Health Services	East Los Angeles Health Center
Health Services	East San Gabriel Valley Health Center
Health Services	Edward R. Roybal Comprehensive Helath Center
Health Services	El Monte Comprehensive Health Center
Health Services	Glendale Health Center
Health Services	H. Claude Hudson Comprehensive Health Center
Health Services	Harbor-UCLA Medical Center
Health Services	High Desert Regional Health Center
Health Services	Hubert H. Humphrey Comprehensive Health Center
Health Services	La Puente Health Center
Health Services	LAC + USC Medical Center
Health Services	Lake Los Angeles Community Clinic
Health Services	Littlerock Community Clinic
Health Services	Long Beach Comprehensive Health Center
Health Services	Martin Luther King, Jr. Outpatient Center
Health Services	Mid Valley Comprehensive Health Center
Health Services	Olive View-UCLA Medical Center
Health Services	Rancho Los Amigos National Rehabilitation Center
Health Services	San Fernando Health Center
Health Services	South Valley Health Center
Health Services	Torrance Health Center
Health Services	Vaughn School Based Health Center
Health Services	West Valley Health Center
Health Services	Wilmington Health Center
Library	A C Bilbrew Library
Library	Acton Agua Dulce Library
Library	Agoura Hills Library
Library	Alondra Library
Library	Angelo M. Iacoboni Library
Library	Anthony Quinn Library
Library	Artesia Library
Library	Avalon Library
Library	Baldwin Park Library
Library	Bell Gardens Library
Library	Bell Library
Library	Carson Library

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Library	Castaic Library
Library	Charter Oak Library
Library	Chet Holifield Library
Library	City Terrace Library
Library	Claremont Helen Renwick Library
Library	Clifton M. Brakensiek Library
Library	Compton Library
Library	Cudahy Library
Library	Culver City Julian Dixon Library
Library	Diamond Bar Library
Library	Dr. Martin Luther King, Jr. Library
Library	Duarte Library
Library	East Los Angeles Library
Library	East Rancho Dominguez Library
Library	El Camino Real Library
Library	El Monte Library
Library	Florence Express Library
Library	Gardena Mayme Dear Library
Library	George Nye Jr. Library
Library	Graham Library
Library	Hacienda Heights Library
Library	Hawaiian Gardens Library
Library	Hawthorne Library
Library	Hermosa Beach Library
Library	Hollydale Library
Library	Huntington Park Library
Library	La Canada Flintridge Library
Library	La Crescenta Library
Library	La Mirada Library
Library	La Puente Library
Library	La Verne Library
Library	Lake Los Angeles Library
Library	Lancaster Library
Library	Lawndale Library
Library	Leland R. Weaver Library
Library	Lennox Library
Library	Littlerock Library
Library	Live Oak Library
Library	Lloyd Taber-Marina del Rey Library
Library	Lomita Library
Library	Los Nietos Library
Library	Lynwood Library
Library	Malibu Library
Library	Manhattan Beach Library
Library	Masao W. Satow Library
Library	Maywood Cesar Chavez Library
Library	Montebello Library
Library	Norwalk Library
Library	Norwood Library
Library	Paramount Library
Library	Pico Rivera Library
Library	Quartz Hill Library
Library	Rivera Library
Library	Rosemead Library
Library	Rowland Heights Library

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Library	San Dimas Library
Library	San Fernando Library
Library	San Gabriel Library
Library	Sorensen Library
Library	South El Monte Library
Library	South Whittier Library
Library	Stevenson Ranch Library
Library	Sunkist Library
Library	Temple City Library
Library	Topanga Library
Library	View Park Bebe Moore Campbell Library
Library	Walnut Library
Library	West Covina Library
Library	West Hollywood Library
Library	Westlake Village Library
Library	Willowbrook Library
Library	Wiseburn Library
Library	Woodcrest Library
Los Angeles County Museum of Arts & Museum of Natural History	La Brea Tarpits
Los Angeles County Museum of Arts & Museum of Natural History	Los Angeles County Museum of Art
Los Angeles County Museum of Arts & Museum of Natural History	Natural History Museum
Los Angeles County Museum of Arts & Museum of Natural History	William S. Hart Museum
Office of Education	Afflerbaugh-Paige Camp
Office of Education	Alma Fuerte Public
Office of Education	Animo City of Champions Charter High
Office of Education	Aspire Antonio Maria Lugo Academy
Office of Education	Aspire Ollin University Preparatory Academy
Office of Education	Central Juvenile Hall
Office of Education	Da Vinci RISE High
Office of Education	Environmental Charter Middle
Office of Education	Environmental Charter Middle - Inglewood
Office of Education	Intellectual Virtues Academy
Office of Education	International Polytechnic High
Office of Education	Jardin de la Infancia
Office of Education	Kirby, Dorothy Camp
Office of Education	L.A. County High School for the Arts
Office of Education	LA's Promise Charter High #1
Office of Education	LA's Promise Charter Middle #1
Office of Education	Lashon Academy
Office of Education	Los Angeles County Special Education
Office of Education	Los Angeles International Charter High
Office of Education	Los Padrinos Juvenile Hall
Office of Education	Magnolia Science Academy
Office of Education	Magnolia Science Academy 2
Office of Education	Magnolia Science Academy 3
Office of Education	Magnolia Science Academy 5
Office of Education	McNair Camp
Office of Education	Nidorf, Barry J.
Office of Education	North Valley Military Institute College Preparatory Academy
Office of Education	Odyssey Charter
Office of Education	Onizuka Camp

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Office of Education	Optimist Charter
Office of Education	Phoenix Academy Residential Education Center
Office of Education	Renaissance County Community
Office of Education	Road to Success Academy at Campus Kilpatrick
Office of Education	Rockey, Glenn Camp
Office of Education	Scott, Joseph Camp
Office of Education	Soleil Academy Charter
Office of Education	Valiente College Preparatory Charter
Other (Office)	1000 S. Fremont Ave.
Other (Office)	1055 Wilshire Blvd.
Other (Office)	1100 North Eastern Ave.
Other (Office)	1104 N. Mission Rd.
Other (Office)	12300 Lower Azusa Rd.
Other (Office)	12400 Imperial Highway
Other (Office)	12860 Crossroads Parkway South
Other (Office)	1320 North Eastern Ave.
Other (Office)	13837 Fiji Way
Other (Office)	1816 S. Figueroa
Other (Office)	210 W. Temple St.
Other (Office)	211 W. Temple St.
Other (Office)	313 N Figueroa St.
Other (Office)	3175 West Sixth St.
Other (Office)	320 West Temple St.
Other (Office)	425 Shatto Place
Other (Office)	550 South Vermont Ave.
Other (Office)	5770 S. Eastern Ave.
Other (Office)	5898 Cherry Ave.
Other (Office)	5905 Wilshire Blvd.
Other (Office)	700 W. Main St.
Other (Office)	7400 East Imperial Highway
Other (Office)	900 South Fremont Ave.
Other (Office)	Kenneth Hahn Hall of Administration
Parks & Recreation	Acton Park
Parks & Recreation	Adventure Park
Parks & Recreation	Adventure Park
Parks & Recreation	Allen J. Martin Park
Parks & Recreation	Alondra Community Regional Park
Parks & Recreation	Alondra Community Regional Park
Parks & Recreation	Amelia Mayberry Park
Parks & Recreation	Amelia Mayberry Park
Parks & Recreation	Amigo Park
Parks & Recreation	Arcadia Community Regional Park
Parks & Recreation	Arcadia Community Regional Park
Parks & Recreation	Athens Park
Parks & Recreation	Athens Park
Parks & Recreation	Bassett Park
Parks & Recreation	Bassett Park
Parks & Recreation	Bassett Park
Parks & Recreation	Belvedere Community Regional Park
Parks & Recreation	Belvedere Community Regional Park
Parks & Recreation	Bodger Park
Parks & Recreation	Carolyn Rosas Park
Parks & Recreation	Castaic Regional Sports Complex
Parks & Recreation	Castaic Regional Sports Complex
Parks & Recreation	Charles S. Farnsworth Park

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Parks & Recreation	Charles S. Farnsworth Park
Parks & Recreation	Charles S. Farnsworth Park
Parks & Recreation	Charles S. Farnsworth Park
Parks & Recreation	Charter Oak Park
Parks & Recreation	City Terrace Park
Parks & Recreation	City Terrace Park
Parks & Recreation	Col. Leon H. Washington Park
Parks & Recreation	Col. Leon H. Washington Park
Parks & Recreation	Crescenta Valley Community Regional Park
Parks & Recreation	Crescenta Valley Community Regional Park
Parks & Recreation	Dalton Park
Parks & Recreation	Del Aire Park
Parks & Recreation	Del Aire Park
Parks & Recreation	Devil's Punchbowl Natural Area and Nature Center
Parks & Recreation	Dexter Park
Parks & Recreation	Dexter Park
Parks & Recreation	Don Knabe Community Regional Park
Parks & Recreation	Don Knabe Community Regional Park
Parks & Recreation	Don Knabe Community Regional Park
Parks & Recreation	East Rancho Dominguez Park
Parks & Recreation	East Rancho Dominguez Park
Parks & Recreation	East Rancho Dominguez Park
Parks & Recreation	El Cariso Community Regional Park
Parks & Recreation	El Cariso Community Regional Park
Parks & Recreation	El Cariso Community Regional Park
Parks & Recreation	Enterprise Park
Parks & Recreation	Eugene A. Obregon Park
Parks & Recreation	Eugene A. Obregon Park
Parks & Recreation	Franklin D. Roosevelt Park
Parks & Recreation	Franklin D. Roosevelt Park
Parks & Recreation	George Lane Park
Parks & Recreation	George Lane Park
Parks & Recreation	George Washington Carver Park
Parks & Recreation	Hacienda Heights Community and Rec Center
Parks & Recreation	Hacienda Heights Community and Rec Center
Parks & Recreation	Hacienda Heights Community and Rec Center
Parks & Recreation	Helen Keller Park
Parks & Recreation	Hollywood Bowl
Parks & Recreation	Jackie Robinson Park
Parks & Recreation	Jackie Robinson Park
Parks & Recreation	Jesse Owens Community Regional Park
Parks & Recreation	Jesse Owens Community Regional Park
Parks & Recreation	John Anson Ford Amphitheatre
Parks & Recreation	John Anson Ford Amphitheatre
Parks & Recreation	Kenneth Hahn State Recreation Area
Parks & Recreation	Ladera Park
Parks & Recreation	Ladera Park
Parks & Recreation	Ladera Park
Parks & Recreation	Lennox Park
Parks & Recreation	Lennox Park
Parks & Recreation	Lennox Park
Parks & Recreation	Loma Alta Park
Parks & Recreation	Loma Alta Park
Parks & Recreation	Los Angeles County Arboretum and Botanic Garden
Parks & Recreation	Manzanita Park

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Parks & Recreation	Mary M. Bethune Park
Parks & Recreation	Mary M. Bethune Park
Parks & Recreation	Mona Park
Parks & Recreation	Mona Park
Parks & Recreation	Pamela County Park
Parks & Recreation	Pamela County Park
Parks & Recreation	Pathfinder Community Regional Park
Parks & Recreation	Pearblossom County Park
Parks & Recreation	Peter F Schabarum Regional County Park
Parks & Recreation	Rimgrove Park
Parks & Recreation	Rowland Heights Park
Parks & Recreation	Roy Campanella Park
Parks & Recreation	Ruben F Salazar Park
Parks & Recreation	Ruben F Salazar Park
Parks & Recreation	Ruben F Salazar Park
Parks & Recreation	San Angelo Park
Parks & Recreation	San Fernando Recreation Park and Aquatic Center
Parks & Recreation	Saybrook Park
Parks & Recreation	Sorensen Park
Parks & Recreation	South Coast Botanic Garden
Parks & Recreation	Stephen Sorensen Park
Parks & Recreation	Sunshine Park
Parks & Recreation	Ted Watkins Memorial Park
Parks & Recreation	Ted Watkins Memorial Park
Parks & Recreation	Tesoro Adobe Historic Park
Parks & Recreation	Val Verde Community Regional Park
Parks & Recreation	Val Verde Community Regional Park
Parks & Recreation	Valleydale Park
Parks & Recreation	Valleydale Park
Parks & Recreation	Vasquez Rocks Natural Area and Nature Center
Parks & Recreation	Veterans Memorial Community Regional Park
Parks & Recreation	Victoria Community Regional Park
Parks & Recreation	Victoria Community Regional Park
Parks & Recreation	Walnut Nature Park
Parks & Recreation	Whittier Narrows Recreation Area
Parks & Recreation	William S. Hart Regional Park
Parks & Recreation	William Steinmetz Park
Parks & Recreation	William Steinmetz Park
Parks & Recreation	William Steinmetz Park
Public Health	Antelope Valley Health Center
Public Health	Central Public Health Center
Public Health	Curtis R. Tucker Health Center
Public Health	Glendale Health Center
Public Health	Hollywood/Wilshire Public Health Center
Public Health	Martin Luther King, Jr. Center for Public Health
Public Health	Monrovia Public Health Center
Public Health	North Hollywood Public Health Center
Public Health	Pacoima Public Health Center
Public Health	Pomona Public Health Center
Public Health	Ruth-Temple Public Health Center
Public Health	Simms/Mann Health and Wellness Center
Public Health	Torrance Public Health Center
Public Health	Whittier Public Health Center
Public Works	Big Dalton Dam
Public Works	Big Tujunga Dam

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Public Works	Brackett Field Airport
Public Works	Cogswell Dam
Public Works	Compton/Woodley Airport
Public Works	Devil's Gate Dam
Public Works	Eaton Wash Dam
Public Works	General Wm. J. Fox Airfield
Public Works	Live Oak Dam
Public Works	Morris Dam
Public Works	Pacoima Dam
Public Works	Puddingstone Dam
Public Works	Puddingstone Diversion Dam
Public Works	PW Headquarters Building
Public Works	PW ITD – Mount Wilson Radio Antenna Tower
Public Works	PW ITD – Mount Wilson Radio Facility Bldg.
Public Works	PW OSD - Eaton Yard – Maintenance Office
Public Works	PW RMD – 518-B Maintenance Yard
Public Works	PW RMD – Baldwin Park Maintenance Yard
Public Works	PW RMD - Div 446 Maintenance Yard
Public Works	PW RMD – Div. #116 Maintenance Yard
Public Works	PW RMD – Div. #141/241 Maintenance Yard
Public Works	PW RMD – Div. #142 Maintenance Yard
Public Works	PW RMD – Div. #232 Maintenance Yard
Public Works	PW RMD – Div. #336 Maint. Yd.
Public Works	PW RMD – Div. #339/539 Agoura Maintenance Yard
Public Works	PW RMD – Div. #417 Maintenance Yard
Public Works	PW RMD – Div. #446 Sub Maintenance Yard
Public Works	PW RMD – Div. #518 Maintenance Yard
Public Works	PW RMD – Div. #519 Maintenance Yard
Public Works	PW RMD – Div. #523 Maintenance Yard
Public Works	PW RMD – Div. #524 Maintenance Yard
Public Works	PW RMD – Div. #526 Maint. Yd.
Public Works	PW RMD – Div. #551 Maintenance Yard
Public Works	PW RMD – Div. #555 Maintenance Yard
Public Works	PW RMD – Div. #558 Maint. Yard
Public Works	PW RMD – Div. #558a Jackson Lake Maintenance Yd.
Public Works	PW RMD – Div. #559b Maintenance Yard
Public Works	PW RMD - Lower Central Yard – Division Administration
Public Works	PW RMD – Maint. District 3 Yard
Public Works	PW RMD – Maintenance District No.4 Yard
Public Works	PW RMD – Palmdale Maintenance Dist. No. 5 Bldg. Yard
Public Works	PW RMD - Upper Central Yard
Public Works	PW RMD – Van Pelt Bridge Maintenance Yard
Public Works	PW SMD - 132ND Street
Public Works	PW SMD - 213TH Street
Public Works	PW SMD - AGAVE
Public Works	PW SMD - Balfour
Public Works	PW SMD - Bradhurst
Public Works	PW SMD - Broadway
Public Works	PW SMD - CAPALLERO
Public Works	PW SMD - Centinela
Public Works	PW SMD – Central Yard
Public Works	PW SMD - Commerce Center Drive
Public Works	PW SMD - Davids Road
Public Works	PW SMD – East Yard
Public Works	PW SMD - Heatherfield

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Public Works	PW SMD – Lake Hughes
Public Works	PW SMD - Lake Hughes - Newvale
Public Works	PW SMD - Lake Hughes - Trail K
Public Works	PW SMD - Lawndale
Public Works	PW SMD - LOWRIDGE
Public Works	PW SMD – Malibu Mesa WWTP
Public Works	PW SMD – Malibu TP
Public Works	PW SMD - Marina Del Rey
Public Works	PW SMD - Maybrook
Public Works	PW SMD - Muscatel
Public Works	PW SMD – North Yard
Public Works	PW SMD - Painter
Public Works	PW SMD – South Yard
Public Works	PW SMD - Surrey Drive
Public Works	PW SMD - Trancas WWTP
Public Works	PW SMD - TYLER
Public Works	PW SMD - Ulmus
Public Works	PW SMD - Viewridge
Public Works	PW SWMD - 120th St. Pump Station
Public Works	PW SWMD - 17th St Pump Station
Public Works	PW SWMD – 83rd St. Maintenance Yard
Public Works	PW SWMD - Alameda Street 3B Pump Station
Public Works	PW SWMD - Alameda Street 3C Pump Station
Public Works	PW SWMD - Alamitos Bay Pump Station
Public Works	PW SWMD – Alamitos Maintenance Yard
Public Works	PW SWMD - Alondra Pump Station
Public Works	PW SWMD - Anaheim St. Pump Station
Public Works	PW SWMD - Appian Way Pump Station
Public Works	PW SWMD - Arena Pump Station
Public Works	PW SWMD - Avalon Pump Station
Public Works	PW SWMD - Belmont Pump Station
Public Works	PW SWMD - Boone Olive Pump Station
Public Works	PW SWMD - Century Frwy Pump Station
Public Works	PW SWMD - Cerritos Pump Station
Public Works	PW SWMD - Claretta Pump Station
Public Works	PW SWMD - Compton Creek Pump Station #1
Public Works	PW SWMD - Compton Creek Pump Station #2
Public Works	PW SWMD - Cordova Walk Pump Station
Public Works	PW SWMD - Dominger Pump Station
Public Works	PW SWMD - Dominguez Pump Station
Public Works	PW SWMD - Doris Pump Station
Public Works	PW SWMD - East Toledo Pump Station
Public Works	PW SWMD – Eaton Maintenance Yard
Public Works	PW SWMD - El Dorado Pump Station
Public Works	PW SWMD - El Segundo Pump Station
Public Works	PW SWMD – El Segundo Yard
Public Works	PW SWMD - Electric Ave Pump Station
Public Works	PW SWMD - Garnet Avenue Pump Station
Public Works	PW SWMD - Hamilton Bowl South Pump Station
Public Works	PW SWMD - Hamilton Bowl West Pump Station
Public Works	PW SWMD - Hill St. Pump Station
Public Works	PW SWMD – Imperial Yard
Public Works	PW SWMD - Johnson Pump Station
Public Works	PW SWMD - Lakewood Pump Station
Public Works	PW SWMD - Lennox Blvd Pump Station

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Public Works	PW SWMD – Longden Yard
Public Works	PW SWMD - Los Altos Pump Station
Public Works	PW SWMD - Lynwood Pump Station
Public Works	PW SWMD - Manhattan Beach Pump Station
Public Works	PW SWMD - Market St. Pump Station
Public Works	PW SWMD - Naples Pump Station
Public Works	PW SWMD - Oxford Pump Station
Public Works	PW SWMD - Paramount Pump Station
Public Works	PW SWMD – Pickens Yard
Public Works	PW SWMD - Redondo Beach Blvd Pump Station
Public Works	PW SWMD – Redondo Yard Office
Public Works	PW SWMD – Rio Hondo Yard
Public Works	PW SWMD – Riverview Maintenance Yard
Public Works	PW SWMD – Rubio Yard
Public Works	PW SWMD – San Dimas Maintenance Yard
Public Works	PW SWMD – Santa Clara Flood Maintenance Yard
Public Works	PW SWMD – Saticoy Yard
Public Works	PW SWMD - Seaside Pump Station
Public Works	PW SWMD - Walteria Lake Pump Station
Public Works	PW SWMD - West Long Beach Pump Station
Public Works	PW SWMD - West Neapolitan Pump Station
Public Works	PW SWMD - West Toledo Pump Station
Public Works	PW SWMD - Wilmington Unit 2 Pump Station
Public Works	PW WWD - 116th street pump station
Public Works	PW WWD - 116th street Tank
Public Works	PW WWD - 168th and G Pump station
Public Works	PW WWD - 27 Tank
Public Works	PW WWD - 37-1 Well
Public Works	PW WWD - 37-3 Well
Public Works	PW WWD - 37-4 Well
Public Works	PW WWD - 39 Tank
Public Works	PW WWD - Adobe Tank
Public Works	PW WWD - Anaverde Tanks and pump station
Public Works	PW WWD - Bev martin tank and Pump Station
Public Works	PW WWD - Blue Rock Tank
Public Works	PW WWD - Butte's Tank
Public Works	PW WWD - City Ranch Tanks
Public Works	PW WWD - Crown Valley Pump station
Public Works	PW WWD - Cuyama Tank
Public Works	PW WWD - Ft. Tejon Tank
Public Works	PW WWD - Hasley Pump Station
Public Works	PW WWD - Hasley Tank
Public Works	PW WWD - Joshua Ranch Tank
Public Works	PW WWD - Kohl's tank
Public Works	PW WWD - Los Valles Pump station and Well
Public Works	PW WWD - M & 7th west Tank site
Public Works	PW WWD - McCennery Tank
Public Works	PW WWD - North Tank
Public Works	PW WWD - Old timers tank and pump station
Public Works	PW WWD - P-10 Pump station
Public Works	PW WWD - Q-9 Tanks
Public Works	PW WWD - Rancho Vista tanks
Public Works	PW WWD - South Tank
Public Works	PW WWD - Tierra Subida Pump Station
Public Works	PW WWD - Tierra Subida Tanks

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Public Works	PW WWD - Vincent Pump station
Public Works	PW WWD #04 – M/5e Water Tank
Public Works	PW WWD #04 – North Administration Building
Public Works	PW WWD #04-M8/75w Water Tank
Public Works	PW WWD #29 - 20858 Regulating Station
Public Works	PW WWD #29 - Big Rock 1010 Tank
Public Works	PW WWD #29 - Big Rock 1200 Tank
Public Works	PW WWD #29 - Big Rock 900 Pump Station
Public Works	PW WWD #29 - Broad Beach Regulating Station
Public Works	PW WWD #29 - Carbon Mesa Tank
Public Works	PW WWD #29 - Entrada Pump Station
Public Works	PW WWD #29 - Entrada Tank
Public Works	PW WWD #29 - Fernwood Tank
Public Works	PW WWD #29 - Guernsey Regulating Station
Public Works	PW WWD #29 - Heather Cliff Regulating Station
Public Works	PW WWD #29 - Horizon Tank
Public Works	PW WWD #29 - Hume Tank
Public Works	PW WWD #29 - La Chusa Feeder Regulating Station
Public Works	PW WWD #29 - La Costa
Public Works	PW WWD #29 - La Costa Regulating Station
Public Works	PW WWD #29 – LADWP Emergency Mindanao Connection
Public Works	PW WWD #29 - Las Flores Pump Station
Public Works	PW WWD #29 - Las Flores Tank
Public Works	PW WWD #29 - Latigo Tank
Public Works	PW WWD #29 - Lower Big Rock 195 Pump Station
Public Works	PW WWD #29 - Lower Busch Pump Station
Public Works	PW WWD #29 - LVMWD , Saddle Peak Interconnection
Public Works	PW WWD #29 - LVMWD, Hume Connection
Public Works	PW WWD #29 - LVMWD, Latigo Connection
Public Works	PW WWD #29 - Malibu Beach Pump Station
Public Works	PW WWD #29 - Malibu Knolls Tank
Public Works	PW WWD #29 - New Summit Tank
Public Works	PW WWD #29 - Nicholas Beach Tank
Public Works	PW WWD #29 - Old Summit Tank
Public Works	PW WWD #29 - Owen Pump Station
Public Works	PW WWD #29 - Pepperdine 545 Pump Station
Public Works	PW WWD #29 - Pepperdine 812 Tank
Public Works	PW WWD #29 - Pepperdine 907 Tank
Public Works	PW WWD #29 - Philip Tank
Public Works	PW WWD #29 - Point Dume Pump Station and Tank
Public Works	PW WWD #29 - Portshead Tank
Public Works	PW WWD #29 - Saddle Peak Tank
Public Works	PW WWD #29 - Santa Maria Tank
Public Works	PW WWD #29 - Serra Pump Station
Public Works	PW WWD #29 - Sumac Ridge Tank
Public Works	PW WWD #29 - Sweetwater Hydro Pump Station
Public Works	PW WWD #29 - Sweetwater Mesa Tank
Public Works	PW WWD #29 - Topanga Beach Pump Station
Public Works	PW WWD #29 - Topanga Beach Tank
Public Works	PW WWD #29 - Topanga Forks Tank
Public Works	PW WWD #29 - Topanga Oaks Tank
Public Works	PW WWD #29 - Topanga Park Pump Station
Public Works	PW WWD #29 - Trancas Tank
Public Works	PW WWD #29 - Upper Big Rock 730 Pump Station
Public Works	PW WWD #29 - Upper Encinal Tank

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Public Works	PW WWD #29 - Winding Wy Tank
Public Works	PW WWD #29 LADWP Emergency Via Dolce Connection
Public Works	San Dimas Dam
Public Works	San Gabriel Dam
Public Works	San Gabriel Valley Airport
Public Works	Santa Anita Dam
Public Works	Thompson Creek Dam
Public Works	Whiteman Airport
Sheriff's Department	Altadena Sheriff's Station
Sheriff's Department	Avalon Sheriff's Station
Sheriff's Department	Carson Sheriff's Station
Sheriff's Department	Century Regional Detention Facility
Sheriff's Department	Century Sheriff's Station
Sheriff's Department	Cerritos Sheriff's Station
Sheriff's Department	Compton Sheriff's Station
Sheriff's Department	Crescenta Valley Sheriff's Station
Sheriff's Department	East Los Angeles Sheriff's Station
Sheriff's Department	Industry Sheriff's Station
Sheriff's Department	Inmate Reception Center
Sheriff's Department	Lakewood Sheriff's Station
Sheriff's Department	Lancaster Sheriff's Station
Sheriff's Department	Lomita Sheriff's Station
Sheriff's Department	Malibu/Lost Hills Sheriff's Station
Sheriff's Department	Marina Del Rey Sheriff's Station
Sheriff's Department	Men's Central Jail
Sheriff's Department	North County Correctional Facility
Sheriff's Department	Norwalk Sheriff's Station
Sheriff's Department	Palmdale Sheriff's Station
Sheriff's Department	Pico Rivera Sheriff's Station
Sheriff's Department	Pitchess Detention Center East Facility
Sheriff's Department	Pitchess Detention Center North Facility
Sheriff's Department	Pitchess Detention Center South Facility
Sheriff's Department	San Dimas Sheriff's Station
Sheriff's Department	Santa Clarita Valley Sheriff's Station
Sheriff's Department	South Los Angeles Sheriff's Station
Sheriff's Department	Temple Sheriff's Station
Sheriff's Department	Twin Towers Correctional Facility
Sheriff's Department	Walnut/Diamond Bar Sheriff's Station
Sheriff's Department	West Hollywood Sheriff's Station

APPENDIX C – RISK ASSESSMENT

Table C-1: County-wide Statistical Area Hazard Impacts

CSA	S.D.	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flood	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Avocado Heights	1				1				1				
Bandini Islands	1				1				1				
Bassett	1				1		1		1				
Charter Oak	1				1		1		1		1		
East Los Angeles	1				1				1				
El Monte	1				1								
North Whittier	1				1				1				
Padua Hills	1				1				1		1		
Pellissier Village	1				1				1				
San Jose Hills	1				1		1		1				
South El Monte	1				1								
South San Gabriel	1				1				1				
Valinda	1				1		1		1				
Walnut	1				1				1				
West Puente Valley	1				1		1						
Whittier Narrows	1				1		1		1				
Athens Village	2				1				1				
Athens-Westmont	2				1				1				
Del Rey	2	1	1		1			1	1				
Hawthorne	2				1								
Ladera Heights	2				1		1		1		1		
Rosewood	2				1								
Rosewood/East Gardena	2				1								
Rosewood/West Rancho Dominguez	2				1								

Table C-1: County-wide Statistical Area Hazard Impacts

CSA	S.D.	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flood	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
View Park/Windsor Hills	2				1				1		1		
West Rancho Dominguez	2				1								
Willowbrook	2				1		1		1				
Wiseburn	2				1								
Franklin Canyon	3				1		1		1		1		
Miracle Mile	3				1		1						
Santa Monica Mountains	3	1	1	1	1		1	1	1	1	1	1	1
Universal City	3				1				1		1		
West LA	3				1				1				
Westhills	3				1				1		1		1
Cerritos	4				1		1						
East La Mirada	4				1		1		1				
East Whittier	4				1								
Harbor Gateway	4				1								
La Habra Heights	4				1				1				
La Rambla	4				1				1				
Lakewood	4				1		1		1				
Long Beach	4				1		1						
Palos Verdes Peninsula	4				1				1		1		
San Clemente Island	4								1				
Santa Catalina Island	4								1	1	1	1	1
South Whittier	4				1		1		1				
Westfield/Academy Hills	4				1				1		1		
Acton	5				1	1			1		1		1

Table C-1: County-wide Statistical Area Hazard Impacts

CSA	S.D.	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flood	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Agua Dulce	5				1	1			1		1	1	1
Altadena	5				1		1		1		1	1	1
Anaverde	5			1	1	1			1			1	1
Bouquet Canyon	5				1	1	1		1		1		1
Bradbury	5				1				1		1		
Canyon Country	5				1				1		1	1	1
Castaic	5			1	1	1	1	1	1		1	1	1
Del Sur	5				1	1	1		1				
Desert View Highlands	5					1							
East Covina	5				1				1				
East Lancaster	5			1	1		1						
East Pasadena	5				1				1		1		1
Elizabeth Lake	5				1	1			1			1	1
Hi Vista	5				1				1				
La Crescenta-Montrose	5				1				1		1		1
Lake Hughes	5				1	1			1				1
Lake Los Angeles	5				1	1			1				
Lake Manor	5				1				1		1		1
Leona Valley	5				1	1	1		1		1	1	1
Littlerock	5			1		1	1		1			1	
Littlerock/Juniper Hills	5			1	1	1	1		1			1	1
Littlerock/Pearblossom	5			1	1	1	1		1			1	
Llano	5				1	1			1			1	1
Monrovia	5				1								
Newhall	5					1			1		1		1
North Lancaster	5				1		1		1				
Northeast San Gabriel	5				1				1				

Table C-1: County-wide Statistical Area Hazard Impacts

CSA	S.D.	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flood	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Palmdale	5			1	1	1	1						
Pearblossom/Llano	5				1	1	1		1			1	
Placerita Canyon	5				1	1			1		1		1
Quartz Hill	5				1	1	1		1				
Roosevelt	5				1		1						
San Francisquito Canyon/Bouquet Canyon	5				1	1			1		1		1
San Pasqual	5				1								
Sand Canyon	5				1	1			1		1		1
Saugus	5				1				1		1		1
Saugus/Canyon Country	5				1				1				1
South Antelope Valley	5			1	1	1			1			1	1
South Edwards	5				1		1	1	1				
Southeast Antelope Valley	5			1	1	1			1			1	1
Stevenson Ranch	5			1	1	1			1		1	1	1
Sun Village	5			1	1	1	1		1				
Twin Lakes/Oat Mountain	5				1	1			1		1		1
Val Verde	5			1	1	1			1		1	1	1
Valencia	5				1				1		1	1	1
West Antelope Valley	5				1	1	1	1	1		1	1	1
West Chatsworth	5				1				1		1		1
White Fence Farms	5					1	1						
Florence-Firestone	1 and 2				1								
Walnut Park	1 and 2				1								
Hacienda Heights	1 and 4				1		1		1		1	1	1

Table C-1: County-wide Statistical Area Hazard Impacts

CSA	S.D.	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flood	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Rowland Heights	1 and 4				1				1		1	1	1
Sunrise Village	1 and 4				1		1		1				
West Whittier/Los Nietos	1 and 4				1		1		1				
Whittier	1 and 4				1		1		1		1	1	1
Arcadia	1 and 5				1				1				
Azusa	1 and 5				1				1		1		1
Claremont	1 and 5				1				1		1		1
Covina	1 and 5				1		1		1		1	1	1
Covina (Charter Oak)	1 and 5				1				1				
Duarte	1 and 5				1				1				
Glendora	1 and 5				1		1		1		1		1
La Verne	1 and 5				1				1		1		1
Pomona	1 and 5				1				1		1	1	1
Lynwood	1, 2, and 4				1		1		1				
Angeles National Forest	1, 3, and 5			1	1	1	1	1	1		1	1	1
Del Aire	2 and 4				1				1				
East Rancho Dominguez	2 and 4				1		1		1				
El Camino Village	2 and 4				1				1				
Lennox	2 and 4				1				1				
Rancho Dominguez	2 and 4				1		1		1				
West Carson	2 and 4				1		1		1				
Marina del Rey	2, 3, and 4	1	1		1		1	1	1	1			
Kagel/Lopez Canyons	3 and 5				1	1	1		1		1		1

Table C-2: Animal Care & Control Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Agoura Animal Care Center				1						1		
Baldwin Park Animal Care Center				1								
Carson Animal Care Center				1								
Castaic Animal Care Center (Castaic)			1	1								1
Downey Animal Care Center				1		1						
Lancaster County Animal Care Center				1								
Palmdale Animal Care Center					1	1						

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Bob Hope Airport Fire Department				1								
City of Alhambra Fire Department - Training Facility				1								
City of Alhambra Fire Department Station 71 - Headquarters				1								
City of Alhambra Fire Department Station 72 - Southeast District				1								
City of Alhambra Fire Department Station 73 - Northwest				1								
City of Alhambra Fire Department Station 74 - Southwest				1								
City of Arcadia Fire Department Station 105				1								
City of Arcadia Fire Department Station 106 - Headquarters				1								
City of Arcadia Fire Department Station 107				1								
City of Avalon Fire Department										1		
City of Beverly Hills Fire Department Station 1 - Headquarters				1								
City of Beverly Hills Fire Department Station 2				1						1		
City of Beverly Hills Fire Department Station 3				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Burbank Fire Department Station 11 - Headquarters				1								
City of Burbank Fire Department Station 12				1								
City of Burbank Fire Department Station 13				1								
City of Burbank Fire Department Station 14				1								
City of Burbank Fire Department Station 15				1								
City of Burbank Fire Department Station 16				1						1		
City of Compton Fire Department Station 1 - Headquarters				1		1						
City of Compton Fire Department Station 2				1		1						
City of Compton Fire Department Station 3				1								
City of Compton Fire Department Station 4				1								
City of Downey Fire Department Station 1 - Headquarters				1		1						
City of Downey Fire Department Station 2				1		1						
City of Downey Fire Department Station 3				1		1						
City of Downey Fire Department Station 4				1		1						

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Glendale Fire Department Station 21				1								
City of Glendale Fire Department Station 22				1								
City of Glendale Fire Department Station 23				1						1		
City of Glendale Fire Department Station 24				1						1		
City of Glendale Fire Department Station 25				1								
City of Glendale Fire Department Station 26				1								
City of Glendale Fire Department Station 27				1								
City of Glendale Fire Department Station 28				1								
City of Long Beach Fire Department - Beach Operations				1					1			
City of Long Beach Fire Department - Headquarters				1								
City of Long Beach Fire Department Station 1				1								
City of Long Beach Fire Department Station 10				1								
City of Long Beach Fire Department Station 11				1		1						
City of Long Beach Fire Department Station 12				1		1						

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Long Beach Fire Department Station 13				1		1						
City of Long Beach Fire Department Station 14		1		1					1			
City of Long Beach Fire Department Station 15				1					1			
City of Long Beach Fire Department Station 16				1								
City of Long Beach Fire Department Station 17				1								
City of Long Beach Fire Department Station 18				1		1						
City of Long Beach Fire Department Station 19				1		1						
City of Long Beach Fire Department Station 2				1								
City of Long Beach Fire Department Station 20		1		1					1			
City of Long Beach Fire Department Station 21		1		1		1			1			
City of Long Beach Fire Department Station 22				1		1						
City of Long Beach Fire Department Station 24				1					1			
City of Long Beach Fire Department Station 3				1								
City of Long Beach Fire Department Station 4				1								
City of Long Beach Fire Department Station 5				1		1						

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Long Beach Fire Department Station 6				1					1			
City of Long Beach Fire Department Station 7				1		1						
City of Long Beach Fire Department Station 8	1	1		1					1			
City of Long Beach Fire Department Station 9				1								
City of Los Angeles Fire Department Station 1				1								
City of Los Angeles Fire Department Station 10				1								
City of Los Angeles Fire Department Station 108				1						1		
City of Los Angeles Fire Department Station 109				1						1		
City of Los Angeles Fire Department Station 11				1								
City of Los Angeles Fire Department Station 12				1								
City of Los Angeles Fire Department Station 13				1								
City of Los Angeles Fire Department Station 14				1								
City of Los Angeles Fire Department Station 15				1								
City of Los Angeles Fire Department Station 16				1								
City of Los Angeles Fire Department Station 17				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Los Angeles Fire Department Station 19				1						1		
City of Los Angeles Fire Department Station 2				1								
City of Los Angeles Fire Department Station 20				1								
City of Los Angeles Fire Department Station 21				1								
City of Los Angeles Fire Department Station 25				1								
City of Los Angeles Fire Department Station 26				1								
City of Los Angeles Fire Department Station 27				1								
City of Los Angeles Fire Department Station 29				1		1						
City of Los Angeles Fire Department Station 3				1								
City of Los Angeles Fire Department Station 33				1								
City of Los Angeles Fire Department Station 34				1								
City of Los Angeles Fire Department Station 35				1								
City of Los Angeles Fire Department Station 37				1								
City of Los Angeles Fire Department Station 4				1								
City of Los Angeles Fire Department Station 41				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Los Angeles Fire Department Station 42				1								
City of Los Angeles Fire Department Station 43				1								
City of Los Angeles Fire Department Station 44				1								
City of Los Angeles Fire Department Station 46				1								
City of Los Angeles Fire Department Station 47				1						1		
City of Los Angeles Fire Department Station 5				1								
City of Los Angeles Fire Department Station 50				1								
City of Los Angeles Fire Department Station 51				1								
City of Los Angeles Fire Department Station 52				1								
City of Los Angeles Fire Department Station 56				1						1		
City of Los Angeles Fire Department Station 57				1								
City of Los Angeles Fire Department Station 58				1								
City of Los Angeles Fire Department Station 59				1								
City of Los Angeles Fire Department Station 6				1								
City of Los Angeles Fire Department Station 61				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Los Angeles Fire Department Station 62				1								
City of Los Angeles Fire Department Station 64				1								
City of Los Angeles Fire Department Station 65				1								
City of Los Angeles Fire Department Station 66				1								
City of Los Angeles Fire Department Station 67				1								
City of Los Angeles Fire Department Station 68				1								
City of Los Angeles Fire Department Station 7					1							
City of Los Angeles Fire Department Station 71				1								
City of Los Angeles Fire Department Station 76				1						1		
City of Los Angeles Fire Department Station 80				1								
City of Los Angeles Fire Department Station 82				1								
City of Los Angeles Fire Department Station 9				1								
City of Los Angeles Fire Department Station 92				1								
City of Los Angeles Fire Department Station 94				1								
City of Los Angeles Fire Department Station 95				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Los Angeles Fire Department Station 97				1						1		
City of Los Angeles Fire Department Station 99				1						1		
City of Monterey Park Fire Department Station 61 - Headquarters				1								
City of Monterey Park Fire Department Station 62				1								
City of Monterey Park Fire Department Station 63				1								
City of Santa Fe Springs Fire Department Station 1 - Headquarters				1								
City of Santa Fe Springs Fire Department Station 2				1								
City of Santa Fe Springs Fire Department Station 3				1								
City of Santa Fe Springs Fire Department Station 4				1		1						
City of Santa Monica Fire Department - Training Facility				1								
City of Santa Monica Fire Department Station 1 - Headquarters				1								
City of Santa Monica Fire Department Station 2				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Santa Monica Fire Department Station 3				1								
City of Santa Monica Fire Department Station 5				1								
City of Vernon Fire Department Station 2				1								
City of Vernon Fire Department Station 3				1								
City of Vernon Fire Department Station 4				1								
City of West Covina Fire Department Station 1				1		1						
City of West Covina Fire Department Station 2				1		1						
City of West Covina Fire Department Station 3				1		1						
City of West Covina Fire Department Station 4				1		1				1		
City of West Covina Fire Department Station 5				1								
Culver City Fire Department Station 1 - Headquarters				1								
Culver City Fire Department Station 2				1								
Culver City Fire Department Station 3				1								
La Verne Fire Department Station 1 - Headquarters				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
La Verne Fire Department Station 2				1								
Los Angeles County Fire Department - Hq/Heliport/Training Facility				1								
Los Angeles County Fire Department Station 1				1								
Los Angeles County Fire Department Station 10				1		1						
Los Angeles County Fire Department Station 101				1								
Los Angeles County Fire Department Station 102				1								
Los Angeles County Fire Department Station 103				1		1						
Los Angeles County Fire Department Station 104				1						1		
Los Angeles County Fire Department Station 105				1		1						
Los Angeles County Fire Department Station 106				1				1		1		
Los Angeles County Fire Department Station 107					1							
Los Angeles County Fire Department Station 11				1								
Los Angeles County Fire Department Station 110				1					1			
Los Angeles County Fire Department Station 111				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 112				1		1						
Los Angeles County Fire Department Station 114												
Los Angeles County Fire Department Station 115				1		1						
Los Angeles County Fire Department Station 116				1								
Los Angeles County Fire Department Station 117				1		1						
Los Angeles County Fire Department Station 118				1								
Los Angeles County Fire Department Station 119				1				1				
Los Angeles County Fire Department Station 12				1								
Los Angeles County Fire Department Station 120				1								
Los Angeles County Fire Department Station 121				1				1				
Los Angeles County Fire Department Station 122				1								
Los Angeles County Fire Department Station 123					1					1		
Los Angeles County Fire Department Station 124				1				1				
Los Angeles County Fire Department Station 125				1						1		
Los Angeles County Fire Department Station 126					1							

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 127				1		1						
Los Angeles County Fire Department Station 129					1							
Los Angeles County Fire Department Station 130				1		1						
Los Angeles County Fire Department Station 131					1							
Los Angeles County Fire Department Station 132				1				1		1		
Los Angeles County Fire Department Station 134					1							
Los Angeles County Fire Department Station 135				1		1						
Los Angeles County Fire Department Station 14				1								
Los Angeles County Fire Department Station 140					1							1
Los Angeles County Fire Department Station 141				1				1				
Los Angeles County Fire Department Station 144			1	1						1		
Los Angeles County Fire Department Station 145				1								
Los Angeles County Fire Department Station 146				1								
Los Angeles County Fire Department Station 147				1								
Los Angeles County Fire Department Station 148				1		1						

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 149			1	1						1		
Los Angeles County Fire Department Station 15				1								
Los Angeles County Fire Department Station 151				1								
Los Angeles County Fire Department Station 152				1								
Los Angeles County Fire Department Station 153				1								
Los Angeles County Fire Department Station 154				1								
Los Angeles County Fire Department Station 155												1
Los Angeles County Fire Department Station 156				1				1				1
Los Angeles County Fire Department Station 157					1	1						1
Los Angeles County Fire Department Station 158				1								
Los Angeles County Fire Department Station 159				1								
Los Angeles County Fire Department Station 16				1								
Los Angeles County Fire Department Station 160				1								
Los Angeles County Fire Department Station 161				1								
Los Angeles County Fire Department Station 162				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 163				1								
Los Angeles County Fire Department Station 164				1								
Los Angeles County Fire Department Station 165				1								
Los Angeles County Fire Department Station 166				1								
Los Angeles County Fire Department Station 167				1								
Los Angeles County Fire Department Station 168				1								
Los Angeles County Fire Department Station 169				1								
Los Angeles County Fire Department Station 17				1								
Los Angeles County Fire Department Station 170				1								
Los Angeles County Fire Department Station 171				1								
Los Angeles County Fire Department Station 172				1								
Los Angeles County Fire Department Station 173				1								
Los Angeles County Fire Department Station 18				1								
Los Angeles County Fire Department Station 181				1								
Los Angeles County Fire Department Station 182				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 183				1								
Los Angeles County Fire Department Station 184				1								
Los Angeles County Fire Department Station 185				1								
Los Angeles County Fire Department Station 186				1								
Los Angeles County Fire Department Station 187				1								
Los Angeles County Fire Department Station 188				1								
Los Angeles County Fire Department Station 19				1						1		
Los Angeles County Fire Department Station 2				1						1		
Los Angeles County Fire Department Station 20				1								
Los Angeles County Fire Department Station 21				1								
Los Angeles County Fire Department Station 22				1								
Los Angeles County Fire Department Station 23				1		1						
Los Angeles County Fire Department Station 24					1							
Los Angeles County Fire Department Station 25				1		1						
Los Angeles County Fire Department Station 26				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 27				1								
Los Angeles County Fire Department Station 28				1								
Los Angeles County Fire Department Station 29				1								
Los Angeles County Fire Department Station 3				1								
Los Angeles County Fire Department Station 30				1		1						
Los Angeles County Fire Department Station 31				1		1						
Los Angeles County Fire Department Station 32				1								
Los Angeles County Fire Department Station 33				1		1						
Los Angeles County Fire Department Station 34				1		1						
Los Angeles County Fire Department Station 35				1								
Los Angeles County Fire Department Station 36				1								
Los Angeles County Fire Department Station 37					1	1						
Los Angeles County Fire Department Station 38				1								
Los Angeles County Fire Department Station 39				1								
Los Angeles County Fire Department Station 4				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 40				1		1						
Los Angeles County Fire Department Station 41				1								
Los Angeles County Fire Department Station 42				1								
Los Angeles County Fire Department Station 43				1								
Los Angeles County Fire Department Station 44				1								
Los Angeles County Fire Department Station 45				1		1						
Los Angeles County Fire Department Station 47				1								
Los Angeles County Fire Department Station 48				1								
Los Angeles County Fire Department Station 49				1								
Los Angeles County Fire Department Station 5				1								
Los Angeles County Fire Department Station 50				1								
Los Angeles County Fire Department Station 51				1						1		
Los Angeles County Fire Department Station 53				1						1		
Los Angeles County Fire Department Station 54				1		1						
Los Angeles County Fire Department Station 55										1		

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 56				1						1		
Los Angeles County Fire Department Station 57				1		1						
Los Angeles County Fire Department Station 58				1								
Los Angeles County Fire Department Station 59				1								
Los Angeles County Fire Department Station 6				1								
Los Angeles County Fire Department Station 60				1								
Los Angeles County Fire Department Station 61				1								
Los Angeles County Fire Department Station 62				1						1		
Los Angeles County Fire Department Station 63				1								
Los Angeles County Fire Department Station 64				1								
Los Angeles County Fire Department Station 65				1								1
Los Angeles County Fire Department Station 66				1								
Los Angeles County Fire Department Station 67				1								1
Los Angeles County Fire Department Station 68				1						1		
Los Angeles County Fire Department Station 69				1								1

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 7				1								
Los Angeles County Fire Department Station 70				1						1		
Los Angeles County Fire Department Station 71				1						1		
Los Angeles County Fire Department Station 72				1								1
Los Angeles County Fire Department Station 73					1							
Los Angeles County Fire Department Station 74					1							1
Los Angeles County Fire Department Station 75				1						1		
Los Angeles County Fire Department Station 76			1	1							1	
Los Angeles County Fire Department Station 77					1							1
Los Angeles County Fire Department Station 78					1							1
Los Angeles County Fire Department Station 79					1							
Los Angeles County Fire Department Station 8				1								
Los Angeles County Fire Department Station 80					1							1
Los Angeles County Fire Department Station 81				1								1
Los Angeles County Fire Department Station 82				1						1		

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 83				1						1		
Los Angeles County Fire Department Station 84					1	1						
Los Angeles County Fire Department Station 85				1								
Los Angeles County Fire Department Station 86				1								
Los Angeles County Fire Department Station 87				1								
Los Angeles County Fire Department Station 88				1					1	1		
Los Angeles County Fire Department Station 89				1								
Los Angeles County Fire Department Station 90				1								
Los Angeles County Fire Department Station 91				1								1
Los Angeles County Fire Department Station 92					1							
Los Angeles County Fire Department Station 94				1		1						
Los Angeles County Fire Department Station 95				1								
Los Angeles County Fire Department Station 96				1								
Los Angeles County Fire Department Station 97				1						1		
Los Angeles County Fire Department Station 98				1		1						

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 99				1						1		
Manhattan Beach Fire Department Station 1 - Headquarters				1								
Manhattan Beach Fire Department Station 2				1								
Montebello Fire Department Station 1 - Headquarters				1								
Montebello Fire Department Station 2				1								
Montebello Fire Department Station 3				1								
Pasadena Fire Department Station 31				1								
Pasadena Fire Department Station 32				1								
Pasadena Fire Department Station 33				1								
Pasadena Fire Department Station 34				1								
Pasadena Fire Department Station 36				1								
Pasadena Fire Department Station 37				1								
Pasadena Fire Department Station 38				1						1		
Pasadena Fire Department Station 39				1						1		

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Redondo Beach Fire Department Station 1 - Headquarters				1								
Redondo Beach Fire Department Station 2				1								
Redondo Beach Fire Department Station 3		1		1					1			
San Gabriel Fire Department Station 1 - Headquarters				1								
San Gabriel Fire Department Station 2				1								
San Marino Fire Department				1								
Sierra Madre Volunteer Fire Department				1								
South Pasadena Fire Department				1								
The City of El Segundo Fire Department Station 1 - Headquarters				1								
The City of El Segundo Fire Department Station 2				1								
Torrance Fire Department Fire Station 1 - Headquarters				1								
Torrance Fire Department Fire Station 2				1								
Torrance Fire Department Fire Station 3				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Torrance Fire Department Fire Station 4				1								
Torrance Fire Department Fire Station 5				1								
Torrance Fire Department Fire Station 6				1								
Vernon Fire Department				1								

Table C-4: Health Services Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Antelope Valley Health Center				1								
Bellflower Health Center				1		1						
Central Public Health Center				1								
Curtis R. Tucker Health Center				1								
Dollarhide Health Center				1		1						
East Los Angeles Health Center				1								
East San Gabriel Valley Health Center				1								
Edward R. Roybal Comprehensive Helath Center				1								
El Monte Comprehensive Health Center				1								
Glendale Health Center				1								
H. Claude Hudson Comprehensive Health Center				1								
Harbor-UCLA Medical Center				1								
High Desert Regional Health Center				1								
Hubert H. Humphrey Comprehensive Health Center				1								
La Puente Health Center				1								
LAC + USC Medical Center				1								

Table C-4: Health Services Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Lake Los Angeles Community Clinic				1								
Littlerock Community Clinic					1	1						
Long Beach Comphrehensive Health Center				1								
Martin Luther King, Jr. Outpatient Center				1								
Mid Valley Comprehensive Health Center			1	1								
Olive View-UCLA Medical Center					1					1		
Rancho Los Amigos National Rehabilitation Center				1		1						
San Fernando Health Center					1							
South Valley Health Center			1		1	1						
Torrance Health Center				1								
Vaughn School Based Health Center					1							
West Valley Health Center				1								
Wilmington Health Center				1								

Table C-5: Library Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
A C Bilbrew Library				1								
Acton Agua Dulce Library					1							1
Agoura Hills Library				1						1		
Alondra Library				1		1						
Angelo M. Iacoboni Library				1		1						
Anthony Quinn Library				1								
Artesia Library				1		1						
Avalon Library										1		
Baldwin Park Library				1								
Bell Gardens Library				1								
Bell Library				1								
Carson Library				1								
Castaic Library				1						1		
Charter Oak Library				1								
Chet Holifield Library				1								
City Terrace Library				1								
Claremont Helen Renwick Library				1								
Clifton M. Brakensiek Library				1		1						
Compton Library				1		1						
Cudahy Library				1		1						

Table C-5: Library Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Culver City Julian Dixon Library				1								
Diamond Bar Library				1								
Dr. Martin Luther King, Jr. Library				1								
Duarte Library				1								
East Los Angeles Library				1								
East Rancho Dominguez Library				1		1						
El Camino Real Library				1								
El Monte Library				1								
Florence Express Library				1								
Gardena Mayme Dear Library				1								
George Nye Jr. Library				1		1						
Graham Library				1								
Hacienda Heights Library				1								
Hawaiian Gardens Library				1		1						
Hawthorne Library				1								
Hermosa Beach Library				1								
Hollydale Library				1		1						
Huntington Park Library				1								

Table C-5: Library Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
La Canada Flintridge Library				1						1		
La Crescenta Library				1								
La Mirada Library				1								
La Puente Library				1								
La Verne Library				1								
Lake Los Angeles Library				1								
Lancaster Library				1		1						
Lawndale Library				1								
Leland R. Weaver Library				1								
Lennox Library				1								
Littlerock Library					1						1	
Live Oak Library				1								
Lloyd Taber-Marina del Rey Library				1					1			
Lomita Library				1								
Los Nietos Library				1								
Lynwood Library				1								
Malibu Library			1	1						1		
Manhattan Beach Library				1								
Masao W. Satow Library				1								
Maywood Cesar Chavez Library				1								
Montebello Library				1								

Table C-5: Library Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Norwalk Library				1								
Norwood Library				1								
Paramount Library				1		1						
Pico Rivera Library				1		1						
Quartz Hill Library					1							
Rivera Library				1		1						
Rosemead Library				1								
Rowland Heights Library				1								
San Dimas Library				1								
San Fernando Library					1							
San Gabriel Library				1								
Sorensen Library				1								
South El Monte Library				1								
South Whittier Library				1								
Stevenson Ranch Library					1					1		
Sunkist Library				1								
Temple City Library				1								
Topanga Library				1								1
View Park Bebe Moore Campbell Library				1								
Walnut Library				1								
West Covina Library				1		1						

Table C-5: Library Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
West Hollywood Library				1								
Westlake Village Library				1						1		
Willowbrook Library				1								
Wiseburn Library				1								
Woodcrest Library				1								

Table C-6: LACMA+MNH Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
La Brea Tarpits				1								
Los Angeles County Museum of Art				1								
Natural History Museum				1								
William S. Hart Museum					1					1		

Table C-7: Office of Education Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Afflerbaugh-Paige Camp				1								1
Alma Fuerte Public				1								
Animo City of Champions Charter High				1								
Aspire Antonio Maria Lugo Academy				1								
Aspire Ollin University Preparatory Academy				1								
Central Juvenile Hall				1								
Da Vinci RISE High				1								
Environmental Charter Middle				1								
Environmental Charter Middle - Inglewood				1								
Intellectual Virtues Academy				1								
International Polytechnic High				1								
Jardin de la Infancia				1								
Kirby, Dorothy Camp				1								
L.A. County High School for the Arts				1								
LA's Promise Charter High #1				1								
LA's Promise Charter Middle #1				1		1						
Lashon Academy			1	1								
Los Angeles County Special Education				1		1						

Table C-7: Office of Education Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles International Charter High				1						1		
Los Padrinos Juvenile Hall				1		1						
Magnolia Science Academy			1	1								
Magnolia Science Academy 2				1								
Magnolia Science Academy 3				1		1						
Magnolia Science Academy 5				1								
McNair Camp					1							
Nidorf, Barry J.					1							
North Valley Military Institute College Preparatory Academy					1							
Odyssey Charter				1								
Onizuka Camp					1							
Optimist Charter				1						1		
Phoenix Academy Residential Education Center					1							
Renaissance County Community				1								
Road to Success Academy at Campus Kilpatrick				1								1
Rockey, Glenn Camp				1				1		1		
Scott, Joseph Camp				1								1
Soleil Academy Charter				1		1						
Valiente College				1								

Table C-7: Office of Education Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Preparatory Charter												

Table C-7: Other (Office) Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
1000 S. Fremont Ave.				1								
1055 Wilshire Blvd.				1								
1100 North Eastern Ave.				1								
1104 N. Mission Rd.				1								
12300 Lower Azusa Rd.				1								
12400 Imperial Highway				1								
12860 Crossroads Parkway South				1								
1320 North Eastern Ave.				1								
13837 Fiji Way				1					1			
1816 S. Figueroa				1								
210 W. Temple St.				1								
211 W. Temple St.				1								
313 N Figueroa St.				1								
3175 West Sixth St.				1								
320 West Temple St.				1								
425 Shatto Place				1								
550 South Vermont Ave.				1								
5770 S. Eastern Ave.				1								

Table C-7: Other (Office) Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
5898 Cherry Ave.				1		1						
5905 Wilshire Blvd.				1								
700 W. Main St.				1								
7400 East Imperial Highway				1		1						
900 South Fremont Ave.				1								
Kenneth Hahn Hall of Administration				1								

Table C-8: Parks & Recreation Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Acton Park				1								1
Adventure Park				1								
Adventure Park				1								
Allen J. Martin Park				1								
Alondra Community Regional Park				1								
Alondra Community Regional Park				1								
Amelia Mayberry Park				1								
Amelia Mayberry Park				1								
Amigo Park				1		1						
Arcadia Community Regional Park				1								
Arcadia Community Regional Park				1								
Athens Park				1								
Athens Park				1								
Bassett Park				1								
Bassett Park				1								
Bassett Park				1								
Belvedere Community Regional Park				1								
Belvedere Community Regional Park				1								
Bodger Park				1								
Carolyn Rosas Park				1								
Castaic Regional Sports Complex			1	1								1
Castaic Regional Sports Complex			1	1								1

Table C-8: Parks & Recreation Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Charles S. Farnsworth Park				1						1		
Charles S. Farnsworth Park				1								
Charles S. Farnsworth Park				1								
Charles S. Farnsworth Park				1								
Charter Oak Park				1								
City Terrace Park				1								
City Terrace Park				1								
Col. Leon H. Washington Park				1								
Col. Leon H. Washington Park				1								
Crescenta Valley Community Regional Park				1						1		
Crescenta Valley Community Regional Park				1						1		
Dalton Park				1								
Del Aire Park				1								
Del Aire Park				1								
Devil's Punchbowl Natural Area and Nature Center					1						1	
Dexter Park					1			1				1
Dexter Park					1			1				1
Don Knabe Community Regional Park				1								

Table C-8: Parks & Recreation Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Don Knabe Community Regional Park				1								
Don Knabe Community Regional Park				1								
East Rancho Dominguez Park				1		1						
East Rancho Dominguez Park				1		1						
East Rancho Dominguez Park				1		1						
El Cariso Community Regional Park					1							
El Cariso Community Regional Park					1							
El Cariso Community Regional Park					1							
Enterprise Park				1								
Eugene A. Obregon Park				1								
Eugene A. Obregon Park				1								
Franklin D. Roosevelt Park				1								
Franklin D. Roosevelt Park				1								
George Lane Park					1	1						
George Lane Park					1	1						
George Washington Carver Park				1								

Table C-8: Parks & Recreation Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Hacienda Heights Community and Rec Center				1								
Hacienda Heights Community and Rec Center				1								
Hacienda Heights Community and Rec Center				1								
Helen Keller Park				1								
Hollywood Bowl				1						1		
Jackie Robinson Park					1	1						
Jackie Robinson Park					1	1						
Jesse Owens Community Regional Park				1								
Jesse Owens Community Regional Park				1								
John Anson Ford Amphitheatre				1						1		
John Anson Ford Amphitheatre				1						1		
Kenneth Hahn State Recreation Area				1						1		
Ladera Park				1								
Ladera Park				1								
Ladera Park				1								
Lennox Park				1								
Lennox Park				1								
Lennox Park				1								

Table C-8: Parks & Recreation Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Loma Alta Park				1								1
Loma Alta Park				1								1
Los Angeles County Arboretum and Botanic Garden				1								
Manzanita Park				1								
Mary M. Bethune Park				1								
Mary M. Bethune Park				1								
Mona Park				1								
Mona Park				1								
Pamela County Park				1								
Pamela County Park				1								
Pathfinder Community Regional Park				1						1		1
Pearblossom County Park					1							
Peter F Schabarum Regional County Park				1						1		
Rimgrove Park				1								
Rowland Heights Park				1								
Roy Campanella Park				1								
Ruben F Salazar Park				1								
Ruben F Salazar Park				1								
Ruben F Salazar Park				1								
San Angelo Park				1								
San Fernando Recreation Park and Aquatic Center					1							
Saybrook Park				1								
Sorensen Park				1								

Table C-8: Parks & Recreation Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
South Coast Botanic Garden				1						1		
Stephen Sorensen Park				1								
Sunshine Park				1								
Ted Watkins Memorial Park				1								
Ted Watkins Memorial Park				1								
Tesoro Adobe Historic Park				1						1		1
Val Verde Community Regional Park				1								1
Val Verde Community Regional Park				1								1
Valleydale Park				1								
Valleydale Park				1								
Vasquez Rocks Natural Area and Nature Center				1								1
Veterans Memorial Community Regional Park					1					1		
Victoria Community Regional Park				1								
Victoria Community Regional Park				1								
Walnut Nature Park				1								
Whittier Narrows Recreation Area				1								
William S. Hart Regional Park					1					1		
William Steinmetz Park				1								

Table C-8: Parks & Recreation Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
William Steinmetz Park				1								
William Steinmetz Park				1								

Table C-9: Public Health Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Antelope Valley Health Center				1								
Central Public Health Center				1								
Curtis R. Tucker Health Center				1								
Glendale Health Center				1								
Hollywood/Wilshire Public Health Center				1								
Martin Luther King, Jr. Center for Public Health				1								
Monrovia Public Health Center				1								
North Hollywood Public Health Center				1								
Pacoima Public Helath Center					1							
Pomona Public Health Center				1								
Ruth-Temple Public Health Center				1								
Simms/Mann Health and Wellness Center				1								
Torrance Public Helath Center				1								
Whittier Public Health Center				1								

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Brackett Field Airport				1								
Compton/Woodley Airport				1								
San Gabriel Valley Airport				1								
General Wm. J. Fox Airfield				1								
Whiteman Airport					1							
Big Dalton Dam								1		1		
Big Tujunga Dam				1				1				
Cogswell Dam				1				1				
Devil's Gate Dam				1						1		
Eaton Wash Dam				1								
Live Oak Dam				1								1
Morris Dam				1				1				1
Pacoima Dam								1				1
Puddingstone Dam				1								
Puddingstone Diversion Dam				1								
San Dimas Dam				1								1
San Gabriel Dam				1								
Santa Anita Dam				1				1				
Thompson Creek Dam				1						1		
PW ITD – Mount Wilson Radio Antenna Tower				1								
PW ITD – Mount Wilson Radio Facility Bldg.				1								
PW WWD - 37-1 Well				1								1
PW WWD - 37-3 Well				1								1

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD - 37-4 Well				1								1
PW Headquarters Building				1								
PW RMD – Div. #116 Maintenance Yard				1								
PW RMD – Div. #142 Maintenance Yard				1								
PW RMD – Div. #417 Maintenance Yard				1								
PW RMD – Baldwin Park Maintenance Yard				1								
PW RMD - Lower Central Yard – Division Administration				1								
PW RMD - Upper Central Yard				1								
PW RMD – Van Pelt Bridge Maintenance Yard				1								
PW SWMD – Imperial Yard				1		1						
PW SWMD – Longden Yard				1								
PW SWMD – Rio Hondo Yard				1								
PW SWMD – Riverview Maintenance Yard				1		1						
PW RMD – Div. #141/241 Maintenance Yard				1								

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW RMD – Div. #232 Maintenance Yard				1								
PW RMD – Maint. District 3 Yard				1								
PW SWMD – 83rd St. Maintenance Yard				1								
PW RMD – Div. #336 Maint. Yd.				1						1		
PW RMD – Div. #339/539 Agoura Maintenance Yard				1								1
PW SWMD – Saticoy Yard				1			1					
PW WWD #29 - 20858 Regulating Station				1		1				1		
PW WWD #29 - Big Rock 900 Pump Station				1				1				1
PW WWD #29 - Big Rock 1010 Tank				1				1				1
PW WWD #29 - Big Rock 1200 Tank				1				1				1
PW WWD #29 - Broad Beach Regulating Station				1				1		1		
PW WWD #29 - Carbon Mesa Tank				1						1		
PW WWD #29 - Entrada Pump Station				1				1				1
PW WWD #29 - Entrada Tank				1				1				1

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD #29 - Fernwood Tank				1				1				1
PW WWD #29 - Guernsey Regulating Station				1						1		
PW WWD #29 - Heather Cliff Regulating Station				1						1		
PW WWD #29 - Horizon Tank				1						1		
PW WWD #29 - Hume Tank				1								1
PW WWD #29 - La Chusa Feeder Regulating Station				1						1		
PW WWD #29 - La Costa				1						1		
PW WWD #29 - La Costa Regulating Station				1				1		1		
PW WWD #29 - Las Flores Pump Station				1						1		
PW WWD #29 - Las Flores Tank				1						1		
PW WWD #29 - Latigo Tank				1				1				1
PW WWD #29 - Lower Big Rock 195 Pump Station				1				1		1		
PW WWD #29 - LVMWD, Hume Connection				1				1				1

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD #29 - LVMWD, Latigo Connection				1				1				1
PW WWD #29 - LVMWD , Saddle Peak Interconnection				1								1
PW WWD #29 - Lower Busch Pump Station				1						1		
PW WWD #29 - Malibu Beach Pump Station				1						1		
PW WWD #29 - Malibu Knolls Tank				1						1		
PW WWD #29 - New Summit Tank				1								1
PW WWD #29 - Nicholas Beach Tank				1				1		1		
PW WWD #29 - Old Summit Tank				1						1		
PW WWD #29 - Owen Pump Station				1								1
PW WWD #29 - Pepperdine 545 Pump Station				1						1		
PW WWD #29 - Pepperdine 812 Tank				1								1
PW WWD #29 - Pepperdine 907 Tank				1				1				1
PW WWD #29 - Philip Tank				1						1		

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD #29 - Point Dume Pump Station and Tank				1						1		
PW WWD #29 - Portshead Tank				1								
PW WWD #29 - Saddle Peak Tank				1				1				1
PW WWD #29 - Santa Maria Tank				1						1		
PW WWD #29 - Serra Pump Station				1						1		
PW WWD #29 - Sumac Ridge Tank				1						1		
PW WWD #29 - Sweetwater Hydro Pump Station				1						1		
PW WWD #29 - Sweetwater Mesa Tank				1				1		1		
PW WWD #29 - Topanga Beach Pump Station				1				1				1
PW WWD #29 - Topanga Beach Tank				1						1		
PW WWD #29 - Topanga Forks Tank				1				1				1
PW WWD #29 - Topanga Oaks Tank				1				1				1
PW WWD #29 - Topanga Park Pump Station				1								1

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD #29 - Trancas Tank				1						1		
PW WWD #29 - Upper Big Rock 730 Pump Station				1				1		1		
PW WWD #29 - Upper Encinal Tank				1				1		1		
PW WWD #29 - Winding Wy Tank				1				1				1
PW RMD - Div 446 Maintenance Yard				1		1						
PW RMD – Div. #446 Sub Maintenance Yard				1								
PW RMD – Maintenance District No.4 Yard				1		1						
PW SWMD – Alamitos Maintenance Yard				1		1						
PW SWMD – El Segundo Yard				1								
PW SWMD – Redondo Yard Office				1								
PW WWD #29 LADWP Emergency Via Dolce Connection				1		1			1			
PW WWD #29 – LADWP Emergency Mindanao Connection				1								
PW OSD - Eaton Yard – Maintenance Office				1				1				

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW RMD – 518-B Maintenance Yard				1						1		
PW RMD – Div. #523 Maintenance Yard				1						1		
PW RMD – Div. #524 Maintenance Yard				1						1		
PW RMD – Div. #518 Maintenance Yard				1								
PW RMD – Div. #519 Maintenance Yard				1								
PW RMD – Div. #526 Maint. Yd.			1	1		1				1		
PW RMD – Div. #551 Maintenance Yard					1	1						
PW RMD – Div. #555 Maintenance Yard				1								
PW RMD – Div. #558 Maint. Yard					1							
PW RMD – Div. #558a Jackson Lake Maintenance Yd.					1							
PW RMD – Div. #559b Maintenance Yard				1								
PW RMD – Palmdale Maintenance Dist. No. 5 Bldg. Yard					1	1						
PW SWMD – Eaton Maintenance Yard				1								
PW SWMD – Pickens Yard				1						1		

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW SWMD – Rubio Yard				1						1		
PW SWMD – Santa Clara Flood Maintenance Yard				1						1		
PW WWD #04 – North Administration Building				1		1						
PW SWMD – San Dimas Maintenance Yard				1								
PW SMD - Balfour				1		1						
PW SMD - Bradhurst				1		1						
PW SMD - Broadway				1								
PW SMD - Muscatel				1								
PW SMD - Painter				1								
PW SMD - Surrey Drive				1				1		1		
PW SMD - 132ND STREET				1								
PW SMD - Centinela				1								
PW SMD - Davids Road				1						1		
PW SMD - Ulmus				1				1		1		
PW SMD - Viewridge				1				1		1		
PW SMD - 213TH STREET				1								
PW SMD - AGAVE				1								
PW SMD - HEATHERFIELD				1				1		1		
PW SMD - MAYBROOK				1								

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD - 116th street pump station					1							
PW WWD - P-10 Pump station					1							
PW WWD - Tierra Subida Pump Station				1								
PW SMD - CAPALLERO				1								1
PW SMD - COMMERCE CENTER DRIVE				1				1				
PW SMD - LAKE HUGHES - NEWVALE					1							1
PW SMD - LAKE HUGHES - TRAILK					1							1
PW SMD - LOWRIDGE				1						1		
PW SMD - MARINA DEL REY				1					1			
PW SMD - TYLER				1								
PW WWD - Crown Valley Pump station				1								1
PW WWD - Hasley Pump Station				1								1
PW SWMD - 120th St. Pump Station				1								
PW SWMD - Alameda Street 3B Pump Station				1		1						
PW SWMD - Alameda Street 3C Pump Station				1		1						

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW SWMD - Avalon Pump Station				1		1						
PW SWMD - Compton Creek Pump Station #1				1		1						
PW SWMD - Compton Creek Pump Station #2				1		1						
PW SWMD - Dominger Pump Station				1		1						
PW SWMD - Lennox Blvd Pump Station				1								
PW SWMD - Oxford Pump Station				1					1			
PW SWMD - Redondo Beach Blvd Pump Station				1								
PW SWMD - Boone Olive Pump Station				1		1			1			
PW SWMD - Electric Ave Pump Station				1								
PW SWMD - 17th St Pump Station				1								
PW SWMD - Alamitos Bay Pump Station		1		1					1			
PW SWMD - Alondra Pump Station				1		1						
PW SWMD - Anaheim St. Pump Station		1		1		1			1			

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW SWMD - Appian Way Pump Station		1		1		1			1			
PW SWMD - Arena Pump Station				1								
PW SWMD - Belmont Pump Station	1	1		1					1			
PW SWMD - Century Frwy Pump Station				1		1						
PW SWMD - Cerritos Pump Station				1		1						
PW SWMD - Claretta Pump Station				1		1						
PW SWMD - Cordova Walk Pump Station									1			
PW SWMD - Dominguez Pump Station				1		1						
PW SWMD - Doris Pump Station				1								
PW SWMD - East Toledo Pump Station									1			
PW SWMD - El Dorado Pump Station				1		1						
PW SWMD - El Segundo Pump Station				1								
PW SWMD - Garnet Avenue Pump Station				1		1						
PW SWMD - Hamilton Bowl South Pump Station				1		1						
PW SWMD - Hamilton Bowl West				1		1						

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Pump Station												
PW SWMD - Hill St. Pump Station				1		1						
PW SWMD - Johnson Pump Station				1								
PW SWMD - Lakewood Pump Station				1		1						
PW SWMD - Los Altos Pump Station				1								
PW SWMD - Lynwood Pump Station				1		1						
PW SWMD - Manhattan Beach Pump Station				1								
PW SWMD - Market St. Pump Station				1		1						
PW SWMD - Naples Pump Station									1			
PW SWMD - Paramount Pump Station				1		1						
PW SWMD - Seaside Pump Station				1		1			1			
PW SWMD - Walteria Lake Pump Station				1								
PW SWMD - West Long Beach Pump Station	1	1		1					1			
PW SWMD - West Neapolitan Pump Station	1	1		1					1			

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW SWMD - West Toledo Pump Station									1			
PW SWMD - Wilmington Unit 2 Pump Station				1								
PW SMD – Malibu Mesa WWTP				1						1		
PW SMD – Malibu TP				1						1		
PW SMD - Trancas WWTP				1		1				1		
PW SMD – LAKE HUGHES					1							
PW WWD - 27 Tank					1						1	
PW WWD - 39 Tank					1						1	
PW WWD - 116th street Tank				1							1	
PW WWD - Adobe Tank												
PW WWD - Blue Rock Tank				1								
PW WWD - Butte's Tank												
PW WWD - City Ranch Tanks					1							
PW WWD - Ft. Tejon Tank					1						1	
PW WWD - Joshua Ranch Tank				1						1		
PW WWD - Kohl's tank					1	1						
PW WWD - M & 7th west Tank site					1							

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD - Q-9 Tanks					1							
PW WWD - Rancho Vista tanks				1				1		1		
PW WWD - Tierra Subida Tanks				1								
PW WWD #04 – M/5e Water Tank					1							
PW WWD #04-M8/75w Water Tank					1							
PW WWD - Cuyama Tank				1				1				1
PW WWD - Hasley Tank				1								1
PW WWD - North Tank				1								1
PW WWD - McCennery Tank					1			1				1
PW WWD - South Tank				1								1
PW WWD - 168th and G Pump station				1								
PW WWD - Anaverde Tanks and pump station				1						1		
PW WWD - Old timers tank and pump station				1								
PW WWD - Los Valles Pump station and Well				1								1
PW WWD - Vincent Pump station					1							1

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD - Bev martin tank and Pump Station				1		1						
PW SMD – East Yard				1								
PW SMD - Lawndale				1								
PW SMD – South Yard				1								
PW SMD – Central Yard				1								
PW SMD – North Yard				1		1						

Table C-11: Sheriff's Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Altadena Sheriff's Station				1								
Avalon Sheriff's Station										1		
Carson Sheriff's Station				1		1						
Century Regional Detention Facility				1								
Century Sheriff's Station				1								
Cerritos Sheriff's Station				1								
Compton Sheriff's Station				1		1						
Crescenta Valley Sheriff's Station				1						1		
East Los Angeles Sheriff's Station				1								
Industry Sheriff's Station				1								
Inmate Reception Center				1								
Lakewood Sheriff's Station				1		1						
Lancaster Sheriff's Station				1		1						
Lomita Sheriff's Station				1								
Malibu/Lost Hills Sheriff's Station				1						1		
Marina Del Rey Sheriff's Station				1					1			
Men's Central Jail				1								
North County Correctional Facility			1	1							1	
Norwalk Sheriff's Station				1								
Palmdale Sheriff's Station					1							
Pico Rivera Sheriff's Station				1		1						
Pitchess Detention Center East Facility				1				1				1

Table C-11: Sheriff's Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Pitchess Detention Center North Facility			1	1								1
Pitchess Detention Center South Facility			1	1								1
San Dimas Sheriff's Station				1								
Santa Clarita Valley Sheriff's Station					1							
South Los Angeles Sheriff's Station				1								
Temple Sheriff's Station				1								
Twin Towers Correctional Facility				1								
Walnut/Diamond Bar Sheriff's Station				1								
West Hollywood Sheriff's Station				1								

APPENDIX M

WATER CONSERVATION REGULATIONS

ORDINANCE NO. 1065

AN URGENCY ORDINANCE OF THE CITY OF SANTA FE SPRINGS IMPLEMENTING 2015 WATER CONSERVATION REGULATIONS

THE CITY COUNCIL OF THE CITY OF SANTA FE SPRINGS DOES ORDAIN AS FOLLOWS:

Section 1. The City Council hereby finds and declares:

A. On May 5, 2015, the State Water Resources Control Board adopted its Resolution No. 2015-0032, adopting an Emergency Regulation for Statewide Urban Water Conservation, in response to an Executive Order issued by Governor Brown on April 1, 2015.

B. The State Board's Regulation compels the City Council to take the actions contained in this Ordinance.

C. It is necessary that this Ordinance take effect immediately upon its adoption, pursuant to the provisions of Section 36937 of the California Government Code, in that its adoption is for the immediate preservation of the public peace, health or safety, based on the following facts: (1) The Statewide drought constitutes a public health and safety emergency requiring immediate action, as provided in the State Board's Resolution and the Governor's Executive Order; (2) the City will not be able to comply with the State Board's Regulation without immediately implementing the actions contained in this Ordinance; and (3) the City will be at substantial financial risk by virtue of potential fines assessed by the State in the event of noncompliance with the mandates of the State Board's Regulation.

D. The Court of Appeal's recent ruling in the Capistrano Taxpayers Association, Inc. vs. City of San Juan Capistrano case jeopardizes the City's ability to use a water rate structure with different rates dependent on the amount of consumption to obtain water conservation.

Section 2. The following new Chapter 54 is hereby added to the City Code:

"CHAPTER 54: WATER CONSERVATION

54.01 2015 WATER CONSERVATION REGULATIONS.

The regulations set forth in this Section shall supersede any conflicting regulations contained elsewhere in this Code or contained in any previous action taken by the City Council, and such regulations shall remain in force and effect until the City Council takes an action to modify or rescind the implementation of these water conservation regulations.

(A) To prevent the waste and unreasonable use of water and to promote water

conservation, each of the following actions is prohibited, except where necessary to address an immediate health and safety need or to comply with a term or condition in a permit issued by a state or federal agency:

1. The application of potable water to outdoor landscapes in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures.

2. The use of a hose that dispenses potable water to wash a motor vehicle, except where a hose is fitted with a shut-off nozzle or device attached to it that causes it to cease dispensing water immediately when not in use.

3. The application of potable water to driveways and sidewalks.

4. The use of potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system.

5. The application of potable water to outdoor landscapes during and within 48 hours after measureable rainfall.

6. The serving of drinking water other than upon request in eating or drinking establishments, including but not limited to restaurants, hotels, cafes, cafeterias, bars, or other public places where food or drink are served and/or purchased.

7. The irrigation with potable water of ornamental turf on public street medians.

8. The irrigation with potable water of landscapes outside of newly constructed homes and buildings in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission and the Department of Housing and Community Development.

(B) To promote water conservation, operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily. The hotel or motel shall prominently display notice of this option in each guestroom using clear and easily understood language.

(C) Residential and commercial landscape areas shall be watered no more than two times per week, for no more than 10 minutes per area. Residential and commercial landscape areas shall not be watered between the hours of 8:00 a.m. and 8:00 p.m. Watering of landscape areas shall be permitted only on Mondays and Thursdays at properties located north of the centerline of Lakeland Road, and at those properties located within the triangle bounded by Florence Avenue on the north, I-5 on the west and the railroad tracks parallel to Ringwood Avenue on the east. Watering of landscape areas shall be permitted only on Tuesdays and Fridays at properties located south of the centerline of Lakeland Road.

(D) The taking of any action prohibited by this Section, or the failure to take any action required by this Section, is an infraction, punishable by a fine as set forth in Section 36900 of the California Government Code, not to exceed $500 for each day in which the violation occurs."

Section 3. The City Council hereby declares it would have passed this Ordinance sentence by sentence, paragraph by paragraph and section by section, and does hereby declare the provisions of this Ordinance are severable, and if for any reason any section of this Ordinance should be held invalid, such decision shall not affect the validity of the remaining parts of this Ordinance.

Section 4. The City Clerk shall certify to the adoption of this Ordinance, and shall cause the same to be posted in at least three (3) public places in the City, such posting to be completed not later than 15 days after passage hereof.

Section 5. This Ordinance shall take effect immediately upon its adoption.

PASSED and ADOPTED this **28th** day of **May 2015**, by the following vote at a regular meeting of the City Council of the City of Santa Fe Springs:

AYES:

NOES:

ABSENT:

MAYOR

ATTEST:

CITY CLERK

APPENDIX N

WATER RATES

RESOLUTION NO. 9673

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SANTA FE SPRINGS, CALIFORNIA AMENDING WATER RATES AND CHARGES FOR FY 2020/21

The City Council of the City of Santa Fe Springs does hereby resolve as follows:

Section 1. The water rates and charges for the City set forth pursuant to Section 53-28 of the City Code, are hereby established as follows:

a. Quantity Rates

Single Family Residential

First 900 cubic feet per month	$2.56/100 cubic feet
Over 900 to 2,500 cubic feet/monthly	$3.92/100 cubic feet
Over 2,500 cubic feet/monthly	$5.62/100 cubic feet

All Other & Non-Residential Customer Classes (Uniform Rates)

Multi-Family Residential	$3.66/100 cubic feet
Commercial / Industrial	$3.66/100 cubic feet

b. Reclaimed Water Rates (Uniform Rate)

Reclaimed Water	$3.49/100 cubic feet

c. Senior Citizen Lifeline Rate

Residential customers who can verify that they meet the following eligibility requirements will receive a 25% discount on the first 900 cubic feet of water used each month:

- Applicant must be at least 60 years old
- Applicant must be a full-time resident of the City water service area
- The water bill must be in the name of the applicant
- The property listed on the water bill must be the primary residence of the applicant
- The total combined annual gross income of applicant's household must not exceed 175% of Federal poverty guidelines.

d. Meter Service Charge

	Per Meter Per Month
5/8 x 3/4inch	$ 20.97
3/4 Inch	$ 20.97
1 inch	$ 31.36
1-1/2 inch	$ 57.33
2 inch	$ 88.50
3 inch	$ 171.62
4 inch	$ 265.12
6 inch	$ 524.86
8 inch	$ 836.54
10 inch	$ 2187.16

The service charge is applicable to all metered service. It is a readiness-to-serve charge to which is added to the consumption charge, computed at the quantity rates, for water used during the month.

e. Fire Service Charge

	Per Meter Per Month
2 inch DC	$ 15.70
4 inch DC	$ 40.89
6 inch DC	$ 108.52
8 inch DC	$ 225.17
10 inch DC	$ 400.63

f. Late Payment Charge

If any account becomes delinquent, the City shall impose a fifteen dollar ($15.00) late payment charge.

g. Reconnection Charge

Water service which has been shut off for failure to comply with any of the rules and regulations or to pay any rates, charges or penalties, as herein provided, shall not be restored until such rules and regulations and penalties have been complied with to the satisfaction of the City and payment is made of the amount due if any; and in addition thereto the amount of thirty dollars ($30.00) shall be assessed for the expense of restoring water service for such occurrence.

h. Unauthorized Turn-On Charge

In the event that a customer turns on their water service, or allows any person other than an authorized City employee to turn on their water service, after the water service has been turned off by the City, a charge of seventy-five dollars ($75.00) shall be added to the bill for the affected service for the first occurrence in a six-month period, and one hundred and fifty dollars ($150.00) shall be assessed for the second and each subsequent occurrence in a six-month period.

Section 2. The foregoing rates and charges shall apply to all water used after June 1, 2020.

APPROVED and ADOPTED this 28th day of May, 2020.

AYES:

NOES:

ABSENT:

ABSTAIN:

_____
William K. Rounds, Mayor

ATTEST:

_____
Janet Martinez, CMC, City Clerk

APPENDIX O

RESOLUTION ADOPTING 2020 UWMP AND WSCP

APPROVED: 7/20/2021
ITEM NO.: 9

RESOLUTION NO. 9727

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SANTA FE SPRINGS ADOPTING THE CITY OF SANTA FE SPRINGS 2020-2025 URBAN WATER MANAGEMENT PLAN

WHEREAS, the Urban Water Management Planning Act requires all water purveyors serving more than 3,000 customers or supplying more that 3,000 acre feet of water annually to prepare an Urban Water Management Plan every five years; and

WHEREAS, the primary purpose of the Urban Water Management Plan is to facilitate proper planning for the conservation and efficient use of water supplies; and

WHEREAS, the primary purpose of the Water Shortage Contingency Plan is to use during drought conditions to implement customer demand reduction measures as well as potential water supply augmentation measures to meet water demands; and

WHEREAS, the City of Santa Fe Springs is an urban water purveyor serving a population of approximately 18,000 residents; and

WHEREAS, the 2020-2025 Urban Water Management Plan for the City of Santa Fe Springs must be adopted before June 30, 2021 after public review and a public hearing, and filed with the State of California Department of Water Resources within thirty days of adoption; and

WHEREAS, an updated Plan was developed and was made available for public review; and

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF SANTA FE SPRINGS DOES HEREBY RESOLVE AS FOLLOWS:

SECTION 1. That a Public Hearing was held on July 20, 2021 to receive public comment and testimony as required by the Urban Water Management Planning Act.

SECTION 2. The 2020-2025 Urban Water Management Plan and the Water Shortage Contingency Plan for the City of Santa Fe Springs is hereby adopted

SECTION 3. The Director of Public Works is hereby authorized and directed to file the same Plan with the California Department of Water Resources within thirty (30) days.

APPROVED and ADOPTED this 20th day of July, 2021 by the following vote:

APPROVED: 7/20/2021
ITEM NO.: 9

AYES: Councilmembers Sarno, Zamora, Mayor Pro Tem Rodriguez, and Mayor Mora

NOES: None

ABSENT: Councilmember Trujillo

ABSTAIN: None

JOHN M. MORA, MAYOR

ATTEST:

JANET MARTINEZ, CITY CLERK