Appendix G: Salt and Nutrient Mangement Plan

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Placeholder for Final Antelope Valley Salt and Nutrient Management Plan

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Appendix H: Climate Change Vulnerability Question Worksheet

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Antelope Valley IRWMP, Climate Change Committee
Climate Change Vulnerabilities Prioritization Activity Results

Vulnerability	Y/N	Justification	Vulnerability Issue	Comments
Water Demand				
Are there major industries that require cooling/process water in your planning region?	Y	Thermal solar power generation, EAFB (not significant), Palmdale Power, landfills, recycling plants	Industrial demand would increase	• Renewables
Are crops grown in your region climate-sensitive? Would shifts in daily heat patterns, such as how long heat lingers before night-time cooling, be prohibitive for some crops?	Y	Major crops: Ornamental trees, turf, alfalfa, nuts, carrots	Crop demand would increase	• Maintain some crops
Do groundwater supplies in your region lack resiliency after drought events?	Y	Groundwater levels are a long-standing issue	Lack of groundwater storage to buffer drought	• Issue is already a major concern. I see the issue increasing exponentially. • Overpumping issues/concerns • Need increased storage to meet needs • Groundwater recharge is slow and AV basin already overdrawn so capacity is reduced
Are water use curtailment measures effective in your region?	N	Not yet saturated	Limited ability to conserve further	
Does water use vary by more than 50% seasonally in parts of your region?	Y	Higher demand in summer: Agriculture, indoor/outdoor varies	Limited ability to meet summer demand	• SWP uncertainty • Aggravates overall issue
Are some instream flow requirements in your region either currently insufficient to support aquatic life, or occasionally unmet?	Y	Aquatic plants, freshwater shrimp,	Habitat demand would be impacted	
Water Supply				
Does a portion of the water supply in your region come from snowmelt?	Y	Local surface supply comes from snowmelt.	Decrease in local surface supply	• Our supply is already limited. Seeing that supply decrease some more is a concern. • Decrease in natural water supplies from snowpack and diverted water will increase dependency and expense of imported water • Impact to species/habitats by capture of runoff
Does part of your region rely on water diverted from the Delta, imported from the Colorado River, or imported from other climate-sensitive systems outside your region?	Y	Large portion of supply comes from imported (SWP)	Decrease in imported supply	• Vulnerability in storage/more rain, then snow - timing • SWP vulnerability • Dependency of Antelope Valley on imported water
Would your region have difficulty in storing carryover supply surpluses from year to year?	Y	Potential for groundwater recharge, have not yet met potential for GW recharge	Decrease in seasonal reliability	*No comments*
Does part of your region rely on coastal aquifers? Has salt intrusion been a problem in the past?	N		Decrease in groundwater supply	
Has your region faced a drought in the past during which it failed to meet local water demands?	Y	Demand management plans have been effective in the past	Sensitivity due to higher drought potential	• See this as fundamental issue • More frequent and prolonged droughts • With the increased potential for drought, the competition for water would be a concern
Does your region have invasive species management issues at your facilities, along conveyance structures, or in habitat areas?	Y	Tamarisk, Cottonwoods	Invasives can reduce supply available	

Antelope Valley IRWMP, Climate Change Committee
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Vulnerability	Y/N	Justification	Vulnerability Issue	Comments
Water Quality				
Are increased wildfires a threat in your region? If so, does your region include reservoirs with fire-susceptible vegetation nearby which could pose a water quality concern from increased erosion?	Y	Fire in the San Gabriel mountains could cause sedimentation in the Little Rock reservoir.	Increased erosion and sedimentation	• Resulting from fires and flash floods • Limited water quantity makes quality even more important
Does part of your region rely on surface water bodies with current or recurrent water quality issues related to eutrophication, such as low dissolved oxygen or algal blooms? Are there other water quality constituents potentially exacerbated by climate change?	N	Little Rock reservoir and Lake Palmdale do not have eutrophication issues.	Poor water quality in surface waters	
Are seasonal low flows decreasing for some waterbodies in your region? If so, are the reduced low flows limiting the waterbodies' assimilative capacity?	N	Contaminant levels are low in areas with transport potential to drinking water bodies.	Increased constituent concentrations	
Are there beneficial uses designated for some water bodies in your region that cannot always be met due to water quality issues?	N	Reservoirs are primarily for drinking water.	Decrease in recreational opportunity	
Does part of your region currently observe water quality shifts during rain events that impact treatment facility operation?	N	Bulk of water either imported or groundwater	Increase in treatment needs and costs	
Sea Level Rise				
Has coastal erosion already been observed in your region?	N		Decrease in land	
Are there coastal structures, such as levees or breakwaters, in your region?	N		Damage to coastal infrastruture/receration/tourism	
Is there significant coastal infrastructure, such as residences, recreation, water and wastewater treatment, tourism, and transportation) at less than six feet above mean sea level in your region?	N			
Is there land subsidence in the coastal areas of your region?	N			
Are there climate-sensitive low-lying coastal habitats in your region?	N		Damage to ecosystem/habitat	
Are there areas in your region that currently flood during extreme high tides or storm surges?	N			
Do tidal gauges along the coastal parts of your region show an increase over the past several decades?	N			

Antelope Valley IRWMP, Climate Change Committee
Climate Change Vulnerabilities Prioritization Activity Results

Vulnerability	Y/N	Justification	Vulnerability Issue	Comments
Flooding				
Does critical infrastructure in your region lie within the 200-year floodplain?	Y	Water reclamation plants are in the 100-yr to 500-yr floodplain	Increases in inland flooding	
Does aging critical flood protection infrastructure exist in your region?	Y	Aging local flood protection infrastructure exists in region		
Have flood control facilities (such as impoundment structures) been insufficient in the past?	Y	Areas exist that flood regularly		
Are wildfires a concern in parts of your region?	Y	Flash flooding has been an issue in the past	Increases in flash flooding	• Increase in extreme weather events though decrease in frequency • Historical occurrences • Development in flood plain • Need to avoid development in flash flooding channels/areas to increase availability of flows to habitat and EAFB landing fields • Great potential for damage
Does part of your region lie within the Sacramento-San Joaquin Drainage District?	N			
Ecosystem and Habitat				
Does your region include inland or coastal aquatic habitats vulnerable to erosion and sedimentation issues?	Y	Erosion and sedimentation in Little and Big Rock Wash, (watershed by Three Points)	Increased impacts to water dependent species	• Stressors to water dependent habitat • Potential conflicts among users of water supply
Does your region include aquatic habitats which rely on seasonal freshwater flow patterns?	Y	Local Piute ponds, ephemeral streambeds - all subwatersheds in desert are critical		
Do climate-sensitive fauna or flora populations live in your region?	Y	Evapotranspiration may affect habitat		
Do estuaries, coastal dunes, wetlands, marshes, or exposed beaches exist in your region? If so, are coastal storms possible/frequent in your region?	N	Region does not have coastal storms	Decrease in habitat protection against coastal storms	
Do endangered or threatened species exist in your region? Are changes in species distribution already being observed in parts of your region?	Y	Desert tortoise, burrowing owl, mojave ground squirrel	Decrease in available necessary habitat	• There are already several factors in play. With anticipated climate change issues, the issue will almost be exacerbated. • Many climate-sensitive and endangered species with limited opportunity for migration
Does the region rely on aquatic or water-dependent habitats for recreation or other economic activities?	Y	Duck hunting in Piute ponds, bird watching, canoeing		
Are there areas of fragmented estuarine, aquatic, or wetland wildlife habitat within your region? Are there movement corridors for species to naturally migrate? Are there infrastructure projects planned that might preclude species movement?	Y	Limited planning in ecological areas - Big Rock & Little Rock Washes, Broad Cyn Wash, Elizabeth Lake - "choke points"		
Does your region include one or more of the habitats described in the Endangered Species Coalition's Top 10 habitats vulnerable to climate change?	Y	The "Southwest Deserts", which include the Mojave Desert, is one of the "Top 10 Habitats"		
Are there rivers in your region with quantified environmental flow requirements or known water quality/quantity stressors to aquatic life?	Y	Freshwater shrimp and mariposa lily require a certain quantity of flow	Decrease in environmental flows	*No comments*
Hydropower				
Is hydropower a source of electricity in your region?	N			

Antelope Valley IRWMP, Climate Change Committee
Climate Change Vulnerabilities Prioritization Activity Results

Vulnerability	Y/N	Justification	Vulnerability Issue	Comments
Are energy needs in your region expected to increase in the future? If so, are there future plans for hydropower generation facilities or conditions for hydropower generation in your region?	N		Decrease in hydropower potential	

Appendix I: List of Adjudication Documents

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Adjudication Documents

Leighton, D.A. and Phillips, S.P. 2003. Simulation of Ground-Water Flow and Land Subsidence in the Antelope Valley Ground-Water Basin, California. Prepared by the U.S. Geological Survey in cooperation with the Antelope Valley Water Group. Water-Resources Investigations Report 03-4016.

Rozman, M. et al. 2011. Semitropic-Rosamond Water Bank Authority – Antelope Valley Waterbank. Abstract and PowerPoint Presentation for the Managed Aquifer Recharge Symposium. January 25-26.

Superior Court of California. 2006. Revised Order After Hearing on Jurisdictional Boundaries. Antelope Valley Groundwater Cases (JCCP4408). Los Angeles County Superior Court Case No. BC 325 201.

Superior Court of California. 2008. Order After Phase Two Trial of Hydrologic Nature of Antelope Valley. Antelope Valley Groundwater Cases (JCCP4408). Los Angeles County Superior Court Case No. Case No. 1-05-CV 049053.

Superior Court of California. 2010. Ex Parte Application of "Moving Principals" for Continuance of Trial; Declaration of Douglas J. Evertz in Support of Application. Case No. BC 364553.

Superior Court of California. 2010. Willis Class Stipulation of Settlement. Case No. BC 364553.

Superior Court of California. 2011. Statement of Decision Phase Three Trial. Case No. BC 325201.

Superior Court of California. 2011. Declaration of Steven Bachman, Ph.D., In Response to the Declaration of Joseph Scalmanini Re: Rebuttal Testimony. Phase 3 Trial. Case No.: 1-05-CV-049053. Los Angeles County Superior Court Case No. BC 325 201.

Superior Court of California. 2012. Notice of Lodgment in Support of Notice of Motion and Motion for Reconsideration of the Court's November 16, 2011 Order RE Election for Periodic Payments of the Amended Final Judgment Approving Willis Class Action Settlement; Memorandum of Points and Authorities. Case No.: BC 364553.

Superior Court of California. 2013. Antelope Valley-East Kern Water Agency's Statement RE Phase V Trial Proposal. Phase 3 Trial. Case No.: 1-05-CV-049053. Los Angeles County Superior Court Case No. BC 325 201.

United States Geological Survey (USGS). 1967. Water Resources of the Antelope Valley-East Kern Water Agency Area, California. (67-21).

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