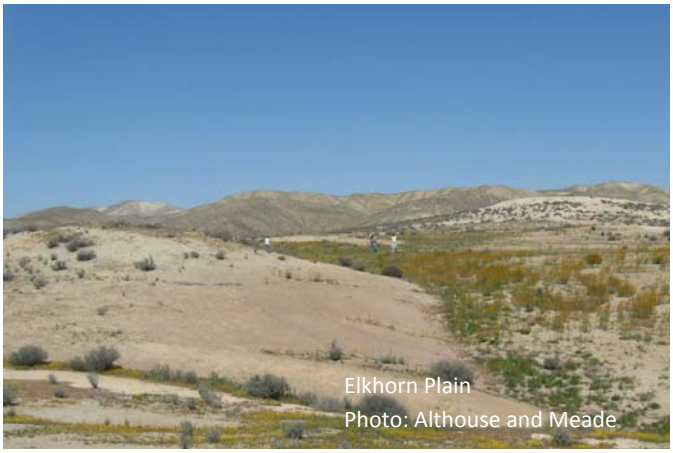
Appendix C.3 North County Sub-region Watersheds

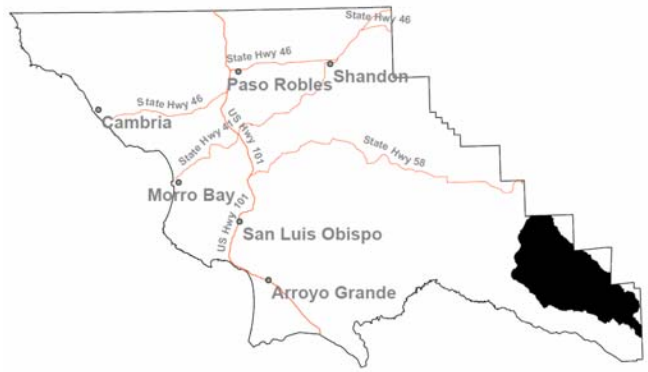
15. Black Sulphur Spring Watershed
16. Soda Lake Watershed
17. Upper San Juan Creek Watershed
18. Lower San Juan Creek Watershed
19. Upper Salinas-Santa Margarita Area Watersheds
20. Mid Salinas- Atascadero Area Watersheds
21. Lower Salinas-Paso Robles Creek Area Watersheds
22. Huer Huero Creek Watershed
23. Estrella River Watershed
24. Cholame Creek Watershed
25. Nacimiento River Watershed

Black Sulphur Spring Watershed

Hydrologic Unit Name	Water Planning Area	Acreage	Flows to	Groundwater Basin(s)	Jurisdictions
Carrizo Plain 11	Carrizo Plain WPA 10	143,160 acres total; 137,489 acres within San Luis Obispo County	Soda Lake	Carrizo Plain	County of San Luis Obispo, Bureau of Land Management



Elkhorn Plain
Photo: Althouse and Meade



Description:

The Black Sulphur Spring Watershed lies in the eastern portion of San Luis Obispo's North County region and includes the southern portion of the Carrizo National Monument. The total watershed area is approximately 143,160 acres with a majority of the acreage located within San Luis Obispo County (137,489 acres). The remaining acreage is located within Kern County to the East. The watershed is bounded by Temblor Range to the east, Caliente Range and San Juan Hills to the west and drains entirely into Soda Lake. The Black Sulphur Watershed contains two major drainages: the Caliente Range and Elkhorn Plain. The highest elevation in the watershed is about 3,411 feet and the lowest elevation is approximately 1,919 feet. Elkhorn Plain is in this watershed, draining toward the basin floor. The watershed is transected by San Andreas Fault. The groundwater basin underlying the watershed, the Carrizo Plain basin, is recharged from percolation of stream flow and infiltration of precipitation. Users of the basin include a small public water system serving local school, agricultural and residential purposes, and solar farms. The dominant land use is rangeland.

Existing Watershed Plans:

No existing plans to date

Black Sulphur Spring Watershed

Characteristics

	Physical Setting	
	Rainfall	Average Annual: 7-13 in. (NRCS shapefile, 2010)
	Air Temperature	Summer Range (August 1991-2012): 64°-88°F Winter Range (December 1991-2012): 39°-52°F (Carrizo NOAA National Climatic Data Center, viewed 2013)
	Geology Description	Carrizo Plain and Elkhorn Scarp sub-watersheds composed of flat highly infiltrative Quaternary geologic material – Category #3. Beam Flat, Abbot Canyon, Goat Spring, and Cottonwood Spring are composed of moderate steep moderately infiltrative early to mid-Tertiary headwaters and flat highly infiltrative Quaternary inland – Category #7. Cochora Ranch, and Simm sub-watersheds are steep moderately infiltrative early to mid-Tertiary materials – Category #8 (Bell, pers. comm., 2013). Groundwater is found in alluvium and the Paso Robles and Morales Formations. Upper Pleistocene to Holocene alluvium consists of unconsolidated to loosely consolidated sands, gravels, and silts with a few beds of compacted clays. Paso Robles Formation. The Pleistocene age Paso Robles Formation consists of poorly sorted, mostly loosely consolidated gravels, sands, and silts. The combined thickness of these deposits is more than 3,000 feet in the eastern portion of the basin along the San Andreas fault and decreases toward the west. Morales Formation. The Upper Pliocene Morales Formation consists of sands, gravels, and silts, which generally are more stratified and compacted than in the overlying Paso Robles Formation (Chipping, 1987).
	Hydrology	
	Stream Gage	No
	Hydrology Models	None
	Peak Flow	No source identified
	Base Flow	No source identified
	Flood Reports	No source identified
	Flood Control Structures	No source identified
	Areas of Heightened Flood Risk	No source identified
	Biological Setting	

Black Sulphur Spring Watershed

Vegetation Cover	Primarily annual grassland and alkali desert scrub. Valley saltbush scrub with juniper and California sagebrush are common (SLO County vegetation shapefile, 1990) *Data limited due to age of shapefile* CNPS recently (2013) completed a vegetation survey of the Carrizo Plain National Monument. Mapped vegetation characterized stands to the alliance level. Desert scrub, alkaline/scrub, coastal scrub, chaparral, woodlands, saline and alkali marshes, grasslands and herblands, and arroyo wash alliances were all represented. Juniper and blue oak woodlands are primarily on the southwestern edge of the watershed in the hills. Alkali, desert, and coastal scrub are common on eastern hills. Goldfield-plantain-fescue fields are common along the basin floor. Alkali wetlands and marsh vegetation are patchy in thenorthern watershed south of soda lake. Many additional alliances are mapped in small patches. The CNPS inventory provides high-resolution vegetation data at fine scale for this watershed. Vernal pools, alkali wetlands, and rare arid-land plant communities are important resources with small areal extent in this watershed (Althouse and Meade, 2013). *Data limited to observations, not complete inventory*
Invasive Species	Slim oat (*Avena barbata*), Common wild oat (*Avena fatua*), Black Mustard (*Brassica nigra*), Bromegrass (*Bromus Diandrus*), Red brome (*Bromus rubens*), Italian thistle (*Carduus pycnocephalus*), Spear thistle (*Cirsium vulgare*), Cut-leaved cranesbill (*Geranium dissectum*), Farmer's foxtail (*Hordeum marinum*), Italian ryegrass (*Lolium multiflorum*), Foxtail fescue (*Vulpia myuros*), Tamarisk (*Tamarix* spp.) (California Native Plant Society, 2011) *Data limited to observations, not complete inventory*
Special Status Wildlife and Plants	Key: FE - Federal endangered, FT - Federal threatened, SE - State endangered, ST - State threatened, SSC - State Species of Special Concern; FP- Fully Protected, SA – Special Animal, CRPR – CA rare plant rank (CNDDB, viewed August, 2013) Locations listed refer to USGS 7.5' quadrangle names. Only the portion overlapping the watershed boundary was considered. *Data limited to observations, not complete inventory*

Species	Status	BALLINGER CANYON	CALIENTE MTN	CUYAMA	ELKHORN HILLS	FELLOWS	MARICOPA	MCKITTRICK SUMMIT	PAINTED ROCK	PANORAMA HILLS	REWARD	WELLS RANCH

Black Sulphur Spring Watershed

Species	Status	BALLINGER CANYON	CALIENTE MTN	CUYAMA	ELKHORN HILLS	FELLOWS	MARICOPA	MCKITTRICK SUMMIT	PAINTED ROCK	PANORAMA HILLS	REWARD	WELLS RANCH
Animals												
American badger	SSC								x			x
blunt-nosed leopard lizard	FE; SE; FP	x			x		x	x	x	x		x
burrowing owl	SSC				x				x			
California condor	FE; SE	x										
giant kangaroo rat	FE; SE	x	x	x	x		x		x	x		x
Kern primrose sphinx moth	FT	x	x	x	x	x				x		x
Morrison's blister beetle	SA				x							
mountain plover	SSC (Wintering)				x				x	x		x
Nelson's antelope squirrel	ST				x				x	x		x
pallid bat	SSC								x			
prairie falcon	SA (Nesting)	x	x	x				x	x	x		x
San Joaquin kit fox	FE; ST	x		x	x		x	x	x	x		x
San Joaquin whipsnake	SSC	x							x			
short-nosed kangaroo rat	SSC									x		x
Swainson's hawk	ST			x	x							
Tulare grasshopper mouse	SSC									x		x
western spadefoot	SSC	x										
Plants												
California jewel-flower	FE; SE				x				x			x
chaparral ragwort	CRPR 2B.2									x		
Coulter's goldfields	CRPR 1B.1				x				x	x		
Jared's pepper-grass	CRPR 1B.2				x				x	x		x
Kern mallow	FE				x				x	x		x
Lemmon's jewel-flower	CRPR 1B.2		x						x			
Lost Hills crownscale	CRPR 1B.2								x			x
Munz's tidy-tips	CRPR 1B.2				x				x			x

Black Sulphur Spring Watershed

	oval-leaved snapdragon	CRPR 4.2	x							x
	pale-yellow layia	CRPR 1B.1		x		x			x	x
	recurved larkspur	CRPR 1B.2					x	x		
	round-leaved filaree	CRPR 1B.1	x							x
	San Joaquin woollythreads	FE	x	x	x		x	x		x
	showy golden madia	CRPR 1B.1		x						x
	stinkbells	CRPR 4.2	x							x
	Temblor buckwheat	CRPR 1B.2		x				x		

	Steelhead Streams	None
	Stream Habitat Inventory	None
	Fish Passage Barriers	No source identified, fish populations not historically supported
	Designated Critical Habitat	None
	Habitat Conservation Plans	Yes; Carrizo Plain Natural Area Plan, Stewardship Council Land Conservation Plan
	Other Environmental Resources	Carrizo Plains National Monument and Ecological Reserve and Soda Lake, San Andreas Fault Zone of Eastern San Luis Obispo County, Caliente Wildlife Area (SLO County Flood Control and Water Conservation District, 2007)
	Land Use	
	Jurisdictions & Local Communities	County of San Luis Obispo, BLM - Carrizo Plains National Monument
	% Urbanized	0% (Land Use Category GIS Layer)
	% Agricultural	62% (SLO County Land Use Category GIS Layer)
	% Other	38% (Rural) (SLO County Land Use Category)
	Planning Areas	Shandon-Carrizo Planning Area
	Potential growth areas	None Identified
	Facilities Present	None identified
	Commercial Uses	Agriculture, tourism
	Demographics	
	Population	2 (US Census Block, 2010)
	Race and Ethnicity	Latinos represent 100%.
	Income	MHI $65,482 in watershed (US Census Tracts, 2010, spans 11 watersheds)

Black Sulphur Spring Watershed

	Disadvantaged Communities	No; 7.0% of individuals are below poverty level in watershed (US Census Tracts, 2010, spans 11 watersheds)
	Water Supply	
	Water Management Entities	None; users served by individual wells
	Groundwater	Carrizo Plain (total storage capacity is estimated at 400,000 af)
	Surface Water	No public reservoirs in the watershed.
	Imported Water	None
	Recycled/ Desalinated Water	None
	Key groundwater percolation area(s)	No key percolation areas identified - Recharge to the basin is largely by percolation of stream flow and infiltration of rainfall to the valley floor (Ca. Dept of Water Resources, 2003)
	Water budget performed	Yes; Aspen Environmental Group, 2011 for Topaz Solar Farm. *Data limited to region affected by the Topaz Solar Farm, which is similar to, but not included in this watershed*
	Water Uses	
	Beneficial Uses	*Soda Lake* - Industrial Service Supply (IND), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Warm Fresh Water Habitat (WARM), Significance (BIOL), Rare, Threatened, or Endangered Species (RARE) and Commercial and Sport Fishing (COMM) (CCRWQB, 2011)
	Other Unique Characteristics	
	San Andreas Fault Zone	The San Andres Fault traverses the eastern portion of the county and is one of the most seismically active faults in North America. The fault zone is important from a botanical and geological standpoint. The San Andres Fault in the Carrizo Plain has the largest post-early Miocene offset and is the oldest reach of the entire active fault system. (The sag ponds along the fault have special ecological significance (Pollard et. al., 1995).
	Carrizo Plain National Monument	A cooperative effort since 1985 between Bureau of Land Management, California Fish and Wildlife and the Nature Conservancy. 250,000 acres of relatively undisturbed habitat.
	Elkhorn Plain Ecological Reserve	A 160 acre, semi-desert state reserve with many unusual plants: the endangered San Joaquin wooly threads, desert boxthorn, cottony and spotted buckwheat, Arizona popcorn flower, Kern Tarplant and thistle sage. Has a population of blunt nose leopard lizard.
	Caliente National Cooperative Land and Wildlife Management Area	Includes 58,000 acres of Bureau of Land Management property. Caliente Mountain, part of the Cuyama River Watershed, is the highest peak in the county at more than 5,100 feet. Partially or entirely in the range of the California Condor and Blunt Nosed Leopard Lizard,

Black Sulphur Spring Watershed

		endangered species, and San Joaquin Kit Fox, a rare species.
	Vernal Pools	Present in the Black Sulphur Spring watershed. These pools are more alkaline than pools of the Paso Region. Rare plants and wildlife utilize vernal pool habitat in the Carrizo.
	San Joaquin Kit Fox	Carrizo Plain supports a core population of federally endangered San Joaquin Kit Fox. Additionally, giant kangaroo rat precincts are known from Black Sulphur Spring watershed. Blunt nose leopard lizard and Nelson's antelope squirrel are known from the Elkhorn Plain. Rare plants of limited extent in the state and globally are reported from this watershed.
	Wildflower Fields	Mid-March to mid-April is the usual time for wildflower season, but it is dependent on the weather and varies from season to season. Temperature and rainfall affect which flowers bloom. Every year is not spectacular and only a few flowers may prevail in some years. Typical species include: goldenbush shrubs, bush lupine, pale yellow astragalus, locoweed, filaree, yellow tropidocarpum, white popcorn flower, orange fiddleneck, poppies, hillside daises, sun cups and baby-blue eyes. One of the three remaining habitats for the California jewelflower as well as other special status plants (BLM, 2013)
	Climate Change Considerations	
		Saltbrush and other native shrubs are expected to decline and marginal farmland may become less productive and retired in the Carrizo Plain area. Pronghorn and Tule elk populations could decline. (ClimateWise, 2010). See IRWMP, 2014 Section H. Climate Change *General County data, not watershed specific*

Watershed Codes

CalWater / DWR Number	HA	Hydrologic Area Name	HSA	Hydrologic sub-area name	SWRCB Number	CDF Super Planning	Sub-watersheds (CDF Watershed Name)
3311.000103	0	Undefined	0	Undefined	311.00	Panorama Hills	Old Cooper Ranch
3311.000201	0	Undefined	0	Undefined	311.00	Elkhorn Plain	South of Cochoro ranch
3311.000202	0	Undefined	0	Undefined	311.00	Elkhorn Plain	Beam Flat
3311.000203	0	Undefined	0	Undefined	311.00	Elkhorn Plain	Elkhorn Scarp
3311.000204	0	Undefined	0	Undefined	311.00	Elkhorn Plain	Cochora Ranch
3311.000301	0	Undefined	0	Undefined	311.00	Caliente Range	Abbot Canyon

Black Sulphur Spring Watershed

3311.000302	0	Undefined	0	Undefined	311.00	Caliente Range	Goat Spring
3311.000303	0	Undefined	0	Undefined	311.00	Caliente Range	Cottonwood Spring
3311.000304	0	Undefined	0	Undefined	311.00	Caliente Range	Lawson Spring
3311.000404	0	Undefined	0	Undefined	311.00	West of Soda Lake	Simm
3311.000500	0	Undefined	0	Undefined	311.00	Soda Lake	Soda Lake / Carrizo Plain (ptn)
Source: Excerpt from California Interagency Watershed Map of 1999, Calwater 2.2.1 (CA Resource Agency, 2004 Update)							

Major Changes in the Watershed

- 4000-8000 years before present – The Carrizo Plains were a meeting place for Salinan, Yokut, Chumash and other Indian tribes. Vaqueros Formation rock monoliths are decorated with art that is being protected today.
- 1780 – First contact by Europeans. Large herds of sheep, horse and cattle brought into the area by Spanish. Introduce non-native species to the Carrizo grasslands
- 1857 – Major earthquake that shaped much of the natural landscape of the Carrizo Plains area (Pollard et. al., 1995)
- 1876 – First homesteads established on Carrizo Plains. Dry grain farming was intensive after invention of mechanized agricultural equipment in 1912, resulting in as much as 2 feet of top soil loss in some field margins
- 1939 to Post World War II – A combination of good weather and post War expansion led to increased profitability and productivity of the areas farms and ranches.
- 1964 – Creation of California Valley. Chicote Ranch, a 7,500 acre ranch just south of 58, was divided into two-and-a half acre parcels which were promoted all over the state as retirement homes.
- 2001 – Carrizo Plain National Monument created by President Clinton under the authority of the Antiquities Act of 1906.

Source: Santa Margarita Historical Society, http://www.santamargaritahistoricalsociety.org/pages/carrisa_plains.html unless otherwise noted

Watershed Health by Major Tributary

Tributary Name	**Ephemeral / Perennial**	**303d Listed/ TMDLs**	**Pollution Sources** NP (non-point) MP (Major Point)

Black Sulphur Spring Watershed

Abbot Canyon	Unknown	None	n/a
Beam Flat	Unknown	None	n/a
Carrizo Plain	Unknown	None	n/a
Cochora Ranch	Unknown	None	n/a
Cottonwood Spring	Perennial	None	n/a
Elkhorn Scarp	Unknown	None	n/a
Goat Spring	Unknown	None	n/a
Simm	Unknown	None	n/a

Watershed Health by Major Groundwater Basin

Groundwater Basin	Estimated Safe Yield	Water Availability Constraints	Drinking Water Standard Exceedance	Water Quality Objective Exceedance, Table 3-8
Carrizo Plain	8000-11,000 AF (Carollo, 2012)	Physical limitations and environmental demand. The shallow alluvial deposits are typically more susceptible to drought impacts (Carollo, 2012).	Yes; see description below.	Exceeds usable mineral quality for total dissolved solids, chloride, sulfate, boron, sodium, and nitrogen (CCRWQB, 2011).

Groundwater Quality Description: Analyses of groundwater from 79 wells in this basin during 1957 through 1985 show Total Dissolved Solids (TDS) content ranging from 161 to 94,750 ppm. A highly mineralized groundwater zone is found in the lower part of the alluvium and the upper part of the Paso Robles Formation where they underlie Soda Lake. Water in a deeper zone Paso Robles Formation is of higher quality and confined in the vicinity of Soda Lake. Groundwater in the Morales Formation is likely

to be brackish. Locally high nitrate and salinity concentrations as well as high Selenium and Arsenic as result of geology (Carollo, 2012).

Primary Issues

Issue	*Potential Causes*	*Referenced from*
Groundwater quality		Carollo, 2012
Groundwater Quantity	Physical Limitations	Carollo, 2012
Outdated Studies of the GW basins		Carollo, 2012

Black Sulphur Spring Watershed

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Significant Studies in Progress:

Soda Lake Watershed

Hydrologic Unit Name	Water Planning Area	Acreage	Flows to	Groundwater Basin(s)	Jurisdictions
Carrizo Plain 11	Carrizo Plain WPA 10	141,876 total acres with 136,015 acres within San Luis Obispo County	Soda Lake	Carrizo Plain, Big Spring Area (ptn)	County of San Luis Obispo, California Valley, Bureau of Land Management

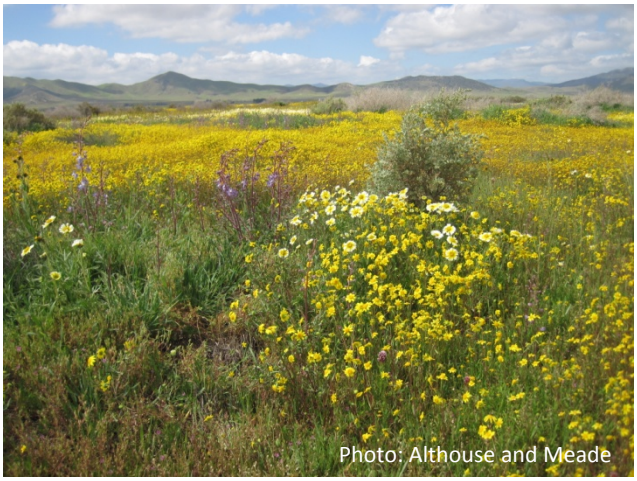
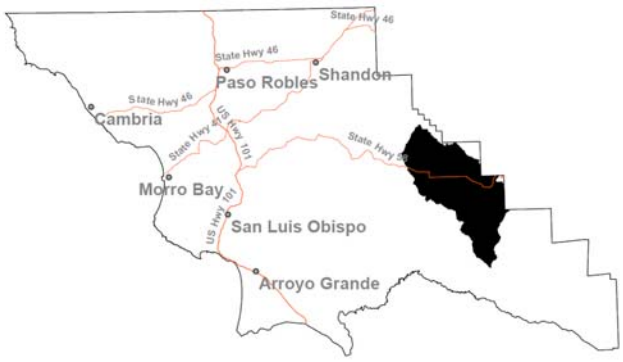


Photo: Althouse and Meade



Description:

The Soda Lake Watershed lies in the eastern portion of San Luis Obispo County and includes the northern portion of the Carrizo National Monument. The watershed is 141,876 acres with a majority of the acreage located within San Luis Obispo County (136,015 acres) and the remaining acreage in Kern County. The watershed is bounded by Temblor Range to the east, Caliente Range and San Juan Hills to the west and drains entirely into Soda Lake. Soda Lake itself is primarily contained within the watershed, with a portion in the Black Sulphur Springs watershed. The Watershed contains two major drainages: Panorama Hills and West of Soda Lake. The highest elevation in the watershed is approximately 4,100 feet and the lowest elevation is about 1,920 feet. The watershed, combined with the adjacent Black Sulphur Spring watershed, is an alkali closed basin with no outflow beyond Soda Lake. The watershed is transected by San Andreas Fault. The major groundwater basin underlying the watershed is the Carrizo Plain basin which is recharged from percolation of stream flow and infiltration of precipitation. The dominant land uses are grazing and solar farms.

Existing Watershed Plans:

No existing plans to date

Soda Lake Watershed

Characteristics

	Physical Setting	
	Rainfall	Average Annual: 7-14 in. (NRCS shapefile, 2010).
	Air Temperature	Summer Range (August 1996-2012): 64-88°F Winter Range (December 1996-2012): 38-52°F (Branch Mountain, NOAA National Climatic Data Center, viewed 2013)
	Geology Description	Carrizo Plain sub-watershed is flat highly infiltrative Quaternary material – Category #3. Painted Rock, Goodwin Ranch and San Diego Creek are moderate steep moderately infiltrative early to mid-Tertiary headwaters and are flat and highly infiltrative Quaternary inland – Category #7 (Bell, pers. comm., 2013). Groundwater is found in alluvium and the Paso Robles and Morales Formations. Upper Pleistocene to Holocene alluvium consists of unconsolidated to loosely consolidated sands, gravels, and silts with a few beds of compacted clays. Paso Robles Formation. The Pleistocene age Paso Robles Formation consists of poorly sorted, mostly loosely consolidated gravels, sands, and silts. The combined thickness of these deposits is more than 3,000 feet in the eastern portion of the basin along the San Andreas fault and decreases toward the west. The Upper Pliocene Morales Formation consists of sands, gravels, and silts, which generally are more stratified and compacted than in the overlying Paso Robles Formation (Chipping, 1987).
	Hydrology	
	Stream Gage	None
	Hydrology Models	Yes; North Coast Engineering. 2008. Preliminary investigation for the California Valley solar ranch, San Luis Obispo County, CA. Taney Engineering. 2009. Hydrology Report of Topaz Solar Facility.
	Peak Flow	No data available
	Base Flow	No data available
	Flood Reports	None
	Flood Control Structures	Bridges: 1 over Carrizo Drain on Soda Lake Road (PWD Bridges GIS Layer)
	Areas of Flood Risk	No data available

Soda Lake Watershed

	Biological Setting	
	Vegetation Cover	Primarily annual grassland with alkali desert scrub, juniper woodland,semi-desert chaparral, sagebrush, saltbush, barren dry salt flats, as well as mixed chaparral consisting of mainly narrowleaf golden bush (SLO County vegetation shapefile, 1990) *Data limited by age of shapefile* CNPS recently (2013) completed a vegetation survey of the Carrizo Plain National Monument; a portion of the Soda Lake watershed was included in the survey. Mapped vegetation characterized stands to the alliance level. Desert scrub, alkaline/scrub, coastal scrub, chaparral, woodlands, saline and alkali marshes, grasslands and herblands, and arroyo wash alliances were all represented. Grasslands are mapped along the western hills and lower portions of the eastern hills; alkali, desert, and coastal scrub are common on upper eastern hills. Goldfield-plantain-fescue fields and other wildflower alliances are present along the basin floor. Alkali wetlands and marsh vegetation are patchy in near Soda Lake. Many additional alliances are mapped in small patches. The CNPS inventory provides high-resolution vegetation data at fine scale for the south part of this watershed. Private lands have not been inventoried. Vernal pools are present on the plain floor, and become less alkaline in the north part of the watershed. Annual grasslands and recently farmed croplands are common in the north part of the watershed (Althouse and Meade, 2013).
	Invasive Species	Slim oat (*Avena barbata*), Common wild oat (*Avena fatua*), Black Mustard (*Brassica nigra*), Bromegrass (*Bromus Diandrus*), Red brome (*Bromus rubens*), Italian thistle (*Carduus pycnocephalus*), Spear thistle (*Cirsium vulgare*), Cut-leaved cranesbill (*Geranium dissectum*), Farmer's foxtail (*Hordeum marinum*), Italian ryegrass (*Lolium multiflorum*), Foxtail fescue (*Vulpia myuros*) Cheat grass (*Bromus diandrus*), Tamarisk (*Tamarix* spp.), Tree of heaven (*Ailanthus altissima*), Russian thistle (*Salsola tragus*), Perennial pepperweed (*Lepidium latifolium*), Barbed goat grass (*Aegilops triuncialis*), Skeleton weed (*Chondrilla juncea*), Russian knapweed (*Acroptilon repens*), and Yellowstar thistle (*Centaurea solstitialis*) (Los Padres Forest Watch, 2011). Several of these species have limited distribution within the watershed and a coordinated effort with landowners could make significant contribution to control of spread. Many of these species were identified and mapped during biological surveys for Topaz Solar Farm, and through personal communications with the County Department of Agriculture. These occurrences pre-date the solar projects (Althouse and Meade, 2013). *Data limited to observations, not complete inventory*

Soda Lake Watershed

Special Status Wildlife and Plants

Key: FE - Federal endangered, FT - Federal threatened, SE - State endangered, ST - State threatened, SSC - State Species of Special Concern; FP- Fully Protected, SA – Special Animal, CRPR – CA rare plant rank (CNDDB, viewed August, 2013)

Locations listed refer to USGS 7.5' quadrangle names. Only the portion overlapping the watershed boundary was considered.

Data limited to observations, not complete inventory

Species	Status	CALIENTE MTN	CALIFORNIA VALLEY	CARNEROS ROCKS	CHIMINEAS RANCH	LA PANZA NE	LA PANZA RANCH	LAS YEGUAS RANCH	MCKITTRICK SUMMIT	PAINTED ROCK	SIMMLER
Animals											
American badger	SSC		x			x	x		x		
blunt-nosed leopard lizard	FE; SE; FP								x	x	x
Burrowing owl	SSC (Burrow sites ,some wintering sites)				x	x					x
coast horned lizard	SSC										x
giant kangaroo rat	FE; SE		x		x			x	x	x	x
longhorn fairy shrimp	FE		x		x			x			x
mountain plover	SSC - Wintering									x	
Nelson's antelope squirrel	ST		x						x	x	x
pallid bat	SSC		x							x	x
pocket pouch fairy shrimp	SA									x	
prairie falcon	SA (Nesting)	x	x	X	x	x	x	x	x	x	x
San Joaquin kit fox	FE; ST		x		x	x		x	x	x	x
San Joaquin pocket mouse	SA								x		x
San Joaquin whipsnake	SSC					x			x		

Soda Lake Watershed

Tipton kangaroo rat	FE; SE				x					x	x
Species	**Status**	**CALIENTE MTN**	**CALIFORNIA VALLEY**	**CARNEROS ROCKS**	**CHIMINEAS RANCH**	**LA PANZA NE**	**LA PANZA RANCH**	**LAS YEGUAS RANCH**	**MCKITTRICK SUMMIT**	**PAINTED ROCK**	**SIMMLER**
Tulare grasshopper mouse	SSC								x		x
vernal pool fairy shrimp	FT										x
western spadefoot	SSC		x								x
Plants											
Coulter's goldfields	CRPR 1B.1							x		x	
diamond-petaled California poppy	CRPR 1B.1							x			x
Eastwood's larkspur	CRPR 1B.2				x					x	
heartscale	CRPR 1B.2									x	x
Jared's pepper-grass	CRPR 1B.2				x					x	x
Kern mallow	FE		x						x		x
Lemmon's jewel-flower	CRPR 1B.2				x	x			x	x	
Lost Hills crownscale	CRPR 1B.2		x		x	x			x	x	x
Munz's tidy-tips	CRPR 1B.2					x			x	x	x
oval-leaved snapdragon	CRPR 4.2				x					x	x
recurved larkspur	CRPR 1B.2		x		x				x	x	x
round-leaved filaree	CRPR 1B.1	x	x		x	X					x
San Joaquin woollythreads	FE										x
shining navarretia	CRPR 1B.2		x								
showy golden madia	CRPR 1B.1					x					
spiny-sepaled button-celery	CRPR 1B.2		x								
Steelhead	None										

Soda Lake Watershed

	Streams	
	Stream Habitat Inventory	No source identified, not historically fish habitat
	Fish Passage Barriers	None identified
	Designated Critical Habitat	Yes; Longhorn Fairy Shrimp and Vernal Pool Fairy Shrimp (USFWS Critical Habitat Portal, viewed 2013)
	Habitat Conservation Plans	Yes; Carrizo Plain Natural Area Plan, Stewardship Council Land Conservation Plan
	Other Environmental Resources	Carrizo Plains National Monument and Ecological Reserve and Soda Lake, San Andreas Fault Zone of Eastern San Luis Obispo County (SLO County Flood Control and Water Conservation District, 2007)
	Land Use	
	Jurisdictions and Local Communities	County of San Luis Obispo, California Valley Community Services District, BLM (Carrizo Plains National Monument)
	% Urbanized	14% (Residential Suburban) (SLO County LUC)
	% Agricultural	80% (SLO County LUC)
	% Other	9% (5% Rural; 1% Open Space; 0.1% Recreational, commercial retail or public facility; 3% Industrial solar farms) (SLO County LUC)
	Planning Areas	Carrizo Plain, Los Padres National Forest
	Potential growth areas	California Valley
	Facilities Present	Goodwin Education Center within the Carrizo Plain National Monument, Soda Lake, Chimineas Ranch, Carrizo Plain Ecological Reserve, California Valley Solar Ranch, Topaz Solar Farms, Elementary School, microwave station operated by the U.S. Navy, oil well operations
	Commercial Uses	California Valley Solar Ranch (includes the remediation of Farm Camp Quarry/California Gypsum), Topaz Solar Farms, oil well drilling, cattle ranching, dry land farming, retail stores
	Other Notable Land Use characteristics	As part of conditions for approval of California Valley Solar Ranch and Topaz Solar Farm, the county required the development of a program to retire lots within California Valley sub-division. For TSF, the county required habitat to be preserved through the use of permanent open space easements within the Carrizo Plain (North Coast Engineering, 2008).
	Demographics	
	Population	464 in watershed (US Census Block, 2010)
	Race and Ethnicity	Watershed: Caucasian, representing 76%. Latinos represent 18% in City. The remaining races each represent less than 4%, including African

Soda Lake Watershed

		American, American Indian, Pacific Islander, and Asian (US Census Bock, 2010).
	Income	MHI $60,676 in watershed (US Census Tract, 2010)
	Disadvantaged Communities	No; 7.0% of individuals are below poverty level in watershed (U.S. Census Tract, 2010).
	Water Supply	
	Water Management Entities	None; area residents and commercial uses served by Individual wells (Carollo, 2012)
	Groundwater	Yes; Carrizo Plains and Big Spring Area (ptn) Basins (Carollo, 2012) Users of the basin include small public water system serving local school, agricultural and residential purposes, and solar farms.
	Surface Water	No public reservoirs.
	Imported Water	None
	Recycled/ Desalinated Water	As of 2013 there is under construction a brine pond and reverse osmosis system at California Valley Solar Ranch on the north-east Carrizo to serve the solar plant's needs (North Coast Engineering, 2008).
	Key groundwater percolation area(s)	None Identified - Recharge to the basin is largely by percolation of stream flow and infiltration of rainfall to the valley floor (Ca. Dept. of Water Resources, 2003).
	Water Budget	Yes; Aspen Environmental Group, 2011, for Topaz Solar Project
	Water Uses	
	Beneficial Uses	*San Diego Creek* - Municipal & Domestic Supply (MUN), Agricultural Supply (AGR), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Warm Fresh Water Habitat (WARM), Significance (BIOL), Rare, Threatened, or Endangered Species (RARE), Freshwater Replenishment (FRSH) and Commercial and Sport Fishing (COMM). *Soda Lake* - Industrial Service Supply (IND), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Warm Fresh Water Habitat (WARM), Significance (BIOL), Rare, Threatened, or Endangered Species (RARE) and Commercial and Sport Fishing (COMM). (CCRWQCB, 2011)
	Other Unique Characteristics	
	Carrizo Plain National Monument	A cooperative effort since 1985 between Bureau of Land Management, California Fish and Wildlife, and the Nature Conservancy. 250,000 acres of relatively undisturbed habitat.

Soda Lake Watershed

Soda Lake	A 13,000 acre ephemeral alkaline lake at the center of the Carrizo Plain. Provides an important habitat for migratory birds and is one of the largest undisturbed alkali wetlands in California. Without an outlet, water from the lake evaporates leaving behind residual sulfates and carbonates. Wintering area for sandhill cranes. The alkaline conditions support one of the most highly localized plant species in the world, alkaline peppergrass (*Lepidium jaredii*)
Painted Rock	The single largest individual pictograph site in the country, Painted Rock is an isolated rock formation which Yokut, Salinan, and Chumash Indians decorated with unique rock paintings ("pictographs") and figures scratched into rocks ("petroglyphs"). These rock paintings have almost been entirely vandalized. Part of the Carrizo Plain Rock Art Discontiguous National Register District dating to circa 400 to 800 years before present.
California Valley	An undeveloped village settlement encompassing 24,083 acres located on the Carrizo Plain, about 60 miles east of San Luis Obispo. It came into being in l960, when part of the El Chicote Ranch was subdivided into more than 7,200 2.5-acre "ranchos" and sold through nationwide advertising as "the geographic center of this spectacular California growth area with unbounded future." This proposed new town has never developed and each year many of the subdivided parcels are sold at tax auctions.
San Andreas Fault Zone	One of the most seismically active faults in North America. Important from a biological and geological standpoint. The San Andres Fault in the Carrizo Plain has the largest post-early Miocene offset and is the oldest reach of the entire active fault system (Pollard et. al., 1995). Sag ponds have special ecological significance due to scarcity of water in this region. Much of the fault zone has agricultural preserve status.
Hubbard Hill Freeborn Mountain	These ridges along the westerly border of the Carrizo Plains, include 7,000 acres under Bureau of Land Management control. Diverse native species are found in the area, with no single dominant plant association
Wildflower Fields	Mid-March to mid-April is the usual time for wildflower season, but it is dependent on the weather and varies from season to season. Temperature and rainfall affect which flowers bloom. Every year is not spectacular and only a few flowers may prevail in some years. Typical species include: gold fields, valley phacelia, goldenbush shrubs, bush lupine, pale yellow astragalus, locoweed, filaree, yellow tropidocarpum, white popcorn flower, orange fiddleneck, poppies, hillside daises, sun cups and baby-blue eyes. One of the three remaining locations known to support extant populations for the California jewelflower as well as other special status plants (BLM, 2013)
Climate Change Considerations	
	Saltbrush and other native shrubs are expected to decline and marginal farmland may become less productive and retired in the Carrizo Plain area (ClimateWise, 2010).

Soda Lake Watershed

See IRWMP, 2014 Section H, Climate Change

Information is general for County, not watershed specific

Watershed Codes

CalWater / DWR Number	HA	Hydrologic Area Name	HSA	Hydrologic Sub-area Name	SWRCB Number	CDF Super Planning	Sub-watersheds (CDF Watershed Name)
3311.000101	0	Undefined	0	Undefined	311.00	Panorama Hills	East of Simmler
3311.000102	0	Undefined	0	Undefined	311.00	Panorama Hills	San Diego Creek
3311.000104	0	Undefined	0	Undefined	311.00	Panorama Hills	North of California Valley
3311.000401	0	Undefined	0	Undefined	311.00	West of Soda Lake	Painted Rock
3311.000402	0	Undefined	0	Undefined	311.00	West of Soda Lake	Goodwin Ranch
3311.000403	0	Undefined	0	Undefined	311.00	West of Soda Lake	East of Freeborn Mtn
3311.000500	0	Undefined	0	Undefined	311.00	Soda Lake	Soda Lake / Carrizo Plain (ptn)

Major Changes in the Watershed

- 4000-8000 years before present – The Carrizo Plains were a meeting place for Salinan, Yokut, Chumash and other Indian tribes. Vaqueros Formation rock monoliths are decorated with art that is being protected today.
- 1780 – First contact by Europeans. Large herds of sheep, horse and cattle brought into the area by Spanish. Introduce non-native species to the Carrizo grasslands
- 1857 – Major earthquake that shaped much of the natural landscape of the Carrizo Plains area (Pollard et. al., 1995)
- 1876 – First homesteads established on Carrizo Plains. Dry grain farming was intensive after invention of mechanized agricultural equipment in 1912, resulting in as much as 2 feet of top soil loss in some field margins
- 1939 to Post World War II – A combination of good weather and post War expansion led to increased profitability and productivity of the areas farms and ranches.

Soda Lake Watershed

- 1964 – Creation of California Valley. Chicote Ranch, a 7,500 acre ranch just south of 58, was divided into two-and-a half acre parcels which were promoted all over the state as retirement homes.
- 2001 – Carrizo Plain National Monument created by President Clinton under the authority of the Antiquities Act of 1906.
- 2013 – Large solar farms established in the watershed

Source: Santa Margarita Historical Society, http://www.santamargaritahistoricalsociety.org/pages/carrisa_plains.html unless otherwise noted

Watershed Health by Major Tributary

Tributary Name	**Ephemeral / Perennial**	**303d Listed/ TMDLs**	**Pollution Sources** NP (non-point) MP (Major Point)
Soda Lake	Ephemeral	Ammonia	Unknown Source
Carrizo Plain	Unknown	None	n/a
Goodwin Ranch	Unknown	None	n/a
Painted Rock	Unknown	None	n/a
San Diego Creek	Unknown	None	n/a

Watershed Health by Major Groundwater Basin

Soda Lake Watershed

Groundwater Basin	Estimated Safe Yield	Water Availability Constraints (Master Water Report)	Drinking Water Standard Exceedance	Water Quality Objective Exceedance
Carrizo Plain	8000-11,000 AF (Carollo, 2012)	Physical limitations and water quality issues (Carollo, 2012).	Yes; see description below.	Exceeds usable mineral quality for total dissolved solids, chloride, sulfate, boron, sodium, and nitrogen (SLO County Flood Control and Water Conservation District, 2007).
Big Spring Area (ptn)	No data available (Carollo, 2012)	Constraints on water availability in this basin are primarily based on physical limitations. (Carollo, 2012)	No data available	No data available

Groundwater Quality Description: Analyses of groundwater from 79 wells in this basin during 1957 through 1985 show Total Dissolved Solids (TDS) content ranging from 161 to 94,750 ppm. A highly mineralized groundwater zone is found in the lower part of the alluvium and the upper part of the Paso Robles Formation where they underlie Soda Lake. Water in a deeper zone Paso Robles Formation is of higher quality and confined in the vicinity of Soda Lake. Groundwater in the Morales Formation is likely to be brackish. There are areas with locally high nitrate and salinity concentrations based on well water sampling (Carollo, 2012).

Primary Issues

Issue	*Potential Causes*	*Referenced from*
Groundwater quality		Carollo, 2012
Groundwater Quantity	Physical Limitations	Carollo, 2012
Outdated Studies of the GW basins		Carollo, 2012
Soda Lake 303(d) listed for ammonia		Carollo, 2012

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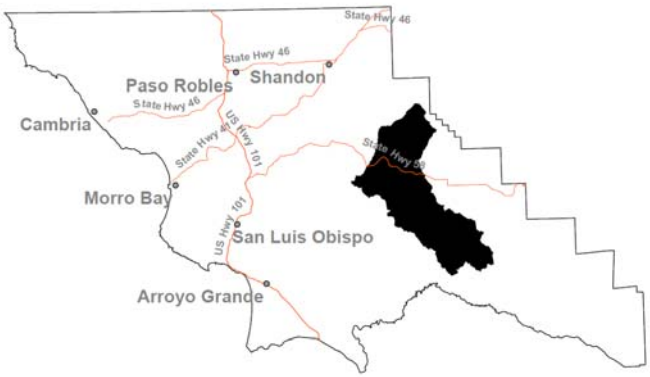
Significant Studies in Progress:

The compliance reporting required of the developing solar ranches has generated many studies informing water quality, listed species, and restoration schema and groundwater quantity.

Upper San Juan Creek Watershed

Hydrologic Unit Name	Water Planning Area	Acreage	Flows to	Groundwater Basin(s)	Jurisdictions
Estrella 17	Rafael/ Big Spring WPA 11, Salinas/ Estrella WPA 14	164,198 acres	Estrella River – to Salinas River and Pacific Ocean (Monterey Bay National Marine Sanctuary)	Paso Robles, Big Spring Area, Rafael Valley, Cuyama Valley (ptn)	County of San Luis Obispo, Los Padres National Forest



Description:

The Upper San Juan Creek Watershed is located in the eastern portion of the County directly adjacent to the Carrizo Plain. The headwaters are located in the La Panza range with the highest point at approximately 3900-feet. The confluence of San Juan Creek with the Estrella River occurs north of Creston. San Juan Creek, a permanent stream, affords recreational possibilities. The mountain slopes are excellent for hiking and riding. Wildlife is abundant, and geology and natural vegetation are of special interest. A spectacular view of the Carrizo Plain is provided from these mountains. The San Juan Creek Valley is generally used most intensively because of better soils and water availability. Irrigated production has increased during the last 10 years, particularly in vineyards and alfalfa. Dry farming and grazing operations encompass the rest of the agricultural uses.

Existing Watershed Plans:

No existing plans to date

Upper San Juan Creek Watershed

Characteristics

	Physical Setting	
	Rainfall	Average Annual: 8-23 in. (NRCS shapefile, 2010)
	Air Temperature	Summer Range (August 1990-2012): 52°-95°F Winter Range (December 1990-2012): 29°-60°F (La Panza, NOAA National Climatic Data Center, viewed 2013)
	Geology Description	French Camp, Carnaza Creek and La Panza Ranch are composed of flat highly infiltrative Quaternary material – Category #3. Windmill Creek, Placer Creek, Willow Canyon, Beartrap Creek, Hay Canyon, Piletas canyon and Anderson Canyon have steep pre-Quaternary non-infiltrative headwaters with steep moderately infiltrative early to mid-Tertiary valleys – Category #5. Carissa Ranch and Wild Hog Creek sub-watersheds have moderate steep moderately infiltrative early to mid-Tertiary headwaters and are flat highly infiltrative Quaternary inland – Category #7. La Panza Canyon, Tajea Flat and Turkey Camp Well are composed of steep moderately infiltrative early to mid-Tertiary materials – Category #8. Barett Creek has steep moderately infiltrative early to mid-Tertiary headwaters with a flat pre-Quaternary moderately infiltrative valley – Category #11. McGinnis Creek has steep pre-Quaternary non-infiltrative headwaters with a flat highly infiltrative Quaternary valley – Category #12. Cedar Canyon, Rogers Creek and Rafael Creek have moderately infiltrative early to mid-Tertiary headwaters with flat Quaternary highly infiltrative valleys – Category #14 (Bell, pers. comm., 2013). Groundwater is found in Holocene age alluvium and the Pleistocene age Paso Robles Formation. Specific yield values in the Paso Robles Sub-basin range from 7 to 11 percent, with an average specific yield of 9 percent (Fugro West 2001c). DWR (1958) estimated the average specific yield for the sub-basin at 8 percent. DWR (1999) estimated the average specific yield at 15 percent for the alluvium and 9 percent for the Paso Robles Formation. Alluvium. Holocene age alluvium consists of unconsolidated, fine- to coarse-grained sand with pebbles and boulders. This alluvium provides limited amounts of groundwater and reaches 130 feet thick near the Salinas River, but is generally less than 30 feet thick in the minor stream valleys (DWR 1999). Its high permeability results in a well production capability that often exceeds 1,000 gpm (Fugro West 2001a). Groundwater in

Upper San Juan Creek Watershed

		Holocene alluvium is mostly unconfined. Paso Robles Formation. Pleistocene age Paso Robles Formation, which is the most important source of groundwater in the sub-basin, is unconsolidated, poorly sorted, and consists of sand, silt, gravel, and clay (DWR 1979). This formation reaches a thickness of 2,000 feet and groundwater within it is generally confined (DWR 1958) (Carollo, 2012).
	Hydrology	
	Stream Gage	None (USGS, viewed August 2013)
	Hydrology Models	Yes; SLO County Flood Control and Water Conservation District, 2008, Paso Robles Groundwater Sub-basin Water Banking Feasibility Study *Data general for Paso Robles Subbasin,, not watershed specific*
	Peak Flow	No data available (USGS, viewed August 2013)
	Base Flow	No data available (USGS, viewed August 2013)
	Flood Reports	No source identified
	Flood Control Structures	No data available
	Areas of Heightened Flood Risk	No data available
	Biological Setting	
	Vegetation Cover	Primarily non-native grassland; mixed chaparral consisting mainly of buckbrush and chamise; blue oak woodland with chamise-redshank chaparral consisting mainly of chamise chaparral; juniper consisting mainly of semi-desert chaparral; coastal scrub consisting mainly of diablan sage scrub; 3 blue oak-foothill pine consisting mainly of foothill pine. (SLO County vegetation shapefile, 1990) *Data limited by age of shapefile*
	Invasive Species	No data available
	Special Status Wildlife and Plants	*Key*: Key: FE - Federal endangered, FT - Federal threatened, SE - State endangered, ST - State threatened, SSC - State Species of Special Concern; FP- Fully Protected, SA – Special Animal, CRPR – CA rare plant rank (CNDDB, viewed August, 2013) Locations listed refer to USGS 7.5' quadrangle names. Only the portion overlapping the watershed boundary was considered. *Data limited to observations, not complete inventory*

Upper San Juan Creek Watershed

Species	Status	BRANCH MTN	CALIFORNIA VALLEY	CAMATTA RANCH	CHIMINEAS RANCH	HOLLAND CANYON	LA PANZA	LA PANZA NE	LA PANZA RANCH	LOS MACHOS HILLS	PACKWOOD CREEK	POZO SUMMIT	SIMMLER
Animals													
American badger	SSC				x	x		x	x		x		
blunt-nosed leopard lizard	FE; SE; FP	x			x								
burrowing owl	SSC (Burrow sites, some wintering sites)				x								
California condor	FE; SE						x						
giant kangaroo rat	FE; SE					x			x		x		
long-eared owl	SSC				x								
longhorn fairy shrimp	FE	x	x		x								x
Nelson's antelope squirrel	ST		x		x								x
pallid bat	SSC		x				x						
prairie falcon	SA-Nesting	x	x	x		x	x	x	x	x	x	x	
San Joaquin kit fox	FE; ST				x			x	x				
San Joaquin whipsnake	SSC				x								
silvery legless lizard	SSC	x											
Tulare grasshopper mouse	SSC						x						
western pond turtle	SSC	x			x								
western spadefoot	SSC				x								
Plants													
California jewel-flower	FE; SE						x		x				
Camatta Canyon amole	FT; SR			x									
chaparral ragwort	CRPR 2B.2			x									
diamond-petaled California poppy	CRPR 1B.1						x		x				
dwarf calycadenia	CRPR 1B.1			x			x		x				
Indian Valley spineflower	CRPR 1B.2							x	x				
Kern mallow	FE				x				x				
La Panza mariposa-lily	CRPR 1B.3	x			x		x					x	
Lemmon's jewel-flower	CRPR 1B.2						x	x	x			x	
Munz's tidy-tips	CRPR 1B.2							x					

Upper San Juan Creek Watershed

Species	Status	BRANCH MTN	CALIFORNIA VALLEY	CAMATTA RANCH	CHIMINEAS RANCH	HOLLAND CANYON	LA PANZA	LA PANZA NE	LA PANZA RANCH	LOS MACHOS HILLS	PACKWOOD CREEK	POZO SUMMIT	SIMMLER
oval-leaved snapdragon	CRPR 4.2				x								
pale-yellow layia	CRPR 1B.1						x						
Palmer's mariposa-lily	CRPR 1B.2											x	
Parish's checkerbloom	SR						x						
round-leaved filaree	CRPR 1B.1				x				x				
Santa Margarita manzanita	CRPR 1B.2						x					x	
showy golden madia	CRPR 1B.1				x								
straight-awned spineflower	CRPR 1B.3	x											
umbrella larkspur	CRPR 1B.3	x											

Steelhead Streams	No (Not listed in Holland Canyon or Camatta Canyon Quads in CNDDB Database viewed 2013)
Stream Habitat Inventory	No source identified
Fish Passage Barriers	None listed in PAD Database
Designated Critical Habitat	Yes; California Condor, Purple Amole (USFWS Critical Habitat Mapper, viewed 2013)
Habitat Conservation Plans	Yes; North San Luis Obispo County Habitat Conservation Program – multiple species, initially San Joaquin kit fox *HCP is general for North County, not watershed specific*
Other Environmental Resources	None listed (SLO County Flood Control and Water Conservation District, 2007)
Land Use	
Jurisdictions & Local Communities	County of San Luis Obispo
% Urbanized	0.7% Public Facility and Residential Suburban
% Agricultural	74.9%
% Other	22% Open Space; 2.4% Rural Land
Planning Areas	Shandon-Carrizo Planning Area
Potential growth areas	None listed

Upper San Juan Creek Watershed

	Facilities Present	No data available
	Commercial Uses	Agriculture
	Demographics	
	Population	38 in watershed (US Census, 2010)
	Race and Ethnicity	Watershed: 86.8% Caucasian, 5.3% Latino, 5.3% Two Plus Races, 2.6% American Indian
	Income	MHI $62,773 in watershed (US Census, 2011, based on interpolation of two census tracts covering multiple watersheds)
	Disadvantaged Communities	No; 6.0% of individuals are below poverty level in watershed
	Water Supply	
	Water Management Entities	Uses served by individual wells
	Groundwater	Yes; Paso Robles, Big Spring Area, Rafael Valley, and Cuyama Valley (ptn) Basins
	Surface Water	No public reservoirs.
	Imported Water	None
	Recycled/Desalinated Water	None
	Key infiltration zone	No comprehensive study has been completed to date however the Shell Creek/Camatta Creek and Lower San Juan Creek Recharge Areas were identified by the SLO County Flood Control and Water Conservation District in 2008. Natural recharge in the basin is derived from infiltration of precipitation, seepage from streams, and return flow from irrigation and other uses (SLO County Flood Control and Water Conservation District, 2008*)*
	Water budget performed?	Yes; Todd Engineers, 2013, for Paso Robles Groundwater Subbasin Management Plan Update *Data is general for Paso Robles Subbasin, not watershed specific*
	Water Uses	
	Beneficial Uses	*San Juan Creek* - Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Warm Freshwater habitat (WARM), Threatened, or Endangered Species (RARE), and Commercial and Sport Fishing (COMM). (CCRWQCB, 2011)
	Other Unique Characteristics	

Upper San Juan Creek Watershed

	Valley Sink Scrub	A unique natural community known as valley sink scrub exists in the watershed. Characterized by low, open succulent shrublands dominated by alkali tolerant plant species such as frankenia (*Frankenia salina*), spear oracle (*Atriplex patula*), wedge scale (*Atriplex truncata*), alkali weed (*Cressa truxillensis*) and saltgrass (*Districhlis spicata*). Valley scrub soils are typically dark, sticky clay soils that often have a brilliant white salty crust over them. Grazing has altered much of this community where non-native grasses now dominate much of the valley floor.
	Climate Change Considerations	
		See IRWMP, 2014 Section H, Climate Change *Data is general for County, not watershed specific*

Upper San Juan Creek Watershed

Watershed Codes

Calwater / DWR Number	HA	Hydrologic Area Name	HSA	Hydrologic Sub-Area Name	SWRCB Number	CDF Super Planning	CDF Watershed Area
3317.000101	0	Undefined	0	Undefined	317.00	Headwaters San Juan Creek	Carrisa Ranch
3317.000102	0	Undefined	0	Undefined	317.00		Barrett Creek
3317.000103	0	Undefined	0	Undefined	317.00	Headwaters San Juan Creek	Tajea Flat
3317.000104	0	Undefined	0	Undefined	317.00	Headwaters San Juan Creek	Wild Hog Creek
3317.000105	0	Undefined	0	Undefined	317.00	Headwaters San Juan Creek	Rafael Creek
3317.000106	0	Undefined	0	Undefined	317.00	Headwaters San Juan Creek	Rogers Creek
3317.000107	0	Undefined	0	Undefined	317.00	Headwaters San Juan Creek	Anderson Canyon
3317.000108	0	Undefined	0	Undefined	317.00	Headwaters San Juan Creek	Piletas Canyon
3317.000109	0	Undefined	0	Undefined	317.00	Headwaters San Juan Creek	Turkey Camp Well
3317.000201	0	Undefined	0	Undefined	317.00	Sixteen Spring	Beartrap Creek
3317.000202	0	Undefined	0	Undefined	317.00	Sixteen Spring	Hay Canyon
3317.000203	0	Undefined	0	Undefined	317.00	Sixteen Spring	Willow Canyon
3317.000204	0	Undefined	0	Undefined	317.00	Sixteen Spring	Placer Creek
3317.000205	0	Undefined	0	Undefined	317.00	Sixteen Spring	La Panza Canyon
3317.000206	0	Undefined	0	Undefined	317.00	Sixteen Spring	La Panza Ranch
3317.000207	0	Undefined	0	Undefined	317.00	Sixteen Spring	Carnaza Creek
3317.000208	0	Undefined	0	Undefined	317.00	Sixteen Spring	Cedar Canyon
3317.000301	0	Undefined	0	Undefined	317.00	Navajo Creek	Windmill Creek

Upper San Juan Creek Watershed

3317.000302	0	Undefined	0	Undefined	317.00	Navajo Creek	French Camp
3317.000303	0	Undefined	0	Undefined	317.00	Navajo Creek	McGinnis Creek
3317.000401	0	Undefined		Undefined	317.00	San Juan Valley	Bellyache Spring
3317.000410		Undefined		Undefined	317.00	San Juan Valley	Sandy Canyon
Source: Excerpt from California Interagency Watershed Map of 1999, Calwater 2.2.1 (CA Resource Agency, 2004 Update)							

Major Changes in the Watershed

The San Juan is the southern branch of the Estrella River, albeit the summer season finds only occasional pools in its broad, sandy channel. The rains convert this into a veritable river, fifty to 100 yards wide, running through small valleys and hills softly rounded, clothed in a luxuriant growth of alfilaria?, wild oats, bunch-grass and flowering shrubs (Storke, 1891).

This section is a paradise to the stockman, being devoted almost entirely to pasturage. Nevertheless, its resources would suffice for varied industries. There is here much oak timber, the soil is very fertile, there are mineral springs, ore-bearing rocks, and diverse elements to support a large population. This valley may be considered as including the following tracts: That section between the San Jose Range and the Carriso Plain; the ranches Las Chimeneas and Avenales in the southern part; La Panza and the mining district in the central part; and La Cometa or Comate, California, and San Juan Capistrano in the north (Storke, 1891).

Among the old settlers were: John Gilkey, on the Comate, murdered in 1858; Baratie and Borel, on the San Juan Capistrano, murdered in 1858; Philip Biddle, Robert G. Flint, .fames Mitchell, Joseph Zumwalt, D. W. James and John D. Thompson, all of whom located there twenty to thirty-five years since (Storke, 1891).

Watershed Health by Major Tributary

Tributary Name	**Ephemeral / Perennial**	**303d Listed/ TMDLs**	**Pollution Sources** NP (non-point) MP (Major Point)	**Environmental Flows**
Anderson Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Barett Creek	Undetermined	Not assessed	Undetermined	Not assessed
Beartrap Creek	Undetermined	Not assessed	Undetermined	Not assessed
Camaza Creek	Undetermined	Not assessed	Undetermined	Not assessed
Carissa Ranch	Undetermined	Not assessed	Undetermined	Not assessed

Upper San Juan Creek Watershed

Tributary Name	Ephemeral / Perennial	303d Listed/ TMDLs	Pollution Sources NP (non-point) MP (Major Point)	Environmental Flows
Cedar Canyon	Undetermined	Not assessed	Undetermined	Not assessed
French Camp	Undetermined	Not assessed	Undetermined	Not assessed
Hay Canyon	Undetermined	Not assessed	Undetermined	Not assessed
La Panza Canyon	Undetermined	Not assessed	Undetermined	Not assessed
La Panza Ranch	Undetermined	Not assessed	Undetermined	Not assessed
McGinnis Creek	Undetermined	Not assessed	Undetermined	Not assessed
Piletas Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Placer Creek	Undetermined	Not assessed	Undetermined	Not assessed
Rafael Creek	Undetermined	Not assessed	Undetermined	Not assessed
Rogers Creek	Undetermined	Not assessed	Undetermined	Not assessed
Tajea Flat	Undetermined	Not assessed	Undetermined	Not assessed
Turkey Camp Well	Undetermined	Not assessed	Undetermined	Not assessed
Wild Hog Creek	Undetermined	Not assessed	Undetermined	Not assessed

Watershed Health by Major Groundwater Basin

Groundwater Basin	Estimated Safe Yield	Water Availability Constraints	Drinking Water Standard Exceedance	Water Quality Objective Exceedance
Paso Robles	97,700 AF (SLO County RCS, 2011).	Physical limitations, water rights and water quality issues (Carollo, 2012).	Yes; see description below.	None (CCRWQCB, 2011
Big Spring Area	None (Carollo, 2012)	None (Carollo, 2012)	None (Carollo, 2012)	None (CCRWQCB, 2011
Rafael Valley	None (Carollo, 2012)	None (Carollo, 2012)	None (Carollo, 2012)	None (CCRWQCB, 2011
Cuyama Valley (ptn)	None (Carollo, 2012)	None (Carollo, 2012)	None (Carollo, 2012)	None (CCRWQCB, 2011

Upper San Juan Creek Watershed

Groundwater Quality Description: The predominant cations are calcium and sodium and the predominant anion is bicarbonate (DWR 1981; Fugro West, 2001b). Analysis of 48 public supply wells in the subbasin show an average Total Dissoved Solid (TDS) content of 614 ppm and a range of 346 to 1,670 ppm.

In one study, (Fugro West 2001b), 23 of 74 samples collected exceeded one or more drinking water standards. The maximum contaminant level (MCL) for nitrate was exceeded in 4 samples (Fugro West, 2001b). Water quality trends indicate an increasing concentration of TDS and chloride in the deep, historically artesian aquifer northeast of Creston (Carollo, 2012).

Another major problem is the unpredictable occurrence of hydrogen sulfide in the ground water (DWR, 1981)

Primary Issues

Issue	***Potential Causes***	***Referenced from***
Significant water level declines	Range of groundwater uses in close proximity, including agricultural irrigation, municipal supply wells, golf course irrigation, and a relatively dense aggregation of rural "ranchette") users	Carollo, 2012
Groundwater Quality	High concentrations of TDS, chlorides, sulfates, and boron	Carollo, 2012

Groundwater: Paso Robles Groundwater Basin

According to multiple studies of this basin, annual basin pumping is now at or near the basin's perennial yield (Paso Robles Groundwater Management Plan, 2011). From 1997–2009, water levels declined on average of 2–6 feet per year, depending on the location. A Todd Engineering monitoring report (2007) indicated that the Basin was not approaching the safe yield level and some areas were experiencing significant declines in groundwater elevations. A later study completed in 2009 suggested groundwater pumping was approaching the safe yield level of the Basin. The 2010 Resource Capacity Study prepared by the San Luis Obispo County Planning Department stated that the Basin is now near or at perennial yield levels. The County Board of Supervisors certified a Level of Severity III for the Paso Robles Basin in October, 2012, due to declining water levels. In August 2013, the County Board of Supervisors adopted an urgency ordinance to limit new draws from the Paso Robles Groundwater basin.

The Paso Robles Groundwater Basin encompasses an area of approximately 790 square miles and is the primary, and in many places the only, source of water available to property owners throughout Northern San Luis Obispo County. The basin extends from the Garden Farms area south of Atascadero to San Ardo in Monterey County, and from the Highway 101 corridor east to Shandon. The basin supplies water for 29% of SLO County's population and an estimated 40% of the agricultural production of the County (Paso Robles Groundwater Basin Blue Ribbon Committee, 2013).

Upper San Juan Creek Watershed

Paso Robles, Atascadero, and Templeton draw their water from the groundwater basin (primarily the Atascadero sub-basin), the underflow of the Salinas River and from the Nacimiento Pipeline Project. The remaining communities (Shandon, San Miguel, Creston, Bradley, Camp Roberts, Whitley Gardens, and Garden Farms) are entirely dependent on the groundwater basin for their water supply.

An established bi-annual well monitoring program overseen by the SLO County Flood Control and Water Conservation District reported these water declines in groundwater dependent communities (Through April, 2013):

a. Shandon: Water levels have dropped approximately 17 feet from 2011 to 2013.
b. Creston: Water levels have dropped approximately 25 feet from 2011 to 2013.
c. Estrella: Water levels have dropped approximately 25 feet from 2011 to 2013.
d. San Juan: Water levels have dropped approximately 5 feet from 2012 to 2013.

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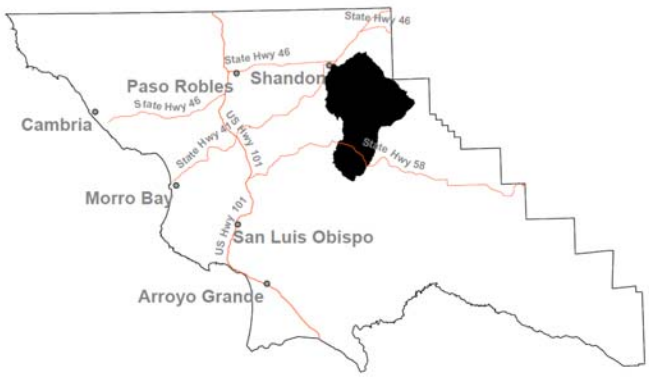
Significant Studies in Progress:

Lower San Juan Creek Watershed

Hydrologic Unit Name	Water Planning Area	Acreage	Flows to	Groundwater Basin(s)	Jurisdictions
Estrella 17	Rafael/ Big Spring WPA 11, Salinas/ Estrella WPA 14	114,329 acres	Salinas River via Estrella River – to Pacific Ocean (Monterey Bay National Marine Sanctuary)	Paso Robles	County of San Luis Obispo Shandon (ptn) Los Padres National Forest



Description:

The Lower San Juan Creek watershed is located in the eastern portion of the county to the north-west of the Carrizo Plains. The headwaters are located in the La Panza range with the highest point at approximately 3600-feet. The confluence of San Juan Creek with the Estrella River occurs at Shandon. The dominant land use is agriculture. The San Juan Creek Valley is generally used most intensively for agriculture because of better soils and water availability. Irrigated production has increased during the last 10 years, particularly in vineyards and alfalfa. Dry farming and grazing operations encompass the rest of the agricultural uses. The riparian forest and a portion of the adjacent upland areas associated with the Estrella River and San Juan Creek in the vicinity of Shandon are important wildlife habitat, and serve as important corridors for wildlife movement. San Joaquin kit fox and Western burrowing owl occur in open grasslands. Another important wildlife movement corridor is located near the base of the hillside near the eastern edge of Shandon.

Existing Watershed Plans:

No existing plans to date

Lower San Juan Creek Watershed

Characteristics

	Physical Setting	
	Rainfall	Average Annual: 9-13 in. (NRCS shapefile, 2010)
	Air Temperature	Summer Range (August 1990-2012): 58°-100°F Winter Range (December 1990-2012): 36°-56°F (Parkfield (*not a part of the watershed*), NOAA National Climatic Data Center, viewed 2013)
	Geology Description	Tucker Canyon, Gillis Canyon, Hughes Canyon, McDonald Canyon, Camata Canyon, Tin Pan Canyon, and Lower Shell Creek have steep pre-Quaternary non-infiltrative headwaters with steep moderately infiltrative early to mid-Tertiary valleys – Category #3. Upper Shell Creek, Fernandez Creek and Camatta Creek are flat highly infiltrative Quaternary materials – Category #5 (Bell, pers. comm., 2013). Groundwater is found in Holocene age alluvium and the Pleistocene age Paso Robles Formation. Specific yield values in the Paso Robles Subbasin range from 7 to 11 percent, with an average specific yield of 9 percent (Fugro West 2001c). DWR (1958) estimated the average specific yield for the subbasin at 8 percent. DWR (1999) estimated the average specific yield at 15 percent for the alluvium and 9 percent for the Paso Robles Formation. Alluvium. Holocene age alluvium consists of unconsolidated, fine- to coarse-grained sand with pebbles and boulders. This alluvium provides limited amounts of groundwater and reaches 130 feet thick near the Salinas River, but is generally less than 30 feet thick in the minor stream valleys (DWR 1999). Its high permeability results in a well production capability that often exceeds 1,000 gpm (Fugro West 2001a). Groundwater in Holocene alluvium is mostly unconfined. The Pleistocene age Paso Robles Formation, which is the most important source of groundwater in the subbasin, is unconsolidated, poorly sorted, and consists of sand, silt, gravel, and clay (DWR 1979). This formation reaches a thickness of 2,000 feet and groundwater within it is generally confined (DWR 1958) (Carollo, 2012).
	Hydrology	
	Stream Gage	None (USGS, viewed August 2013)
	Hydrology Models	Yes; SLO County Flood Control and Water Conservation District, 2008, Paso Robles Groundwater Sub-basin Water Banking Feasibility Study.
	Peak Flow	No data available (USGS, viewed August 2013)

Lower San Juan Creek Watershed

	Base Flow	No data available (USGS, viewed August 2013)
	Flood Reports	No source identified
	Flood Control Structures	No data available
	Areas of Heightened Flood Risk	Poor drainage in Shandon (source); San Juan and Camatta creek listed as flood hazard areas (Shandon-Carrizo Inland Area Plan, County of San Luis Obispo, 2012)
	Biological Setting	
	Vegetation Cover	Primarily non-native annual grassland with mixed chaparral consisting mainly of California buckwheat and chamise; cropland, orchards and vineyards; chamise-redshank chaparral consisting mainly of chamise; blue oak and foothill pine; blue oak woodland; and valley foothill riparian consisting mainly of willow and saltbush. (SLO County vegetation shapefile, 1990) *Data limited by age of shapefile*
	Invasive Species	No data available
	Special Status Wildlife and Plants	Key: FE - Federal endangered, FT - Federal threatened, SE - State endangered, ST - State threatened, SSC - State Species of Special Concern; FP- Fully Protected, SA – Special Animal, CRPR – CA rare plant rank (CNDDB, viewed August, 2013) Locations listed refer to USGS 7.5' quadrangle names. Only the portion overlapping the watershed boundary was considered. *Data limited to observations, not complete inventory*

Special Status Species	Status	CAMATTA CANYON	CAMATTA RANCH	CHOLAME	HOLLAND CANYON	LA PANZA RANCH	ORCHARD PEAK	POZO SUMMIT	SHANDON	SHEDD CANYON	WILSON CORNER
Animals											
American badger	SSC	x	x		x	x					x
bank swallow	ST			x					x		
blunt-nosed leopard lizard	FE; SE; FP	x			x						
burrowing owl	SSC (Burrow sites, some wintering sites)				x						

Lower San Juan Creek Watershed

Species	Status	CAMATTA CANYON	CAMATTA RANCH	CHOLAME	HOLLAND CANYON	LA PANZA RANCH	ORCHARD PEAK	POZO SUMMIT	SHANDON	SHEDD CANYON	WILSON CORNER
giant kangaroo rat	FE; SE	x			x						
prairie falcon	SA (Nesting)	x	x	x	x	x	x	x	x	x	
San Joaquin kit fox	FE; ST	x	x		x						
San Joaquin pocket mouse	SA	x									
Swainson's hawk	ST								x	x	
Tulare grasshopper mouse	SSC	x		x					x		
western spadefoot	SSC		x								
Plants											
Camatta Canyon amole	FT; SR		x								
chaparral ragwort	CRPR 2B.2		x								
dwarf calycadenia	CRPR 1B.1		x								
Indian Valley spineflower	CRPR 1B.2		x								
Kern mallow	FE		x								
La Panza mariposa-lily	CRPR 1B.3		x								
Lemmon's jewel-flower	CRPR 1B.2		x								
Mason's neststraw	CRPR 1B.1	x	x								
Munz's tidy-tips	CRPR 1B.2		x								
oval-leaved snapdragon	CRPR 4.2						x				
round-leaved filaree	CRPR 1B.1		x								
showy golden madia	CRPR 1B.1		x								
stinkbells	CRPR 4.2		x								
straight-awned spineflower	CRPR 1B.3		X								

Steelhead Streams	None (Not listed in Holland Canyon or Camatta Canyon Quads in CNDDB Database viewed 2013)
Stream Habitat Inventory	No source identified
Fish Passage Barriers	None listed in PAD Database
Designated Critical Habitat	Yes; Purple Amole (USFWS Critical Habitat Mapper, viewed 2013)
Habitat Conservation Plans	Yes; Shandon Community Plan Habitat Conservation Plan

Lower San Juan Creek Watershed

	Other Environmental Resources	San Juan River, Paso Robles Groundwater Basin, San Andreas Fault Zone of Eastern San Luis Obispo County (SLO County Flood Control and Water Conservation District, 2007)
	Land Use	
	Jurisdictions & Local Communities	County of San Luis Obispo, Community of Shandon
	% Urbanized	Less than 1%
	% Agricultural	90.4% (vineyard, alfalfa, dry farming)
	% Other	8.3% Open Space; 1.2% Rural Land
	Planning Area	Shandon-Carrizo Planning Area
	Potential growth areas	Shandon
	Facilities Present	Los Padres National Forest
	Commercial Uses	Agriculture
	Demographics	
	Population	488 in watershed (US Census Block, 2010) Approximately 305 in Shandon (US Census, 2010)
	Race and Ethnicity	Watershed: 49.2% Latino; 47.3% Caucasian; 1.4% Mixed Race; Less than 1% African American, Asian, American Indian (US Census Block, 2010) Shandon: 53.5% Latino; 41.1% Caucasian; 2.6% Black or African American; 0.9% American Indian and Alaska Native; 0.5% Asian; 0.2% Pacific Islander; 1.2% Mixed Race (US Census, 2010)
	Income	MHI $66,966 in watershed (US Census Tract, 2011) (from tract covering 6 watersheds) MHI $65,260 in Shandon (2007-2011 American Community Survey 5-Year Estimates)
	Disadvantaged Communities	No; 4% of individuals are below poverty level in watershed (US Census Tract, 2010) (from tract covering 6 watersheds) 19.1% of individuals are below poverty level in Shandon (2007-2011 American Community Survey 5-Year Estimates)
	Water Supply	
	Water Management Entities	County Service Area (CSA) No. l6 (Shandon); outlying properties served by individual wells - Depths of wells ranged from 100 to 665 feet (Carollo, 2012)
	Groundwater	Yes; Paso Robles Basin
	Surface Water	No public reservoirs.
	Imported Water	CSA 16 holds an allocation for 100 acre-feet per year (AFY) of the

Lower San Juan Creek Watershed

		State Water Project supply. In order to use this allocation, a turn-out on the State Water Project, which runs north-south along the eastern edge of San Juan Road, would have to be built. (SLO County, 2012)
	Recycled/Desalinated Water	None
	Key infiltration zone	No comprehensive studies have been completed to date however the Shell Creek/Camatta Creek and Lower San Juan Creek Recharge Areas in the Paso Robles Groundwater Subbasin Water Banking Feasibility Study, 2008. Natural recharge in the basin is derived from infiltration of precipitation, seepage from streams, and return flow from irrigation and other uses (SLO County Flood Control and Water Conservation District, 2008)
	Water budget	Yes; Todd Engineers, 2013 for Paso Robles Groundwater Subbasin Management Plan Update. *Water budget information limited by lack of data for the region*
	Water Uses	
	Beneficial Uses	*San Juan Creek* - Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Warm Freshwater habitat (WARM), Threatened, or Endangered Species (RARE), and Commercial and Sport Fishing (COMM). (CCRWQCB, 2011)
	Other Unique Characteristics	
	San Andreas Fault Zone	Identified as Special Studies Zone by the State Geologist and is one of the most seismically active faults in North America. Because of the scarcity of wetlands in this arid part of the county, sag ponds along the fault have ecological significance
	Shandon Vicinity Creek Area and Habitat Area	The riparian forest and a portion of the adjacent upland areas associated with the Estrella River and San Juan Creek in the vicinity of Shandon are important wildlife habitat for the San Joaquin kit fox, Western burrowing owl and other wildlife species, and serve as important corridors for wildlife movement. Another important wildlife movement corridor is located near the base of the hillside near the eastern edge of Shandon.
	Hubbard Hill-Freeborn Mountain	Designated in Open Space land use category to emphasize protection of the area n its natural state, and use for passive recreation activities only. San Juan Creek has recreational possibilities. Mountain slopes excellent for hiking and riding with a spectacular view of Carrizo Plain.
	San Juan Ranch	44,000 acres with livestock production dating back to era of Mexican land grants. Antonio Herrera began grazing sheep in the area in 1843. In 1874, Canadian Robert Flint purchased headquarters of San Juan Ranch as well as acreage extending up

Lower San Juan Creek Watershed

		San Juan Creek.
	Palo Prieto	Located at an important crossroads for San Joaquin kit fox movement between the Carrizo Plain population, the Cirvo-Panoche population and the Salinas River Valley. Properties contain a natural lake (sag pond), Grant Lake, and numerous small vernal and seasonal ponds and pools. Wetlands support rare amphibians, crustaceans and flora. Sag ponds historically habitat for California tiger salamander, Western spadefoot toad and California toad.
	Climate Change Considerations	
		See IRWMP, 2014 Section H, Climate Change *Data is general for County, not watershed specific*

Watershed Codes

Calwater/DWR Number	HA	Hydrologic Area Name	HSA	Hydrologic Sub-Area Name	SWRCB Number	CDF Super Planning	CDF Watershed Name
3317.000402	0	Undefined	0	Undefined	317.00	San Juan Valley	San Juan Ranch
3317.000403	0	Undefined	0	Undefined	317.00	San Juan Valley	Wilinson Canyon
3317.000404	0	Undefined	0	Undefined	317.00	San Juan Valley	Upper Long Canyon
3317.000405	0	Undefined	0	Undefined	317.00	San Juan Valley	Lower Long Canyon
3317.000406	0	Undefined	0	Undefined	317.00	San Juan Valley	Holland Canyon
3317.000407	0	Undefined	0	Undefined	317.00	San Juan Valley	Tin Pan Canyon
3317.000408	0	Undefined	0	Undefined	317.00	San Juan Valley	Hughes Canyon
3317.000409	0	Undefined	0	Undefined	317.00	San Juan Valley	West of Red Hills
3317.000501	0	Undefined	0	Undefined	317.00	Shandon	Tucker Canyon
3317.000502	0	Undefined	0	Undefined	317.00	Shandon	Gillis Canyon
3317.000509	0	Undefined	0	Undefined	317.00	Shandon	McDonald Canyon
3317.001001	0	Undefined	0	Undefined	317.00	Shell Creek	Camata Canyon

3317.001002	0	Undefined	0	Undefined	317.00	Shell Creek	Lower Shell Creek
3317.001003	0	Undefined	0	Undefined	317.00	Shell Creek	Camatta Creek
3317.001004	0	Undefined	0	Undefined	317.00	Shell Creek	Fernandez Creek
3317.001005	0	Undefined	0	Undefined	317.00	Shell Creek	Upper Shell Creek
Source: Excerpt from California Interagency Watershed Map of 1999, Calwater 2.2.1 (CA Resource Agency, 2004 Update)							

Major Changes in the Watershed

The San Juan is the southern branch of the Estrella River, albeit the summer season finds only occasional pools in its broad, sandy channel. The rains convert this into a veritable river, fifty to 100 yards wide, running through small valleys and hills softly rounded, clothed in a luxuriant growth of alfilaria?, wild oats, bunch-grass and flowering shrubs (Storke, 1891).

1890s - Original settlement of Shandon. Planning for original townsite done by West Coast Land Company.

Watershed Health by Major Tributary

Tributary Name	**Ephemeral / Perennial**	**303d Listed/ TMDLs**	**Pollution Sources** NP (non-point) MP (Major Point)	**Environmental Flows**
Camata Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Camatta Creek	Undetermined	Not assessed	Undetermined	Not assessed
Fernandez Creek	Undetermined	Not assessed	Undetermined	Not assessed
Gillis Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Holland Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Hughes Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Lower Long Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Lower Shell Creek	Undetermined	Not assessed	Undetermined	Not assessed
McDonald Canyon	Undetermined	Not assessed	Undetermined	Not assessed
San Juan Ranch	Undetermined	Not assessed	Undetermined	Not assessed
Tin Pan Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Tucker Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Upper Long Canyon	Undetermined	Not assessed	Undetermined	Not assessed

Upper Shell Creek	Undetermined	Not assessed	Undetermined	Not assessed
Wilkinson Canyon	Undetermined	Not assessed	Undetermined	Not assessed

Watershed Health by Major Groundwater Basin

Groundwater Basin	Estimated Safe Yield	Water Availability Constraints	Drinking Water Standard Exceedance	Water Quality Objective Exceedance
Paso Robles	97,700 AF (SLO County RCS, 2011)	Physical limitations, water rights and water quality issues (Master Water Report).	Yes; see description below.	No for basin. No information for subbasin.

Groundwater Quality Description: The predominant cations are calcium and sodium and the predominant anion is bicarbonate (DWR 1981; Fugro West, 2001b). Analysis of 48 public supply wells in the subbasin show an average Total Dissoved Solid (TDS) content of 614 ppm and a range of 346 to 1,670 ppm.

In one study, (Fugro West 2001b), 23 of 74 samples collected exceeded one or more drinking water standards. The maximum contaminant level (MCL) for nitrate was exceeded in 4 samples (Fugro West, 2001b). Water quality trends indicate an increasing concentration of TDS and chloride in the deep, historically artesian aquifer northeast of Creston (Carollo, 2012).

Another major problem is the unpredictable occurrence of hydrogen sulfide in the ground water (DWR, 1981)

Primary Issues

Issue	*Potential Causes*	*Referenced from*
Significant water level declines	Range of groundwater uses in close proximity, including agricultural irrigation, municipal supply wells, golf course irrigation, and a relatively dense aggregation of rural “ranchette”) users	Carollo, 2012
Groundwater Quality	High concentrations of TDS, chlorides, sulfates, and boron	Carollo, 2012

Lower San Juan Creek Watershed

Groundwater: Paso Robles Groundwater Basin

According to multiple studies of this basin, annual basin pumping is now at or near the basin's perennial yield (Paso Robles Groundwater Management Plan, 2011). From 1997–2009, water levels declined on average of 2–6 feet per year, depending on the location. A Todd Engineering monitoring report (2007) indicated that the Basin was not approaching the safe yield level and some areas were experiencing significant declines in groundwater elevations. A later study completed in 2009 suggested groundwater pumping was approaching the safe yield level of the Basin. The 2010 Resource Capacity Study prepared by the San Luis Obispo County Planning Department stated that the Basin is now near or at perennial yield levels. The County Board of Supervisors certified a Level of Severity III for the Paso Robles Basin in October, 2012, due to declining water levels. In August 2013, the County Board of Supervisors adopted an urgency ordinance to limit new draws from the Paso Robles Groundwater basin.

The Paso Robles Groundwater Basin encompasses an area of approximately 790 square miles and is the primary, and in many places the only, source of water available to property owners throughout Northern San Luis Obispo County. The basin extends from the Garden Farms area south of Atascadero to San Ardo in Monterey County, and from the Highway 101 corridor east to Shandon. The basin supplies water for 29% of SLO County's population and an estimated 40% of the agricultural production of the County (Paso Robles Groundwater Basin Blue Ribbon Committee, 2013).

Paso Robles, Atascadero, and Templeton draw their water from the groundwater basin (primarily the Atascadero sub-basin), the underflow of the Salinas River and from the Nacimiento Pipeline Project. The remaining communities (Shandon, San Miguel, Creston, Bradley, Camp Roberts, Whitley Gardens, and Garden Farms) are entirely dependent on the groundwater basin for their water supply.

An established bi-annual well monitoring program overseen by the SLO County Flood Control and Water Conservation District reported these water declines in groundwater dependent communities (Through April, 2013):

a. Shandon: Water levels have dropped approximately 17 feet from 2011 to 2013.
b. Creston: Water levels have dropped approximately 25 feet from 2011 to 2013.
c. Estrella: Water levels have dropped approximately 25 feet from 2011 to 2013.
d. San Juan: Water levels have dropped approximately 5 feet from 2012 to 2013.

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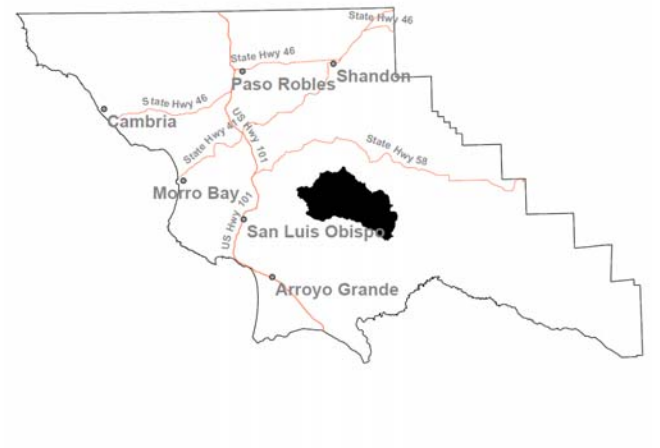
Significant Studies in Progress:

Upper Salinas – Santa Margarita Area Watershed

Hydrologic Unit Name	Water Planning Area	Acreage	Flows to	Groundwater Basin(s)	Jurisdictions
Salinas 9	Santa Margarita WPA 12, Atascadero/ Templeton WPA 13	82,156 acres	Salinas River to Pacific Ocean (Monterey Bay National Marine Sanctuary)	Paso Robles; Atascadero sub-Basin; Rinconada Valley	County of San Luis Obispo, City of Atascadero, Town of Santa Margarita, Los Padres National Forest



Description:

The Upper Salinas- Santa Margarita Area Watershed is located in northern San Luis Obispo County and includes a portion of the Salinas River and adjacent tributaries. The drainage rises to a maximum elevation of approximately 2,800 feet above mean sea level with steep topography categorizing much of the western portion of the watershed. The watershed contains two major drainages; Atascadero Creek and Parole Canyon. The watershed contains a mix of urban and rural residential land uses as well as agricultural land uses. A portion of the Los Padres National Forest is also contained within the watershed along the western boundary. The City of Atascadero is located at the northern end of the watershed boundary and the community of Santa Margarita is located within the central and southern portions of the watershed. Other land uses include two quarries, Atascadero Lake, and a wastewater treatment plant. Water supply for the watershed area is dominated by wells, including those used by the Atascadero Mutual Water Company to supply urban residents and commercial uses.

Existing Watershed Plans:

Salinas River Watershed Action Plan

Upper Salinas – Santa Margarita Area Watershed

Characteristics:

	Physical Setting	
	Rainfall	Average annual: 21-37 inches (NRCS shapefile, 2010)
	Air Temperature	Summer Range (August 1990- 2012): 52°-92°F Winter Range (December 1990-2012): 32°-61°F (Paso Robles (*not in watershed*), NOAA National Climatic Data Center, viewed 2013)
	Geology Description	Rincon Creek is composed of flat highly infiltrative Quaternary material. Santa Margarita Creek and Hale Creek sub-watersheds have steep pre-Quaternary non-infiltrative headwaters with steep moderately infiltrative early to mid-Tertiary valleys. Trout Creek has steep pre-Quaternary non-infiltrative headwaters with flat highly infiltrative Quaternary valleys. Calf Canyon, Moreno Creek and Pilitas Creek have steep pre-Quaternary non-infiltrative headwaters. Paloma Creek sub-watershed has moderately infiltrative early to mid-Tertiary headwaters with flat Quaternary highly infiltrative valleys (Bell, pers. comm., 2013). Water Bearing Formations. The principal water-bearing unit is Quaternary age alluvium (Carollo, 2012) The Middle Salinas-Atascadero Watershed is more complex than northern San Luis Obispo Counties other watersheds because it is dissected by the Rinconada Fault. Atascadero draws water from a sub-basin, a pocket located on the western edge of the main basin (just 3 percent of the basin) that is smaller, narrower and replenishes water far more easily with rainfall. The Rinconada Fault separates the two. The local public water utility doesn't need a treatment plant because the natural geology along the Salinas River in Atascadero allows it to treat the water by filtering it through a sandy layer adjacent to the Salinas River (Tribune, 2013). The Santa Margarita Formation in this watershed is present as Miocene aged, nearly white, coarse, arkosic sandstones which are interbedded with small amounts of mudstone, siltstone, diatomite, and conglomerate. The sandstones are commonly massively cross-bedded, indicative of a high energy, shallow marine bottom depositional environment. Minerals indicate a granitic origin for the sands, while the pebbles in the conglomerates appear to have been reworked from older conglomerates. Some beds are tuffaceous, and some diatomaceous beds altered to chert by redeposition of silica. Significant in environmental interpretation of the formation are the thick biostromes, consisting of masses of pectin, oyster shells, and broken shell debris. Such masses appear to have been storm constructed masses.

		They imply shallow water, high energy conditions, as supported by thick shells of many fossils, deposited in a structural trough between the Rinconada and Nacimiento fault zones, reaching 2,000 ft thick northeast of Santa Margarita but 200 feet west of Atascadero (Chipping, 1987). Southern Salinas Valley contains extensive outcroppings of Monterey Formation. The Hames member forms extensive outcrops between Atascadero and Santa Margarita. The Monterey Formation is dominated by thin, siliceous shales, and diatomaceous beds, which contains few, thin phosphatic beds. Sandstones are usually calcareous, well-cemented, and laced with small calcite veins. Some beds, like Graves Creek near Atascadero for example, were buried while still in a slurry-like state, and injected into overlying beds as sandstone dikes. The calcareous nature of the Monterey Formation is due to the high foraminifera content (Chipping, 1987). The Salinas Valley near Santa Margarita is bounded by the Sur-Nacimiento Fault on the east and Rinconada Fault to the west. The Sur-Nacimiento fault marks the boundary between the old oceanic crust of the Franciscan mélange to the west, and the Salinian continental crust made up of granite to the east. The Salinan granite basement extends to the San Andreas Fault to the east. The Salinan Block represents a slice of continental granitic crust sandwiched between two oceanic crustal plates of the younger Franciscan on the west, and the older Franciscan of the San Joaquin Valley to the east. The Rinconada Fault is a branch off the SAF and continues N until it goes offshore N of Monterey. It is a right lateral wrench similar to the San Andreas and forms the mountains on the westside of the Salinas Valley. The fault passes through Paso Robles and is the source of the mineral hot springs in town (Chipping, 1987).
	Hydrology	
	Stream Gage	Yes; USGS 11145500 (Salinas River near CA-58); USGS 11145000 (Salinas River at Las Pilitas Road); USGS 11144600 (Salinas River near Santa Margarita Lake) (USGS, viewed August 2013)
	Hydrology Models	Yes; Klinchuch. 2012. Groundwater model to analyze the sustainability of the Atascadero Sub-basin; Montgomery Watson, 1997, Monterey County Water Resource Agency's Salinas Valley Integrated Groundwater and Surface Water Model Update, Final Report; Todd Engineers, Oct 2013, Paso Robles Groundwater Basin Model.
	Peak Flow	16,600 cfs (USGS, viewed August 2013).
	Base Flow	7.5 cfs (USGS, viewed August 2013).

	Flood reports	None
	Flood Control Structures	Bridges: 1 over Rinconada Creek on Pozo Road; 2 over Salinas River on Las Pilitas Road; 3 over Las Pilitas Creek on Las Pilitas Road; 5 over Santa Margarita Creek on El Camino Real, Walnut Avenue, Norte Road, Linden Ave and Tassajara Creek Road; 4 over Yerba Buena Creek on H Street, J Street, I Street and Encina Avenue; 1 over Tassajara Creek on Tassajara Creek Road (PWD Bridges GIS layer)
	Areas of Heightened Flood Risk	Creeks in Atascadero overflow banks and cause local flooding • Major flooding problems in Santa Margarita are caused by inadequate culverts/ bridges, and inadequate channel capacity in Yerba Buena Creek, where water overtops the banks and floods adjacent low topographic areas. • Santa Margarita has a serious lack of sufficient drainage ditches, culverts, and storm drains. These facilities are often under maintained and filled with sediment or debris, which prevents the drainage system from properly conveying urban runoff to Yerba Buena and Santa Margarita Creeks. • Proposed Solutions (2009): Construction of a levee and major retention basins to address frequently recurring flooding problems • Proposed Improvements (2009): The local CSA 23 advisory group has been active in mobilizing community support for the projects and pursuing an easement for the levee and retention basins from the owners of adjacent Santa Margarita Ranch (SLO County Flood Control and Water Conservation District, 2009).
	Biological Setting	
	Vegetation Cover	Primarily oak woodland, consisting mainly of coast live oak, blue oak, intermittent valley oak, chamise chaparral some buckbrush chaparral, non-native annual grassland, coastal scrub, foothill pine woodland, mixed evergreen forest around Cuesta grade, and cropland. (SLO County vegetation shapefile, 1990) Riparian vegetation is present along creeks and the Salinas river, ranging from willow scrub to multi-layer mature riparian woodland with cottonwood, sycamore, black walnut, and willow. (Althouse and Meade, 2013). Forest Service Calveg data from 2002 for this watershed also describe chamise chaparral, mixed chaparral, sage scrub, and woodlands. Woodland types include blue oak woodland, coast live oak woodland, foothill woodland with mixed oak and foothill pine, mixed hardwoods, and coulter pine. Riparian woodlands with sycamore, valley oak, and mixed hardwood are also noted. Willow scrub is mapped along some drainages. This shapefile does not have complete coverage in this watershed. (Calveg R5 Zone 6, EvegTile42_97_02, 2007, based on 2002 aerials) *Data limited by age and incomplete coverage of shapefiles*

Upper Salinas – Santa Margarita Area Watershed

Invasive Species	Star thistle, tocolote, spotted knapweed, Blue gum/Eucalyptus (Althouse and Meade, 2005) *Data limited to observations, not complete inventory*
Special Status Wildlife and Plants	Key: FE - Federal endangered, FT - Federal threatened, SE - State endangered, ST - State threatened, SSC - State Species of Special Concern; FP- Fully Protected, SA – Special Animal, CRPR – CA rare plant rank (CNDDB, viewed August, 2013) Locations listed refer to USGS 7.5' quadrangle names. Only the portion overlapping the watershed boundary was considered. *Data limited to observations, not complete inventory*

Species	Status	ATASCADERO	LOPEZ MTN	SAN LUIS OBISPO	SANTA MARGARITA	SANTA MARGARITA LAKE	TEMPLETON	WILSON CORNER
Animals								
American badger	SSC				x			
Atascadero June beetle	SA	x					x	
California linderiella	SA				x			
California red-legged frog	FT	x	x		x			
Coast Range newt	SSC		x	x				
ferruginous hawk	SA (Wintering)		x		x			
foothill yellow-legged frog	SSC				x			
golden eagle	FP	x						
grasshopper sparrow	SSC (Nesting)				x			
loggerhead shrike	SSC (Nesting)		x					
merlin	SA (Wintering)		x					
pallid bat	SSC	x						
prairie falcon	SA (Nesting)		x	x	x	X		x
purple martin	SSC (Nesting)	x	x					
San Luis Obispo pyrg	SA			x				
silvery legless lizard	SSC		x					
Townsend's big-eared bat	SSC				x			
western pond turtle	SSC	x	x	x	x			
western spadefoot	SSC				x			x
white-tailed kite	FP		x		x			

Upper Salinas – Santa Margarita Area Watershed

Species	Status	ATASCADERO	LOPEZ MTN	SAN LUIS OBISPO	SANTA MARGARITA	SANTA MARGARITA LAKE	TEMPLETON	WILSON CORNER
	Plants							
Brewer's spineflower	CRPR 1B.3	x		x				
Cambria morning-glory	CRPR 4.2		x	x				
caper-fruited tropidocarpum	CRPR 1B.1		x					
Cuesta Pass checkerbloom	SR	x		x				
Cuesta Ridge thistle	CRPR 1B.2	x		x				
dwarf soaproot	CRPR 1B.2			x				
Eastwood's larkspur	CRPR 1B.2	x					x	
Hardham's evening-primrose	CRPR 1B.2				x			
hooked popcornflower	CRPR 1B.2	x		x				
Hoover's bent grass	CRPR 1B.2		x			x		
La Panza mariposa-lily	CRPR 1B.3				x	x		
mesa horkelia	CRPR 1B.1	x		x			x	
Miles' milk-vetch	CRPR 1B.2	x			x			
most beautiful jewel-flower	CRPR 1B.2	x						
pale-yellow layia	CRPR 1B.1				x			
Palmer's monardella	CRPR 1B.2	x		x		x		
Pecho manzanita	CRPR 1B.2		x					
round-leaved filaree	CRPR 1B.1	x			x		x	
San Benito fritillary	CRPR 1B.2			x				
San Luis mariposa-lily	CRPR 1B.2	x		x				
San Luis Obispo County lupine	CRPR 1B.2		x					
San Luis Obispo owl's-clover	CRPR 1B.2		x					
San Luis Obispo sedge	CRPR 1B.2	x		x		x		
Santa Lucia manzanita	CRPR 1B.2		x	x				
Santa Margarita manzanita	CRPR 1B.2	x	x	x				
shining navarretia	CRPR 1B.2				x			
straight-awned spineflower	CRPR 1B.3	x	x		x			
yellow-flowered eriastrum	CRPR 1B.2	x			x	x	x	X

Upper Salinas – Santa Margarita Area Watershed

	Steelhead Streams	Yes; Atascadero (Hale) Creek (FR 50) Atascadero (Hale) Creek, Santa Margarita Creek, Tassajara Creek, Salinas River (US-LT RCD, 2002)
	Stream Habitat Inventory	Yes; DFG, 2005
	Fish Passage Barriers	PAD ID: 707003– Bedrock waterfall on Atascadero Creek. Total Barrier. 22.565639 miles upstream. PAD ID: 707244- Utility crossing on Atascadero Creek at Curbail Avenue. Temporal Barrier. 25.51314 miles upstream. PAD ID: 719388- Dam at Atascadero Park on unnamed tributary to Atascadero. Unknown Status.PAD ID: 731745- Road crossing at Highway 41 on unnamed tributary to Atascadero Creek. Unknown Status. PAD ID: 732138- Road crossing at Highway 41 on unnamed tributary to Atascadero Creek. Unknown Status. PAD ID: 707246- Culvert under Highway 101 on Santa Margarita Creek. Total Barrier. 5.52855 miles upstream.PAD ID: 712052- Road Crossing at El Camino Real Bridge on Santa Margarita Creek. Partial Barrier.69.42864 miles upstream. PAD ID: 707245- Culvert on Santa Margarita Creek. Temporal Barrier. 7.00901 miles upstream.
	Designated Critical Habitat	Yes; Atascadero (Hale) Creek for Steelhead Trout (NMFS CFR 50 226) Steelhead Trout: Tassajara (trout) creek, Santa Margarita Creek, Salinas River (US Fish and Wildlife – Critical Habitat Mapper) California Red-Legged Frog (USFWS Critical Habitat Portal, viewed 2013)
	Habitat Conservation Plans	Yes; North San Luis Obispo County Habitat Conservation Program – Multiple species, initially San Joaquin kit fox. *HCP general for North County, not watershed specific*
	Other Environmental Resources	Salinas River, Paso Robles Groundwater Basin, Salinas Reservoir/Santa Margarita Lake, Los Padres National Forest, Santa Lucia Wilderness, Cuesta Ridge Botanical Area, Rinconada Mine Botanical Area (SLO County Flood Control and Water Conservation District, 2007)
	Land Use	
	Jurisdictions & Local Communities	County of San Luis Obispo, City of Atascadero, Town of Santa Margarita
	% Urbanized	9.6% in City of Atascadero, 0.05% Commercial (majority in Santa Margarita), 5% residential (majority Santa Margarita and South Atascadero: non-city)
	% Agricultural	42% rangeland, small scale vineyard and crop production.
	% Other	12.6% open space (Los Padres national Forest), 0.04% Public Facilities, 0.2% recreation, 3% rural lands
	Planning Areas	Salinas River Planning Area

	Potential growth areas	Eagle Ranch (South Atascadero); Santa Margarita Ranch; City of Atascadero Urban Core, South Atascadero
	Facilities Present	Atascadero Wastewater Treatment Plant discharges to the Salinas River; Atascadero Lake; Los Padres National Forest, The Garden Farms Water District
	Commercial Uses	City of Atascadero – Urban Core, Santa Margarita Ranch, hobby vineyards, Livestock and Ag – east Salinas River, Kaiser Quarry, Rocky Canyon Quarry (Union Asphalt), Santa Margarita Quarry (Hansen Aggregates), various industrial facilities, agricultural service provides, residential service providers, commercial districts, restaurants, wine related tourism
	Demographics	
	Population	24,098 in watershed (U.S. Census Block, 2010). 19,333 in Atascadero (US Census Blocks, 2010) 386 in Garden Farms (US Census Blocks, 2010) 1,259 in Santa Margarita (US Census Blocks, 2010)
	Race and Ethnicity	Watershed: Caucasians representing 76%, Latinos representing 16.3%, Mixed-race individuals representing 2.4%, Asians representing 2.2%, African Americans representing 2.2% of the total population in the watershed. The remaining races include Native American, Pacific Islander, and other. Atascadero: 74% Caucasian; 18% Latino; 2.5% Mixed Race; 2.4% Asian (US Census Blocks, 2010) Garden Farms: 87.3% Caucasian; 10.4% Hispanic or Latino; 1.3% Asian (US Census, 2010) Santa Margarita: 76.5% Caucasian; 16.4% Hispanic or Latino; 3.2% Mixed Race; 2.2% Asian; 1.2% American Indian and Alaska Native (US Census, 2010)
	Income	MHI $60,676 for watershed (U.S. Census Tracts, 2010). MHI $68,502 in Atascadero (US Census, 2010) MHI $49,032 in Santa Margarita (US Census, 2010)
	Disadvantaged Communities	No; 7% of individuals are below poverty level in the watershed (U.S. Census Tracts, 2010). 8.7% of individuals are below poverty level in Atascadero (US Census, 2010) 16.7% of individuals are below poverty level in Garden Farms (2007-2011 American Community Survey 5-Year Estimates) 18.9% of individuals are below poverty level in Santa Margarita (2007-2011 American Community Survey 5-Year Estimates)
	Water Resources	
	Water Management Entities	Atascadero Mutual Water Company, County Waterworks District No. 6

		County Waterworks District No. 6: three wells located in the Paso Robles groundwater basin that provide water to residents of Santa Margarita Atascadero Mutual Water Company – Salinas River wells located in the Atascadero Sub-basin that provide water to the City of Atascadero and surrounding areas.
	Groundwater	Yes; Paso Robles; Atascadero sub-Basin; Rinconada Valley
	Surface Water	No public reservoirs. The rights to surface water flows in the Salinas River and associated pumping from the alluvium have been fully appropriated by the State Board and no future plans exist to increase these demands beyond the current allocations. (Carollo, 2012)
	Imported Water	Yes; Nacimiento Pipeline (Atascadero Mutual Water Company)
	Recycled/Desalinated Water	Yes; The City of Atascadero uses reclaimed water from the Wastewater Treatment Plant for use at Heilman Regional Park and Golf Course, as well as recharge for Paso Robles Groundwater Basin.
	Key Infiltration Areas	No comprehensive study has been completed to date. The main source of recharge in the alluvium is the Salinas River. Recharge to the Paso Robles Formation occurs from the overlying Salinas River alluvium as well as from overlying channel deposits of the Santa Margarita, Atascadero, Graves, and Paso Robles Creeks (Carollo, 2012)
	Water Budget	Yes; Todd Engineers, 2013, Paso Robles Groundwater Basin Model Update *Water budget limited by lacking well data*
	Water Uses	
	Beneficial Uses	*Atascadero Creek* – Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Commercial and Sport Fishing (COMM), Cold Fresh Water Habitat (COLD), Wildlife Habitat (WILD), Rare, Threatened, or Endangered Species (RARE), and/or Early Development (SPWN). *Atascadero Lake* - Municipal and Domestic Supply (MUN), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Commercial and Sport Fishing (COMM), Warm Freshwater habitat (WARM), Cold Fresh Water Habitat (COLD) , Wildlife Habitat (WILD), Navigation (NAV), and/or Early Development (SPWN). *Salinas River (Nacimiento River-Santa Margarita Reservoir)* - Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Industrial Process Supply (PRO), Ground Water Recharge (GWR),

		Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Cold Fresh Water Habitat (COLD), Warm Freshwater habitat (WARM), Migration of Aquatic Organisms (MIGR), Spawning, Reproduction, and/or Early Development (SPWN), Threatened, or Endangered Species (RARE) and Commercial and Sport Fishing (COMM). (CCRWQCB, 2011)
	Other Unique Characteristics	
	Historical Resources	Santa Margarita de Cortona (22515 H Street, Santa Margarita) (PLN_DES_HISTORIC_POINTS GIS layer)
	Los Padres National Monument	Ecosystems in Los Padres National Forest range from semi-desert in interior areas to redwood forest on the coast. Forest vegetation classified into two major types: chaparral and forested lands. Provides a diverse wildlife habitat with 23 threatened and endangered animals. Member of the California Condor Recovery Program, and has been an active player in the reintroduction of California condors in the wild. The Forest has one endangered plant, two threatened plant species and 71 sensitive plant species. Management of riparian vegetation focuses on supporting fish and wildlife populations. There are over 870,000 acres of livestock grazing allotments in the Forest.
	Heilman Regional Park, Santa Margarita Community Park and Chalk Mountain Golf Course	Group day-use facilities owned and managed by the County of San Luis Obispo.
	Atascadero Lake Park	Man-made lake managed by the City of Atascadero. There is a walking path that follows the edge of the lake for a stroll, jog or bike ride lakeside. The park also has a playground, paddle/kayak boats, workout stations, restroom facilities, large and small barbecue areas, horseshoe pits, sand volleyball court and the Charles Paddock Zoo.
	Stadium Park	During the 1920's, Stadium Park was a gathering place for community events, concerts, and theater. Performances were held on a big stage under an Oak tree. That stage was later moved to where the Atascadero Lake Pavilion now stands. Besides being a beautiful park, it is a natural amphitheater with gently sloping hills leading to the basin. Acoustics are ideal just as nature made them.
	Sunken Gardens	Inspired by “The Grand Basin” at the 1904 St. Louis World’s Fair, Atascadero founder E.G. Lewis envisioned a formal Sunken Garden to adorn the civic center in his new colony. Restored in 2005 as originally designed with walkways crossing the length and width of the gardens and meeting at a central fountain designed by architect Walter D. Bliss of the San Francisco firm of Bliss and Faville.
	Rinconada Mine Botanical Area	Significant as an outstanding representative foothill woodland community with a wide diversity of species. *Monardella palmeri*, a plant on the California Native Plant Society’s list of rare and

		endangered species is known to this area
	Climate Change Considerations	
		See IRWMP, 2014 Section H, Climate Change *Data is general for county, not watershed specific*

Watershed Codes

Calwater / DWR Number	HA	Hydrologic Area Name	HSA	Hydrologic Sub-Area Name	SWRCB Number	CDF Super Planning	CDF Watershed Name
3309.811303	8	Paso Robles	1	Atascadero	309.81	Parole Canyon	Pilitas Creek
3309.811304	8	Paso Robles	1	Atascadero	309.81	Parole Canyon	Rincon Creek
3309.811306	8	Paso Robles	1	Atascadero	309.81	Parole Canyon	Moreno Creek
3309.811401	8	Paso Robles	1	Atascadero	309.81	Atascadero Lake	Santa Margarita Creek
3309.811402	8	Paso Robles	1	Atascadero	309.81	Atascadero Lake	Calf Canyon
3309.811403	8	Paso Robles	1	Atascadero	309.81	Atascadero Lake	Paloma Creek
3309.811404	8	Paso Robles	1	Atascadero	309.81	Atascadero Lake	Hale Creek
3309.811405	8	Paso Robles	1	Atascadero	309.81	Atascadero Lake	Henry
3309.811408	8	Paso Robles	1	Atascadero	309.81	Atascadero Lake	Trout Creek

Source: Excerpt from California Interagency Watershed Map of 1999, Calwater 2.2.1 (CA Resource Agency, 2004 Update)

Major Changes in the Watershed

- Since late 1700's Salinas River Valley used for agriculture. After Spanish missionary priests established the mission at San Luis Obispo, they built Santa Margarita de Cortona Asistencia in 1817 to provide crops and livestock.

Atascadero

- First building in the area in 1812. Adobe that served as the southern grazing outpost for Mission San Miguel Portions of the adobe walls stood until late 1900's near Traffic Way.

- 1876 – A. F. Benton purchased the Eagle Rancho, near the headwaters of Atascadero Creek. Uses the land the raise hogs, but as many encounters with grizzly bears that make ranching difficult, but attracts big game hunters to the area (Storke, 1891).
- During 19th century cattle ran in large tracts that had been Mexican land grants. Toward the end of the century, J. H. Henry consolidated a number of tracts into the 23,770 acre Atascadero Ranch.
- During the early 20th century, U.S. Army used the central plains of the ranch for annual encampments and maneuvers and at one time considered the acquisition of the ranch for permanent military camp.
- In 1913, Edward Gardner "E. G. Lewis" selected the Atascadero Ranch as the ideal location for a model colony. Lewis purposely chose a location halfway between major urban center of the state on both a railway and state highway.
- Lewis subdivided the entire 38 square miles, built 100 miles of roads, a water system of tanks, wells and mains, nearly 3,000 acres of orchards, parks, the Sunken Gardens and public buildings.
- A twenty-mile road through the Santa Lucia Mountains connecting the Colony to the 1,000 acre Atascadero Beach properties near Morro Bay which had schools, a community center, hospital and hotel.
- Two important factors that stimulated growth in the 1950's have also significantly affected design and demographics of the community: bisection of the City in 1954 by Highway 101, and the siting of the Atascadero State Hospital on the edge of the community in 1956.
- 2006 – Severely eroded bank on south side of Atascadero Creek repaired. Rock slope protection installed along the bank and heavily vegetated with native riparian species.

Watershed Health by Major Tributary

Tributary Name	**Ephemeral / Perennial**	**303d Listed/ TMDLs**	**Pollution Sources** NP (non-point) MP (Major Point)	**Environmental Flows**
Salinas River	Undetermined	Yes; Sodium and Chloride	Undetermined	Not assessed
Tributary Name	**Ephemeral / Perennial**	**303d Listed/ TMDLs**	**Pollution Sources** NP (non-point) MP (Major Point)	**Environmental Flows**
Atascadero Creek (Hale)	Perennial	Yes on 303d list for Chloride, E. coli, Fecal Coliform, Low Dissolved Oxygen, and Sodium. TMDL estimated	NP: Agriculture, grazing-related, natural sources, resource extraction, petroleum activities, transient encampments	**Lower**: Spring: 0.99 cfs. Summer: 0.37 cfs.

		date of completion 2021.	MP: None defined as such on 303d list	
Paloma Creek	Undetermined	Not assessed	Undetermined	Not assessed
Santa Margarita Creek	Undetermined	Not assessed	Undetermined	**Upper**: Spring: 0.81 cfs. Summer: 0.32 cfs.
Calf Canyon Creek	Undetermined	Not assessed	Undetermined	**Upper**: Spring: 0.49 cfs. Summer: 0.24 cfs.
Moreno Creek	Undetermined	Not assessed	Undetermined	Spring: 0.53 cfs. Summer: 0.24 cfs.
Trout Creek	Undetermined	Not assessed	Undetermined	**Upper**: Spring: 0.63 cfs. Summer: 0.27 cfs.
Rincon Creek	Undetermined	Not assessed	Undetermined	Not assessed
Pilitas Creek	Undetermined	Not assessed	Undetermined	Spring: 0.65 cfs. Summer: 0.28 cfs.

Watershed Health by Major Groundwater Basin

Groundwater Basin	Estimated Safe Yield	Water Availability Constraints	Drinking Water Standard Exceedance	Water Quality Objective Exceedance
Paso Robles	97,700 AF (SLO County RCS, 2011)	Physical limitations, water rights and water quality issues (Master Water Report).	Yes; see description below.	None (CCRWQCB, 2011)
Atascadero	None (Carollo, 2012)	Water rights and physical limitations (SLO County WMP, 2012)	The 2008 Water Quality Report for both Templeton CSD and Atascadero MWC found that none of the tested regulated and secondary substances in water samples exceeded their MCL values (Carollo, 2012)	None (CCRWQCB, 2011)

Rinconada	None (Carollo, 2012)	Physical Limitations (SLO County WMP, 2012)	None (Carollo, 2012)	None (CCRWQCB, 2011)

Groundwater Quality Description:

Paso Robles Groundwater Basin: Based on Todd monitoring report (2007), the Basin was not at the safe yield although some areas were experiencing significant declines in groundwater elevations. A later study completed in 2009 suggests groundwater pumping was approaching the safe yield of the Basin, which led to the recommendation to do a groundwater management plan. The Resource Capacity Study prepared by the San Luis Obispo County Planning Department in November 2010 states that the Basin is near or at perennial yield, and contains land use and water use monitoring and conservation recommendations within the authority of the County and District to help ensure the sustainability of the Basin into the future (Paso Robles Groundwater Basin – Groundwater Advisory Committee, 2011).

The predominant cations are calcium and sodium and the predominant anion is bicarbonate (DWR 1981; Fugro West, 2001b). Analysis of 48 public supply wells in the sub-basin show an average Total Dissoved Solid (TDS) content of 614 ppm and a range of 346 to 1,670 ppm.

In one study, (Fugro West 2001b), 23 of 74 samples collected exceeded one or more drinking water standards. The maximum contaminant level (MCL) for nitrate was exceeded in 4 samples (Fugro West, 2001b). Water quality trends indicate an increasing concentration of TDS and chloride in the deep, historically artesian aquifer northeast of Creston (Carollo, 2012).

Salinas River recharge typically contains calcium and magnesium bicarbonate. Santa Margarita Creek water contains magnesium-calcium-bicarbonate. Atascadero and Paso Robles Creeks have calcium bicarbonate rich waters. Increasing Total Dissolved Solids and chlorine, physical limitations (Carollo, 2012).

Atascadero sub-basin: In terms of physical limitations, Todd (2009) estimated the gross groundwater pumping in the sub-basin during 2006 to be 15,545 AF, which is 95 percent of the sub-basin perennial yield of 16,400 AFY. Ongoing studies may revise the estimated outflow from the sub-basin. According to Fugro (2010), whereas total groundwater in storage in the main part of the Paso Robles Groundwater Basin is predominantly in the Paso Robles Formation, the Salinas River alluvium in the Atascadero Groundwater Sub-basin accounts for a significant percentage of the total groundwater storage in the sub-basin. Pumping from the alluvium should be accounted for separately from pumping from the Paso Robles Formation.

Primary Issues

Issue	***Potential Causes***	***Referenced from***
Significant water level declines	Range of groundwater uses in close proximity, including agricultural irrigation, municipal supply wells, golf course irrigation, and a relatively dense aggregation of rural “ranchette”)	Carollo, 2012

	users	
Groundwater Quality	High concentrations of TDS, chlorides, sulfates, and boron	Carollo, 2012
Limited Groundwater Basin information (Rinconada basin)		Carollo, 2012
Atascadero (Hale) Creek 303(d) listed for chloride, Escherichia coli (E. coli), fecal coliform, low dissolved oxygen, sodium	Agriculture, grazing related and natural sources, resource extraction petroleum activities, transient encampments	Carollo, 2012
Steelhead passage	Several tributaries and the Salinas are designated critical habitat which must be considered in planning water use.	*50 CFR 226 - National Marine Fisheries Service - NOAA*

Groundwater: Paso Robles Groundwater Basin

According to multiple studies of this basin, annual basin pumping is now at or near the basin's perennial yield (Paso Robles Groundwater Management Plan, 2011). From 1997–2009, water levels declined on average of 2–6 feet per year, depending on the location. A Todd Engineering monitoring report (2007) indicated that the Basin was not approaching the safe yield level and some areas were experiencing significant declines in groundwater elevations. A later study completed in 2009 suggested groundwater pumping was approaching the safe yield level of the Basin. The 2010 Resource Capacity Study prepared by the San Luis Obispo County Planning Department stated that the Basin is now near or at perennial yield levels. The County Board of Supervisors certified a Level of Severity III for the Paso Robles Basin in October, 2012, due to declining water levels. In August 2013, the County Board of Supervisors adopted an urgency ordinance to limit new draws from the Paso Robles Groundwater basin.

The Paso Robles Groundwater Basin encompasses an area of approximately 790 square miles and is the primary, and in many places the only, source of water available to property owners throughout Northern San Luis Obispo County. The basin extends from the Garden Farms area south of Atascadero to San Ardo in Monterey County, and from the Highway 101 corridor east to Shandon. The basin supplies water for 29% of SLO County's population and an estimated 40% of the agricultural production of the County (Paso Robles Groundwater Basin Blue Ribbon Committee, 2013).

Paso Robles, Atascadero, and Templeton draw their water from the groundwater basin (primarily the Atascadero sub-basin), the underflow of the Salinas River and from the Nacimiento Pipeline Project. The remaining communities (Shandon, San Miguel, Creston, Bradley, Camp Roberts, Whitley Gardens, and Garden Farms) are entirely dependent on the groundwater basin for their water supply.

An established bi-annual well monitoring program overseen by the SLO County Flood Control and Water Conservation District reported these water declines in groundwater dependent communities (Through April, 2013):

a. Shandon: Water levels have dropped approximately 17 feet from 2011 to 2013.
b. Creston: Water levels have dropped approximately 25 feet from 2011 to 2013.
c. Estrella: Water levels have dropped approximately 25 feet from 2011 to 2013.

d. San Juan: Water levels have dropped approximately 5 feet from 2012 to 2013.

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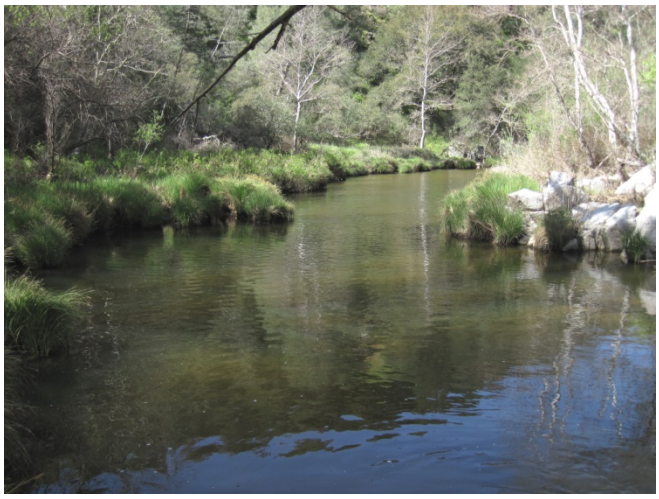
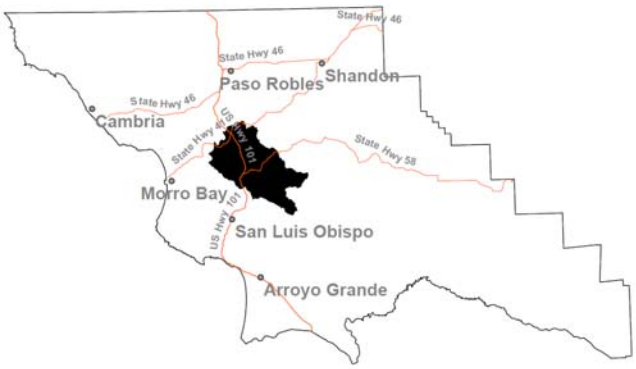
Significant Studies in Progress:

Mid Salinas – Atascadero Creek Area Watersheds

Hydrologic Unit Name	Water Planning Area	Acreage	Flows to	Groundwater Basin(s)	Jurisdictions
Salinas 9	Santa Margarita WPA 12, Atascadero/ Templeton WPA 13	82,156 acres	Salinas River to Pacific Ocean (Monterey Bay National Marine Sanctuary)	Paso Robles; Atascadero sub-Basin; Rinconada Valley	County of San Luis Obispo, City of Atascadero, Town of Santa Margarita, Los Padres National Forest





Description:

The Atascadero Creek - Mid Salinas Watershed is located in northern San Luis Obispo County and includes a portion of the Salinas River and adjacent tributaries. The drainage rises to a maximum elevation of approximately 2,800 feet above mean sea level with steep topography categorizing much of the western portion of the watershed. The watershed contains two major drainages; Atascadero Lake and Parole Canyon. The watershed contains a mix of urban and rural residential land uses as well as agricultural land uses. A portion of the Los Padres National Forest is also contained within the watershed along the western boundary. The City of Atascadero is located at the northern end of the watershed boundary and the community of Santa Margarita is located within the central and southern portions of the watershed. Other land uses include two quarries, Atascadero Lake, and a wastewater treatment plant. Water supply for the watershed area is dominated by wells, including those used by the Atascadero Mutual Water Company to supply urban residents and commercial uses.

Existing Watershed Plans:

Salinas River Watershed Action Plan

Mid Salinas – Atascadero Creek Area Watersheds

Characteristics:

	Physical Setting	
	Rainfall	Average annual: 21-37 inches (NRCS shapefile, 2010)
	Air Temperature	Summer Range (August 1990- 2012): 52°-92°F Winter Range (December 1990-2012): 32°-61°F (Paso Robles (*not in watershed*), NOAA National Climatic Data Center, viewed 2013)
	Geology Description	Category #3: Rincon Creek is composed of flat highly infiltrative Quaternary material – Category #3. Category #5: Santa Margarita Creek and Hale Creek sub-watersheds have steep pre-Quaternary non-infiltrative headwaters with steep moderately infiltrative early to mid-Tertiary valleys – Category #5. Category #12: Trout Creek has steep pre-Quaternary non-infiltrative headwaters with flat highly infiltrative Quaternary valleys – Category #12. Category #13: Calf Canyon, Moreno Creek and Pilitas Creek have steep pre-Quaternary non-infiltrative headwaters – Category #13. Category #14: Paloma Creek sub-watershed has moderately infiltrative early to mid-Tertiary headwaters with flat Quaternary highly infiltrative valleys – Category #14 (Bell, pers. comm., 2013). Water Bearing Formations. The principal water-bearing unit is Quaternary age alluvium (Carollo, 2012) The Middle Salinas-Atascadero Watershed is more complex than northern San Luis Obispo Counties other watersheds because it is dissected by the Rinconada Fault. Atascadero draws water from a sub-basin, a pocket located on the western edge of the main basin (just 3 percent of the basin) that is smaller, narrower and replenishes water far more easily with rainfall. The Rinconada Fault separates the two. The local public water utility doesn't need a treatment plant because the natural geology along the Salinas River in Atascadero allows it to treat the water by filtering it through a sandy layer adjacent to the Salinas River (Tribune, 2013).

The Santa Margarita Formation in this watershed is present as Miocene aged, nearly white, coarse, arkosic sandstones which are interbedded with small amounts of mudstone, siltstone, diatomite, and conglomerate. The sandstones are commonly massively cross-bedded, indicative of a high energy, shallow marine bottom depositional environment. Minerals indicate a granitic origin for the sands, while the pebbles in the conglomerates appear to have been reworked from older conglomerates. Some beds are tuffaceous, and some diatomaceous beds altered to chert by redeposition of silica. Significant in environmental interpretation of the formation are the thick biostromes, consisting of masses of pectin, oyster shells, and broken shell debris. Such masses appear to have been storm constructed masses. They imply shallow water, high energy conditions, as supported by thick shells of many fossils, deposited in a structural trough between the Rinconada and Nacimiento fault zones, reaching 2,000 ft thick northeast of Santa Margarita but 200 feet west of Atascadero (Chipping, 1987).

Southern Salinas Valley contains extensive outcroppings of Monterey Formation. The Hames member forms extensive outcrops between Atascadero and Santa Margarita. The Monterey Formation is dominated by thin, siliceous shales, and diatomaceous beds, which contains few, thin phosphatic beds. Sandstones are usually calcareous, well-cemented, and laced with small calcite veins. Some beds, like Graves Creek near Atascadero for example, were buried while still in a slurry-like state, and injected into overlying beds as sandstone dikes. The calcareous nature of the Monterey Formation is due to the high foraminifera content (Chipping, 1987).

The Salinas Valley near Santa Margarita is bounded by the Sur-Nacimiento Fault on the east and Rinconada Fault to the west. The Sur-Nacimiento fault marks the boundary between the old oceanic crust of the Franciscan mélange to the west, and the Salinian continental crust made up of granite to the east. The Salinan granite basement extends to the San Andreas Fault to the east. The Salinan Block represents a slice of continental granitic crust sandwiched between two oceanic crustal plates of the younger Franciscan on the west, and the older Franciscan of the San Joaquin Valley to the east. The Rinconada Fault is a branch off the SAF and continues N until it goes offshore N of Monterey. It is a right lateral wrench similar to the San Andreas and forms the mountains on the west side of the Salinas Valley. The fault passes through Paso Robles and is the source of the

		mineral hot springs in town (Chipping, 1987).
	Hydrology	
	Stream Gage	Yes; USGS 11145500 (Salinas River near CA-58); USGS 11145000 (Salinas River at Las Pilitas Road); USGS 11144600 (Salinas River near Santa Margarita Lake) (USGS, viewed August 2013)
	Hydrology Models	Yes; Klinchuch. 2012. Groundwater model to analyze the sustainability of the Atascadero Sub-basin; Montgomery Watson, 1997, Monterey County Water Resource Agency's Salinas Valley Integrated Groundwater and Surface Water Model Update, Final Report; Todd Engineers, Oct 2013, Paso Robles Groundwater Basin Model.
	Peak Flow	16,600 cfs (USGS, viewed August 2013).
	Base Flow	7.5 cfs (USGS, viewed August 2013).
	Flood reports	None
	Flood Control Structures	Bridges: 1 over Rinconada Creek on Pozo Road; 2 over Salinas River on Las Pilitas Road; 3 over Las Pilitas Creek on Las Pilitas Road; 5 over Santa Margarita Creek on El Camino Real, Walnut Avenue, Norte Road, Linden Ave and Tassajara Creek Road; 4 over Yerba Buena Creek on H Street, J Street, I Street and Encina Avenue; 1 over Tassajara Creek on Tassajara Creek Road (PWD Bridges GIS layer)
	Areas of Heightened Flood Risk	Creeks in Atascadero overflow banks and cause local flooding • Major flooding problems in Santa Margarita are caused by inadequate culverts/ bridges, and inadequate channel capacity in Yerba Buena Creek, where water overtops the banks and floods adjacent low topographic areas. • Santa Margarita has a serious lack of sufficient drainage ditches, culverts, and storm drains. These facilities are often under maintained and filled with sediment or debris, which prevents the drainage system from properly conveying urban runoff to Yerba Buena and Santa Margarita Creeks. • Proposed Solutions (2009): Construction of a levee and major retention basins to address frequently recurring flooding problems

		• Proposed Improvements (2009): The local CSA 23 advisory group has been active in mobilizing community support for the projects and pursuing an easement for the levee and retention basins from the owners of adjacent Santa Margarita Ranch (SLO County Flood Control and Water Conservation District, 2009).
	Biological Setting	
	Vegetation Cover	Primarily chamise-redshank chaparral consisting mainly of continuous chamise; mixed chaparral consisting mainly of continuous buckbrush chaparral; and valley oak woodland consisting mainly of intermittent valley oak, blue oak and coast live oak; with non-native annual grassland; coastal scrub consisting mainly of continuous chamise; blue oak-foothill pine consisting of continuous blue oak and coast live oak; blue oak woodland; and cropland. (SLO County vegetation shapefile, 1990) *Data limited by age of shapefile*
	Invasive Species	Star thistle, tocolote, spotted knapweed, Blue gum/Eucalyptus (Althouse and Meade, 2005) *Data limited to observations, not complete inventory*
	Special Status Wildlife and Plants	*Key*: FE - Federal endangered, FT - Federal threatened, SE - State endangered, ST - State threatened, SSC - State Special Species of Concern, CRPR – CA rare plant rank (CNDDB, viewed August 2013) *Data limited to observations, not complete inventory*

Species	**Status**	**ATASCADERO**	**LOPEZ MTN**	**SAN LUIS OBISPO**	**SANTA MARGARITA**	**SANTA MARGARITA LAKE**	**TEMPLETON**	**WILSON CORNER**
Animals								
American badger	SSC				x			
Atascadero June beetle	Special Animal	x					x	
California linderiella	Special Animal				x			
California red-legged frog	FT	x	x		x			
Coast Range newt	SSC		x	x				

ferruginous hawk	Special Animal (Wintering)		x		x		
foothill yellow-legged frog	SSC				x		
golden eagle	Fully Protected	x					
grasshopper sparrow	SSC (Nesting)				x		
loggerhead shrike	SSC (Nesting)		x				
merlin	Special Animal (Wintering)		x				
pallid bat	SSC	x					
prairie falcon	Special Animal (Nesting)		x	x	x	X	x
purple martin	SSC (Nesting)	x	x				
San Luis Obispo pyrg	Special Animal			x			
silvery legless lizard	SSC		x				
Townsend's big-eared bat	SSC				x		
western pond turtle	SSC	x	x	x	x		
western spadefoot	SSC				x		x
white-tailed kite	Fully Protected		x		x		
Plants							
Brewer's spineflower	CRPR 1B.3	x		x			
Cambria morning-glory	CRPR 4.2		x	x			
caper-fruited tropidocarpum	CRPR 1B.1		x				
Cuesta Pass checkerbloom	SR	x		x			
Cuesta Ridge thistle	CRPR 1B.2	x		x			
dwarf soaproot	CRPR 1B.2			x			
Eastwood's larkspur	CRPR 1B.2	x				x	
Hardham's evening-primrose	CRPR 1B.2				x		
hooked							

popcornflower	CRPR 1B.2	x		x				
Hoover's bent grass	CRPR 1B.2		x			x		
La Panza mariposa-lily	CRPR 1B.3				x	x		
mesa horkelia	CRPR 1B.1	x		x			x	
Miles' milk-vetch	CRPR 1B.2	x			x			
most beautiful jewel-flower	CRPR 1B.2	x						
pale-yellow layia	CRPR 1B.1				x			
Palmer's monardella	CRPR 1B.2	x		x		x		
Pecho manzanita	CRPR 1B.2		x					
round-leaved filaree	CRPR 1B.1	x			x		x	
San Benito fritillary	CRPR 1B.2			x				
San Luis mariposa-lily	CRPR 1B.2	x		x				
San Luis Obispo County lupine	CRPR 1B.2		x					
San Luis Obispo owl's-clover	CRPR 1B.2		x					
San Luis Obispo sedge	CRPR 1B.2	x		x		x		
Santa Lucia manzanita	CRPR 1B.2		x	x				
Santa Margarita manzanita	CRPR 1B.2	x	x	x				
shining navarretia	CRPR 1B.2				x			
straight-awned spineflower	CRPR 1B.3	x	x		x			
yellow-flowered eriastrum	CRPR 1B.2	x			x	x	x	X

	Steelhead Streams	Yes; Atascadero (Hale) Creek (FR 50) Atascadero (Hale) Creek, Santa Margarita Creek, Tassajara Creek, Salinas River (US-LT RCD, 2002)
	Stream Habitat Inventory	Yes; DFG, 2005
	Fish Passage Barriers	PAD ID: 707003– Bedrock waterfall on Atascadero Creek. Total Barrier. 22.565639 miles upstream. PAD ID: 707244- Utility crossing on Atascadero Creek at Curbail Avenue. Temporal Barrier. 25.51314 miles upstream. PAD ID: 719388- Dam at Atascadero Park on unnamed tributary to Atascadero. Unknown Status.PAD ID: 731745- Road crossing at Highway 41 on unnamed tributary to Atascadero Creek. Unknown Status. PAD ID: 732138- Road crossing at Highway 41 on unnamed tributary to Atascadero Creek. Unknown Status. PAD ID: 707246- Culvert under Highway 101 on Santa Margarita Creek. Total Barrier. 5.52855 miles upstream.PAD ID: 712052- Road Crossing at El Camino Real Bridge on Santa Margarita Creek. Partial Barrier.69.42864 miles upstream. PAD ID: 707245- Culvert on Santa Margarita Creek. Temporal Barrier. 7.00901 miles upstream.
	Designated Critical Habitat	Yes; Atascadero (Hale) Creek for Steelhead Trout (NMFS CFR 50 226) Steelhead Trout: Tassajara (trout) creek, Santa Margarita Creek, Salinas River (US Fish and Wildlife – Critical Habitat Mapper) California Red-Legged Frog (USFWS Critical Habitat Portal, viewed 2013)
	Habitat Conservation Plans	Yes; North San Luis Obispo County Habitat Conservation Program – Multiple species, initially San Joaquin kit fox. *HCP general for North County, not watershed specific*
	Other Environmental Resources	Salinas River, Paso Robles Groundwater Basin, Salinas Reservoir/Santa Margarita Lake, Los Padres National Forest, Santa Lucia Wilderness, Cuesta Ridge Botanical Area, Rinconada Mine Botanical Area (SLO County Flood Control and Water Conservation District, 2007)
	Land Use	
	Jurisdictions & Local Communities	County of San Luis Obispo, City of Atascadero, Town of Santa Margarita
	% Urbanized	9.6% in City of Atascadero, 0.05% Commercial (majority in Santa Margarita), 5% residential (majority Santa Margarita and South Atascadero: non-city)

	% Agricultural	42% rangeland, small scale vineyard and crop production.
	% Other	12.6% open space (Los Padres national Forest), 0.04% Public Facilities, 0.2% recreation, 3% rural lands
	Planning Areas	Salinas River Planning Area
	Potential growth areas	Eagle Ranch (South Atascadero); Santa Margarita Ranch; City of Atascadero Urban Core, South Atascadero
	Facilities Present	Atascadero Wastewater Treatment Plant discharges to the Salinas River; Atascadero Lake; Los Padres National Forest, The Garden Farms Water District
	Commercial Uses	City of Atascadero – Urban Core, Santa Margarita Ranch, hobby vineyards, Livestock and Ag – east Salinas River, Kaiser Quarry, Rocky Canyon Quarry (Union Asphalt), Santa Margarita Quarry (Hansen Aggregates), various industrial facilities, agricultural service provides, residential service providers, commercial districts, restaurants, wine related tourism
	Demographics	
	Population	24,098 in watershed (U.S. Census Block, 2010). 19,333 in Atascadero (US Census Blocks, 2010) 386 in Garden Farms (US Census Blocks, 2010) 1,259 in Santa Margarita (US Census Blocks, 2010)
	Race and Ethnicity	Watershed: Caucasians representing 76%, Latinos representing 16.3%, Mixed-race individuals representing 2.4%, Asians representing 2.2%, African Americans representing 2.2% of the total population in the watershed. The remaining races include Native American, Pacific Islander, and other. Atascadero: 74% Caucasian; 18% Latino; 2.5% Mixed Race; 2.4% Asian (US Census Blocks, 2010) Garden Farms: 87.3% Caucasian; 10.4% Hispanic or Latino; 1.3% Asian (US Census, 2010) Santa Margarita: 76.5% Caucasian; 16.4% Hispanic or Latino; 3.2% Mixed Race; 2.2% Asian; 1.2% American Indian and Alaska Native (US Census, 2010)
	Income	MHI $60,676 for watershed (U.S. Census Tracts, 2010). MHI $68,502 in Atascadero (US Census, 2010) MHI $49,032 in Santa Margarita (US Census, 2010)
	Disadvantaged Communities	No; 7% of individuals are below poverty level in the watershed (U.S. Census Tracts, 2010). 8.7% of individuals are below poverty level in Atascadero (US Census, 2010) 16.7% of individuals are below poverty level in Garden

		Farms (2007-2011 American Community Survey 5-Year Estimates) 18.9% of individuals are below poverty level in Santa Margarita (2007-2011 American Community Survey 5-Year Estimates)
	Water Resources	
	Water Management Entities	Atascadero Mutual Water Company, County Waterworks District No. 6 County Waterworks District No. 6: three wells located in the Paso Robles groundwater basin that provide water to residents of Santa Margarita Atascadero Mutual Water Company – Salinas River wells located in the Atascadero Sub-basin that provide water to the City of Atascadero and surrounding areas.
	Groundwater	Yes; Paso Robles; Atascadero sub-Basin; Rinconada Valley
	Surface Water	No public reservoirs. The rights to surface water flows in the Salinas River and associated pumping from the alluvium have been fully appropriated by the State Board and no future plans exist to increase these demands beyond the current allocations. (Carollo, 2012)
	Imported Water	Yes; Nacimiento Pipeline (Atascadero Mutual Water Company)
	Recycled/Desalinated Water	Yes; The City of Atascadero uses reclaimed water from the Wastewater Treatment Plant for use at Heilman Regional Park and Golf Course, as well as recharge for Paso Robles Groundwater Basin.
	Key Infiltration Areas	No comprehensive study has been completed to date. The main source of recharge in the alluvium is the Salinas River. Recharge to the Paso Robles Formation occurs from the overlying Salinas River alluvium as well as from overlying channel deposits of the Santa Margarita, Atascadero, Graves, and Paso Robles Creeks (Carollo, 2012)
	Water Budget	Yes; Todd Engineers, 2013, Paso Robles Groundwater Basin Model Update *Water budget limited by lacking well data*
	Water Uses	
	Beneficial Uses	*Atascadero Creek* – Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water

		Recreation (REC-2), Commercial and Sport Fishing (COMM), Cold Fresh Water Habitat (COLD), Wildlife Habitat (WILD), Rare, Threatened, or Endangered Species (RARE), and/or Early Development (SPWN). *Atascadero Lake* - Municipal and Domestic Supply (MUN), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Commercial and Sport Fishing (COMM), Warm Freshwater habitat (WARM), Cold Fresh Water Habitat (COLD) , Wildlife Habitat (WILD), Navigation (NAV), and/or Early Development (SPWN). *Salinas River (Nacimiento River-Santa Margarita Reservoir)* - Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Industrial Process Supply (PRO), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Cold Fresh Water Habitat (COLD), Warm Freshwater habitat (WARM), Migration of Aquatic Organisms (MIGR), Spawning, Reproduction, and/or Early Development (SPWN), Threatened, or Endangered Species (RARE) and Commercial and Sport Fishing (COMM). (CCRWQCB, 2011)
	Other Unique Characteristics	
	Historical Resources	Santa Margarita de Cortona (22515 H Street, Santa Margarita) (PLN_DES_HISTORIC_POINTS GIS layer)
	Los Padres National Monument	Ecosystems in Los Padres National Forest range from semi-desert in interior areas to redwood forest on the coast. Forest vegetation classified into two major types: chaparral and forested lands. Provides a diverse wildlife habitat with 23 threatened and endangered animals. Member of the California Condor Recovery Program, and has been an active player in the reintroduction of California condors in the wild. The Forest has one endangered plant, two threatened plant species and 71 sensitive plant species. Management of riparian vegetation focuses on supporting fish and wildlife populations. There are over 870,000 acres of livestock grazing allotments in the Forest.
	Heilman Regional Park, Santa Margarita Community Park and Chalk Mountain Golf Course	Group day-use facilities owned and managed by the County of San Luis Obispo.
	Atascadero Lake Park	Man-made lake managed by the City of Atascadero. There is a walking path that follows the edge of the lake for a stroll, jog or bike ride lakeside. The park also has a

		playground, paddle/kayak boats, workout stations, restroom facilities, large and small barbecue areas, horseshoe pits, sand volleyball court and the Charles Paddock Zoo.
	Stadium Park	During the 1920's, Stadium Park was a gathering place for community events, concerts, and theater. Performances were held on a big stage under an Oak tree. That stage was later moved to where the Atascadero Lake Pavilion now stands. Besides being a beautiful park, it is a natural amphitheater with gently sloping hills leading to the basin. Acoustics are ideal just as nature made them.
	Sunken Gardens	Inspired by "The Grand Basin" at the 1904 St. Louis World's Fair, Atascadero founder E.G. Lewis envisioned a formal Sunken Garden to adorn the civic center in his new colony. Restored in 2005 as originally designed with walkways crossing the length and width of the gardens and meeting at a central fountain designed by architect Walter D. Bliss of the San Francisco firm of Bliss and Faville.
	Climate Change Considerations	
		See IRWMP, 2014 Section X. Climate Change *Data is general for county, not watershed specific*

Characteristics:

Watershed Codes:

Mid Salinas – Atascadero Creek Area Watersheds

Source: Excerpt from California Interagency Watershed Map of 1999, Calwater 2.2.1 (CA Resource Agency, 2004

Calwater / DWR Number	HA	Hydrologic Area Name	HSA	Hydrologic Sub-Area Name	SWRCB Number	CDF Super Planning	CDF Watershed Name
3309.811303	8	Paso Robles	1	Atascadero	309.81	Parole Canyon	Pilitas Creek
3309.811304	8	Paso Robles	1	Atascadero	309.81	Parole Canyon	Rincon Creek
3309.811306	8	Paso Robles	1	Atascadero	309.81	Parole Canyon	Moreno Creek
3309.811401	8	Paso Robles	1	Atascadero	309.81	Atascadero Lake	Santa Margarita Creek
3309.811402	8	Paso Robles	1	Atascadero	309.81	Atascadero Lake	Calf Canyon
3309.811403	8	Paso Robles	1	Atascadero	309.81	Atascadero Lake	Paloma Creek
3309.811404	8	Paso Robles	1	Atascadero	309.81	Atascadero Lake	Hale Creek
3309.811405	8	Paso Robles	1	Atascadero	309.81	Atascadero Lake	Henry
3309.811408	8	Paso Robles	1	Atascadero	309.81	Atascadero Lake	Trout Creek

Update)

Major Changes in the Watershed

- Since late 1700's Salinas River Valley used for agriculture. After Spanish missionary priests established the mission at San Luis Obispo, they built Santa Margarita de Cortona Asistencia in 1817 to provide crops and livestock.

Atascadero

- First building in the area in 1812. Adobe that served as the southern grazing outpost for Mission San Miguel Portions of the adobe walls stood until late 1900's near Traffic Way.
- 1876 – A. F. Benton purchased the Eagle Rancho, near the headwaters of Atascadero Creek. Uses the land the raise hogs, but as many encounters with grizzly bears that make ranching difficult, but attracts big game hunters to the area (Storke, 1891).
- During 19th century cattle ran in large tracts that had been Mexican land grants. Toward the end of the century, J. H. Henry consolidated a number of tracts into the 23,770 acre Atascadero Ranch.
- During the early 20th century, U.S. Army used the central plains of the ranch for annual encampments and maneuvers and at one time considered the acquisition of the ranch for permanent military camp.

Mid Salinas – Atascadero Creek Area Watersheds

- In 1913, Edward Gardner "E. G. Lewis" selected the Atascadero Ranch as the ideal location for a model colony. Lewis purposely chose a location halfway between major urban center of the state on both a railway and state highway.
- Lewis subdivided the entire 38 square miles, built 100 miles of roads, a water system of tanks, wells and mains, nearly 3,000 acres of orchards, parks, the Sunken Gardens and public buildings.
- A twenty-mile road through the Santa Lucia Mountains connecting the Colony to the 1,000 acre Atascadero Beach properties near Morro Bay which had schools, a community center, hospital and hotel.
- Two important factors that stimulated growth in the 1950's have also significantly affected design and demographics of the community: bisection of the City in 1954 by Highway 101, and the siting of the Atascadero State Hospital on the edge of the community in 1956.
- 2006 – Severely eroded bank on south side of Atascadero Creek repaired. Rock slope protection installed along the bank and heavily vegetated with native riparian species.

Watershed Health by Major Tributary

Tributary Name	**Ephemeral / Perennial**	**303d Listed/ TMDLs**	**Pollution Sources** NP (non-point) MP (Major Point)	**Environmental Flows**
Salinas River	Undetermined	Yes; Sodium and Chloride	Undetermined	Not assessed
Atascadero Creek (Hale)	Perennial	Yes on 303d list for Chloride, E. coli, Fecal Coliform, Low Dissolved Oxygen, and Sodium. TMDL estimated date of completion 2021.	NP: Agriculture, grazing-related, natural sources, resource extraction, petroleum activities, transient encampments MP: None defined as such on 303d list	**Lower**: Spring: 0.99 cfs. Summer: 0.37 cfs.
Paloma Creek	Undetermined	Not assessed	Undetermined	Not assessed
Santa Margarita Creek	Undetermined	Not assessed	Undetermined	**Upper**: Spring: 0.81 cfs. Summer: 0.32 cfs.
Calf Canyon Creek	Undetermined	Not assessed	Undetermined	**Upper**: Spring: 0.49 cfs. Summer: 0.24 cfs.
Moreno Creek	Undetermined	Not assessed	Undetermined	Spring: 0.53 cfs. Summer: 0.24 cfs.
Trout Creek	Undetermined	Not assessed	Undetermined	**Upper**:

				Spring: 0.63 cfs. Summer: 0.27 cfs.
Rincon Creek	Undetermined	Not assessed	Undetermined	Not assessed
Pilitas Creek	Undetermined	Not assessed	Undetermined	Spring: 0.65 cfs. Summer: 0.28 cfs.

Watershed Health by Major Groundwater Basin

Groundwater Basin	Estimated Safe Yield	Water Availability Constraints	Drinking Water Standard Exceedance	Water Quality Objective Exceedance
Paso Robles	97,700 AF (SLO County RCS, 2011)	Physical limitations, water rights and water quality issues (Master Water Report).	Yes; see description below.	None (CCRWQCB, 2011)
Atascadero	None (Carollo, 2012)	Water rights and physical limitations (SLO County WMP, 2012)	The 2008 Water Quality Report for both Templeton CSD and Atascadero MWC found that none of the tested regulated and secondary substances in water samples exceeded their MCL values (Carollo, 2012)	None (CCRWQCB, 2011)
Rinconada	None (Carollo, 2012)	Physical Limitations (SLO County WMP, 2012)	None (Carollo, 2012)	None (CCRWQCB, 2011)

Groundwater Quality Description:

Paso Robles Groundwater Basin: Based on Todd monitoring report (2007), the Basin was not at the safe yield although some areas were experiencing significant declines in groundwater elevations. A later study completed in 2009 suggests groundwater pumping was approaching the safe yield of the Basin, which led to the recommendation

to do a groundwater management plan. The Resource Capacity Study prepared by the San Luis Obispo County Planning Department in November 2010 states that the Basin is near or at perennial yield, and contains land use and water use monitoring and conservation recommendations within the authority of the County and District to help ensure the sustainability of the Basin into the future (Paso Robles Groundwater Basin – Groundwater Advisory Committee, 2011).

The predominant cations are calcium and sodium and the predominant anion is bicarbonate (DWR 1981; Fugro West, 2001b). Analysis of 48 public supply wells in the sub-basin show an average Total Dissoved Solid (TDS) content of 614 ppm and a range of 346 to 1,670 ppm.

In one study, (Fugro West 2001b), 23 of 74 samples collected exceeded one or more drinking water standards. The maximum contaminant level (MCL) for nitrate was exceeded in 4 samples (Fugro West, 2001b). Water quality trends indicate an increasing concentration of TDS and chloride in the deep, historically artesian aquifer northeast of Creston (Carollo, 2012).

Salinas River recharge typically contains calcium and magnesium bicarbonate. Santa Margarita Creek water contains magnesium-calcium-bicarbonate. Atascadero and Paso Robles Creeks have calcium bicarbonate rich waters. Increasing Total Dissolved Solids and chlorine, physical limitations (Carollo, 2012).

Atascadero sub-basin: In terms of physical limitations, Todd (2009) estimated the gross groundwater pumping in the sub-basin during 2006 to be 15,545 AF, which is 95 percent of the sub-basin perennial yield of 16,400 AFY. Ongoing studies may revise the estimated outflow from the sub-basin. According to Fugro (2010), whereas total groundwater in storage in the main part of the Paso Robles Groundwater Basin is predominantly in the Paso Robles Formation, the Salinas River alluvium in the Atascadero Groundwater Sub-basin accounts for a significant percentage of the total groundwater storage in the sub-basin. Pumping from the alluvium should be accounted for separately from pumping from the Paso Robles Formation.

Primary Issues

Issue	***Potential Causes***	***Referenced from***
Significant water level declines	Range of groundwater uses in close proximity, including agricultural irrigation, municipal supply wells, golf course irrigation, and a relatively dense aggregation of rural “ranchette”) users	Carollo, 2012
Groundwater Quality	High concentrations of TDS, chlorides, sulfates, and boron	Carollo, 2012
Limited Groundwater Basin information (Rinconada basin)		Carollo, 2012
Atascadero (Hale) Creek 303(d) listed for chloride, Escherichia coli (E. coli), fecal coliform, low dissolved oxygen, sodium	Agriculture, grazing related and natural sources, resource extraction petroleum activities, transient encampments	Carollo, 2012

Groundwater: Paso Robles Groundwater Basin

According to multiple studies of this basin, annual basin pumping is now at or near the basin's perennial yield (Paso Robles Groundwater Management Plan, 2011). From 1997–2009, water levels declined on average of 2–6 feet per year, depending on the location. A Todd Engineering monitoring report (2007) indicated that the Basin was not approaching the safe yield level and some areas were experiencing significant declines in groundwater elevations. A later study completed in 2009 suggested groundwater pumping was approaching the safe yield level of the Basin. The 2010 Resource Capacity Study prepared by the San Luis Obispo County Planning Department stated that the Basin is now near or at perennial yield levels. The County Board of Supervisors certified a Level of Severity III for the Paso Robles Basin in October, 2012, due to declining water levels. In August 2013, the County Board of Supervisors adopted an urgency ordinance to limit new draws from the Paso Robles Groundwater basin.

The Paso Robles Groundwater Basin encompasses an area of approximately 790 square miles and is the primary, and in many places the only, source of water available to property owners throughout Northern San Luis Obispo County. The basin extends from the Garden Farms area south of Atascadero to San Ardo in Monterey County, and from the Highway 101 corridor east to Shandon. The basin supplies water for 29% of SLO County's population and an estimated 40% of the agricultural production of the County (Paso Robles Groundwater Basin Blue Ribbon Committee, 2013).

Paso Robles, Atascadero, and Templeton draw their water from the groundwater basin (primarily the Atascadero sub-basin), the underflow of the Salinas River and from the Nacimiento Pipeline Project. The remaining communities (Shandon, San Miguel, Creston, Bradley, Camp Roberts, Whitley Gardens, and Garden Farms) are entirely dependent on the groundwater basin for their water supply.

An established bi-annual well monitoring program overseen by the SLO County Flood Control and Water Conservation District reported these water declines in groundwater dependent communities (Through April, 2013):

a. Shandon: Water levels have dropped approximately 17 feet from 2011 to 2013.
b. Creston: Water levels have dropped approximately 25 feet from 2011 to 2013.
c. Estrella: Water levels have dropped approximately 25 feet from 2011 to 2013.
d. San Juan: Water levels have dropped approximately 5 feet from 2012 to 2013.

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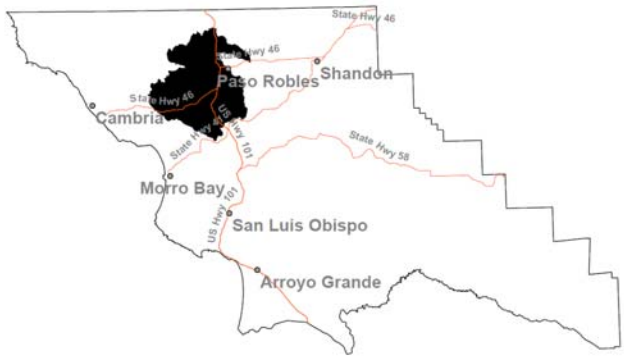
Significant Studies in Progress:

Lower Salinas - Paso Robles Area Watershed

Hydrologic Unit Name	Water Planning Area	Acreage	Flows to	Groundwater Basin(s)	Jurisdictions
Salinas 9	Atascadero/ Templeton WPA 13 Salinas/ Estrella WPA 14	143,654 acres	Salinas River (to Monterey Bay National Marine Sanctuary)	Paso Robles, Paso Robles Creek	County of San Luis Obispo Paso Robles (ptn), Atascadero (ptn), Templeton, San Miguel, Camp Roberts



Existing Watershed Management Plans:

No existing plans to date

Description:

The portion of the Salinas River Watershed classified here is located centrally within San Luis Obispo's North County region and encompasses Paso Robles Creek. Because of the extensive reach of the Salinas River watershed, we have utilized a watershed grouping scale that is consistent with the CalWater hydrologic unit code 10, which separates the River into 3 segments within San Luis Obispo County. We have merged 3 of the Indian Valley subwatersheds into this grouping since the bulk of the Indian Valley watershed is located in Monterey County. All or portions of the City of Paso Robles, City of Atascadero, community of San Miguel, and community of Templeton are all located within this watershed. It is within this watershed that most development has occurred along the Salinas River, both urban and rural agricultural. The western portion of the watershed is characterized by higher elevations with more dense oak woodlands whereas east of the Salinas River is characterized by more rolling hills and terraces. The peak elevation within the watershed occurs at the westernmost boundary reaching approximately 2,460 feet. The northern portion of the watershed contains the point at which the Salinas River leaves San Luis Obispo County and flows into Monterey County. The headwaters are in the Coast Ranges, west of city of Paso Robles. The dominant land use is agriculture with a strong urban component located adjacent to the Salinas River.

Lower Salinas - Paso Robles Area Watershed

Characteristics

	Physical Setting	
	Rainfall	Average Annual: 11-18 in, (northeast portion), 25-33 in. (southwest portion) (NRCS shapefile, 2010)
	Air Temperature	Summer Range (August 1990-2012): 52°-98°F Winter Range (December 1990-2012): 32°-62°F (Paso Robles, NOAA National Climatic Data Center, viewed 2013)
	Geology Description	McKay, Mahoney Canyon, Lower Vineyard Canyon, Fern Canyon, Neals Spring, Templeton (including Toad Creek) and Asuncion sub-watersheds are composed of flat highly infiltrative Quaternary materials – Category #3. Graves Creek and Upper Paso Robles Creek are steep pre-Quaternary non-infiltrative headwaters with steep moderately infiltrative early to mid-Tertiary valleys – Category #5. Sheepcamp Creek and Summit Creek are composed of steep moderately infiltrative early to mid-Tertiary fill – Category #8. Mustard Creek has steep pre-Quaternary non-infiltrative headwaters with flat highly infiltrative Quaternary valley floor – Category #12. Upper San Marcos Creek, San Francisco Canyon, Cienega Canyon and Santa Rita Creek have steep pre-Quaternary non-infiltrative headwaters – Category #13. Lower San Marcos Creek, Bethel School and Lower Paso Robles Creek sub-watersheds have moderately infiltrative early to mid-Tertiary headwaters with flat Quaternary highly infiltrative valleys – Category #14 (Bell, pers. comm., 2013). Groundwater is found in Holocene age alluvium and the Pleistocene age Paso Robles Formation. Specific yield values in the Paso Robles Sub-basin range from 7 to 11 percent, with an average specific yield of 9 percent (Fugro West 2001c). DWR (1958) estimated the average specific yield for the sub-basin at 8 percent. DWR (1999) estimated the average specific yield at 15 percent for the alluvium and 9 percent for the Paso Robles Formation. Holocene age alluvium consists of unconsolidated, fine- to coarse-grained sand with pebbles and boulders. This alluvium provides limited amounts of groundwater and reaches 130 feet thick

		near the Salinas River, but is generally less than 30 feet thick in the minor stream valleys (DWR 1999). Its high permeability results in a well production capability that often exceeds 1,000 gpm (Fugro West, 2001). Groundwater in Holocene alluvium is mostly unconfined. Pleistocene age Paso Robles Formation, which is the most important source of groundwater in the sub-basin, is unconsolidated, poorly sorted, and consists of sand, silt, gravel, and clay (DWR, 1979). This formation reaches a thickness of 2,000 feet and groundwater within it is generally confined (DWR 1958). Bedrock is composed of granitic and metamorphic materials of the Salinian Block. The Salinian basement block is separated from the adjacent Franciscan basement by the San Andreas Fault in the northeast corner of the area and by the Nacimiento Fault zone in the Southwest corner. Overlying both basement blocks is a sequence of Cretaceous and Tertiary marine deposits and the nonmarine Paso Robles Formation. Serpentines occur in the area as ultramafic Franciscan Formation. Granite outcrops are typically coarse grained biotites. The Santa Margarita Formation crops out in the eastern part of the San Miguel quadrangle. The Pancho Rico Formation lies in a broad belt from the northeastern part of the Bradly quadrangle across the San Miguel quadrangle. These two units are exposed in the same stratigraphic sequence. Monterey shale is generally deformed into broad folds where it is thick, but near faults it is commonly tightly folded, contorted and overturned. Sandy and conglomerate units are tilted or warped into broad folds (Burch and Durham, 1970).
	Hydrology	
	Stream Gage	Yes; USGS 11147500 (Salinas River at 13th Street, Paso Robles); USGS 11147070 (Santa Rita Creek near Santa Rita Road); USGS 11147040 (Santa Rita Creek near Old Creek Road); USGS 11147000 (Jack Creek near Highway 46W) (USGS, viewed August 2013)
	Hydrology Models	Yes; SLO County Flood Control and Water Conservation District, 2008, Paso Robles Groundwater Sub-basin Water Banking Feasibility Study. Todd Engineers, 2013, Paso Robles Groundwater Basin Update.
	Peak Flow	Peak flow: 28,400cfs. (USGS, viewed August 2013)
	Base Flow	Salinas River: 600 cfs. (USGS, viewed August 2013)

Lower Salinas - Paso Robles Area Watershed

	Flood Control Structures	Bridges: 1 over Vineyard Creek on Indian Valley Road; 1 over Salinas River on River Road (PWD Bridges GIS Layer) Caltrans culverts convey HWY 1 stormwater onto road surfaces of 10th, 12th, 14th, and 16th Street.
	Flood Reports	The SLO County Flood Control and Water Conservation District commissioned a community wide master drainage study for Templeton. The initial and subsequent phases of the study are intended to characterize existing drainage patterns, analyze flood problems and identify proposed near and short term solutions. The study focussed on a section of Toad Creek with community stakeholders responding (Fugro North Coast Engineering, 2010 2011 draft: SLO County Flood Control and Water Conservation District, 2009; TAAG Toad Creek Watershed Report 2013). *Data limited by scope of related study, does not address Watershed level flooding, more specific to Templeton area*
	Areas of Heightened Flood Risk	Templeton lacks a formal drainage system and flood control infrastructure. Tributaries of Toad Creek collect drainage from the west side of the town, and convey them under Highway 101 through densely developed residential neighborhoods between Highway 101 and Main Street. (County of SLO facilities Inventory, draft viewed 2013) The freeway culverts at both the south and middle area are undersized, restricting flow causing potential flooding at the inlets. The length of Toad Creek between Main Street Highway 101 and the Southern Pacific Railroad is susceptible to flooding. Urbanization of the north sub area could have a very significant impact on this flooding. The area west and east of Main Street is currently in a Flood Hazard Zone. The community stakeholders proposed flood control and basin re-charge areas. (Templeton Design Plan, 1990; TAAG Toad Creek Watershed Report, 2013). 1.38 square miles of Paso Robles is within an identified floodplain of the Salinas River and its tributaries. San Luis Obispo County has also identified additional areas in the vicinity of Marquita Road, and an area bounded by Herdsman Way to the south, West Bethel Road to the west, and Highway 46 West to the north; and an area north of Highway 46 West, west of Arbor Road, and south of Live Oak Road as flood prone (City of Paso Robles, 2005). Illegal off-road use of the Salinas River causes displacement of the river bed, pollution of the river, and destruction of riparian vegetation along 20 miles of the river (US-LT RCD, 2003).

		The community of San Miguel lacks formal drainage. Local runoff follows the gentle northeasterly slope of the community and either flows to the Salinas River or infiltrates into the historic flood plain. Low spots cause frequent ponding and shallow flooding at several locations (SLO Flood Control and Water Conservation District, 2009) Abandoned vehicles and illegal dumping in the Salinas River continues to be a problem. (US-LT RCD, 2003) In San Miguel, ponding of stormwater west of Union Pacific Railroad tracks can result in the flooding of Mission Street from 11th to 16th street. The tracks bisect the community and impede flows from reaching Salinas River on the eastside. The primary cause of flooding in San Miguel is due to the absence of a continuous slope and drainage conveyance path from L Street to the Salinas River (SLO County Flood Control and Water Conservation District, 2009).
	Biological Setting	
	Vegetation Cover	Primarily coastal oak woodland consisting mainly of continuous coast live oak; chamise-redshank and mixed chaparral consisting mainly of chamise; orchards and vineyards with non-native annual grassland; oak woodland consisting mainly of continuous coast live oak and blue oak; urban; montane hardwood consisting mainly of continuous coast live oak. (SLO County vegetation shapefile, 1990 and Templeton-Atascadero Bikeway Connector Trail Constraints, 2003) *Data limited by age of shapefile.* Bunchgrass grasslands, wetlands, riparian woodlands, seeps, and vernal pools are also present. These habitats support uniquely adapted plants and provide important ecological functions. They also provide habitat for wildlife, including rare and endangered species. The Salinas River Riparian corridor is mature, multi-layered woodland habitat with sycamore (*Platanus racemosa*), cottonwood (*Populus fremontii*), and willow (*Salix* spp.) that provide habitat for many species of songbirds and raptors. Riparian canopy also provides shade that can regulate water temperature (Althouse and Meade, 2013). *Data limited to observations, not complete inventory*
	Invasive Species	The following invasive species have been identified in the Lower Salinas-Paso Robles Creek Area Watershed: Giant

	reed grass (*Arundo donax*), tree of heaven (*Ailanthus altissima*), pampas grass (*Cortaderia selloana*), Perennial pepperweed (*Lepidium latifolium*), Skeleton weed (*Chondrilla juncea*), common unicorn (*Proboscidea louisianica*), Russian thistle (*Salsola tragus*), Medusahead (*Taeniatherum caput-medusae*), Tamarisk (*Tamarix* sp.) (Althouse and Meade, 2013). Poison hemlock, yellow star thistle, cheeseweed mallow, black mustard, ripgut brome, horseweed, Prickley lettuce and milkthistle have also been identified (Sierra Delta Corporation, 2007) *Data limited to observations, not complete inventory*
Special Status Wildlife and Plants	*Key*: FE - Federal endangered, FT - Federal threatened, SE - State endangered, ST - State threatened, SSC - State Species of Special Concern; FP- Fully Protected, SA – Special Animal, CRPR – CA rare plant rank (CNDDB, viewed August, 2013) Locations listed refer to USGS 7.5' quadrangle names. Only the portion overlapping the watershed boundary was considered. *Data limited to observations, not complete inventory*

Special Status Species	Status	ADELAIDA	ATASCADERO	CRESTON	CYPRESS MTN	PASO ROBLES	TEMPLETON	YORK MTN
Animals								
American badger	SSC	x					x	
Atascadero June beetle	SA		x			x	x	
California red-legged frog	FT				x		x	x

Special Status Species	Status	ADELAIDA	ATASCADERO	CRESTON	CYPRESS MTN	PASO ROBLES	TEMPLETON	YORK MTN
Coast Range newt	SSC		x					x
least Bell's vireo	FE; SE					x		
Lompoc grasshopper	SA					x	x	
Monterey dusky-footed woodrat	SSC	x						
Salinas pocket mouse	SSC	x						
San Joaquin kit fox	FE; ST	x				x	x	
San Joaquin pocket mouse	SA					x		

Lower Salinas - Paso Robles Area Watershed

silvery legless lizard	SSC	x				x			
vernal pool fairy shrimp	FT	x				x			
western pond turtle	SSC				x	x	x		
western spadefoot	SSC	x				x			
Plants									
Carmel Valley bush-mallow	CRPR 1B.2			x					
Cook's triteleia	CRPR 1B.3	x							
dwarf calycadenia	CRPR 1B.1	x							
Eastwood's larkspur	CRPR 1B.2		x			x			
Kellogg's horkelia	CRPR 1B.1				x				
Lemmon's jewel-flower	CRPR 1B.2				x	x			
mesa horkelia	CRPR 1B.1		x			x			
most beautiful jewel-flower	CRPR 1B.2		x	x					
round-leaved filaree	CRPR 1B.1					x			
Santa Cruz Mountains pussypaws	CRPR 1B.1	x							
Santa Lucia bush-mallow	CRPR 1B.2			x					
Santa Lucia dwarf rush	CRPR 1B.2	x		x		x			
shining navarretia	CRPR 1B.2	x			x	x			
umbrella larkspur	CRPR 1B.3	x							
woodland woollythreads	CRPR 1B.2	x			x				
yellow-flowered eriastrum	CRPR 1B.2		x			X			

Steelhead Streams	Yes; Paso Robles Creek, Jack Creek (watershed fisheries report) Salinas River, Graves Creek, Santa Rita Creek, Summit Creek, Sheepcamp Creek, San Marcos Creek (US Fish and Wildlife – Critical Habitat Mapper) Likely to be present: Willow Creek (NMFS South-Central California Coast Steelhead Trout Dataset, 2005). Toad Creek is identified as a previous steelhead creek (Watershed Fisheries Report 2002).
Stream Habitat Inventory	Yes; DFG, 1997.
Fish Passage Barriers	No total, partial, temporal or unassessed barriers on Paso Robles Creek (CalFish PAD). PAD ID: 718835- Dam at Hartzell Dam on Santa Rita Creek, Tributary to Paso Robles Creek. Total Barrier. 14.86411 miles upstream.

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		PAD ID: 736536- Culvert at Highway 46 on Sheepcamp Creek, tributary to Paso Robles Creek. Unknown Status
	Designated Critical Habitat	Yes; Salinas River, Paso Robles Creek, Jack Creek, Sheepcamp Creek, Santa Rita Creek, Graves Creek, San Marcos Creek, and Summit Creek for Steelhead trout; South-Central California Coast Steelhead Trout Recovery Plan (50 CFR *226* - National Marine Fisheries Service - NOAA*);* Vernal Pool Fairy Shrimp (USFWS Critical Habitat Portal, viewed 2013)
	Habitat Conservation Plans	Yes; North San Luis Obispo County Habitat Conservation Program, City of Paso/SLO County, multiple species, initially San Joaquin kit fox *HCP general for County, not watershed specific*
	Other Environmental Resources	Salinas River, Paso Robles Groundwater Basin (SLO County IRWM, 2007)
	Land Use	
	Jurisdictions & Local Communities	County of San Luis Obispo, City of Atascadero (ptn), City of Paso Robles (ptn),Templeton, the community of San Miguel, Camp Roberts (ptn)
	% Urbanized	6.7% City of Paso; 6.4% City of Atascadero; 1.8% the community of Templeton; 6.2% (0.7% commercial, 5.5%residential), the community of San Miguel; 3% Public Facility; 1.7% Residential Suburban; Less than 1% each Commercial Retail, Industrial, Recreational, Residential Multi-family, Residential Single Family, Office Professional and Commercial Service
	% Agricultural	62.5%; row crops, vineyards, orchards and rangeland 73%; row crops, vineyards, forage, and rangeland
	% Other	9.4%Rural Lands; 7.4% Residential Rural
	Planning Areas	Salinas River, Adelaida, El-Pomar/Estella Planning Areas
	Potential growth areas	Adelaida, Olsen Ranch, Chandler Ranch, Beechwood, Borkey, Union Road, Wellsona Area (City of Paso General Plan, 2011), San Miguel Urban Core, San Miguel Freeway Corridor (San Miguel Community Plan, 2013), Templeton.
	Facilities Present	Mission San Miguel, Rios Caledonia Adobe, County Public [?] Works District 1, Camp Roberts, San Miguel Wastewater Treatment Plant, Paso Robles Waste Water Treatment Plant, Paso Robles Youth Correctional Facility, Mid State Fair Grounds, Templeton Wastewater Treatment Plant, Atascadero Mutual Water Company facilities are found near the Salinas River, at the south end of this watershed.
	Commercial Uses	Industrial facilities - North River Road Pit operated by Viborg Construction; North River Road Pit operated by County of SLO; Mountain Springs Shale Pit operated by Viborg Construction; Templeton/Ormonde Sand and Gravel Pit operated by Borzini Sand and Gravel; Finley Sand Pit by

		Weyrick; Smith Sand Pit operated by Paul Viborg; Hartzell Red Rock #1 & Hartzell Red Rock #2 Sand and Gravel Pit operated by Hartzell Ranch; Santa Rita Stone Quarry operated by Santa Rita Quarry, tourism, agriculture: row crops, forage, vineyards, orchards, ranches and Paso Robles Airport; San Miguel commercial core, tourism- mission and wine related; and Templeton downtown and Twin Cities Hospital.
	Demographics	
	Population	54,952 in watershed (US Census Blocks, 2010) 9,078 in the City of Atascadero (US Census Blocks, 2010) 29,524 in the City of Paso Robles (US Census Blocks, 2010) 7,674 in the community of Templeton (US Census, 2010) 2,205 in the community of San Miguel (US Census Blocks, 2010)
	Race and Ethnicity	Watershed: 69.1% Caucasian; 25.1% Latino; 2% Mixed Race; 1.7% Asian; 1.2% African American; Less than 1% each American Indian and Pacific Islander (US Census Blocks, 2010) City of Atascadero: 83.2% Caucasian; 11.4% Latino; 0.4% Black; 0.5% American Indian and Alaska Native; 2% Asian; 2.2% Mixed Race (US Census Blocks, 2010) City of Paso Robles: 58.9% Caucasian; 34.6% Latino; 1.8% Black; 0.5% American Indian and Alaska Native; 1.8% Asian; 2% Mixed Race (US Census Blocks, 2010) Community of Templeton: 79.5% Caucasian; 15.3% Hispanic; 2.2% Mixed Race; 1.6% Asian; 0.7% Black or African American; 0.5% American Indian and Alaskan Native (US Census, 2010) The community of San Miguel: 46% Caucasian; 48.4% Latino; The remaining races each represent less than 6%, including African American, American Indian, Pacific Islander, and Asian. (US Census, 2010)
	Income	MHI $67,028 in watershed (interpolated from 9 US Census tracts, 2010) MHI $49,097 in San Miguel (US Census, 2010) MHI $57,927 in Paso Robles (US Census, 2010) MHI $70,820 in Templeton (US Census, 2010) MHI $68,502 in Atascadero (US Census, 2010)
	Disadvantaged Communities	Yes; San Miguel (DWR); 16.8% of individuals are below poverty level

Lower Salinas - Paso Robles Area Watershed

		6.0% of individuals are below poverty level in the watershed, not including San Miguel (US Census Tracts, 2010) (interpolated from 13 tracts spanning multiple watersheds) 8.7% of individuals are below poverty level in Atascadero (2007-2011 American Community Survey 5-Year Estimates) 10.2% of individuals are below poverty level in Paso Robles (2007-2011 American Community Survey 5-Year Estimates) 4.1% of individuals are below poverty level in Templeton (2007-2011 American Community Survey 5-Year Estimates)
	Water Resources	
	Water Management Entities	Atascadero Mutual Water Company, Templeton CSD, City of Paso Robles, San Miguel CSD, outlying areas served by individual wells
	Groundwater	Yes; Paso Robles Groundwater Basin Natural recharge in the basin is derived from infiltration of precipitation, seepage from streams, and return flow from irrigation and other uses (Ca. Dept. of Water Resources, 2003)
	Surface Water	No public reservoirs. The rights to surface water flows in the Salinas River and associated pumping from the alluvium have been fully appropriated by the State Board and no future plans exist to increase these demands beyond the current allocations. (Carollo, 2012)
	Imported Water	The cities of Atascadero and Paso Robles, and the Templeton CSD are signors of the Nacimiento Water Project, which allows them to draw supplemental water from Lake Nacimiento for their users (Carollo, 2012). Atascadero Mutual Water Company – 2,000 afy City of Paso Robles – 4,000 afy Templeton Community Services District – 250 afy
	Recycled/Desalinated Water	The City of Paso Robles has a wastewater recycling plant in planning phase, scheduled for completion in 2015 (City of El Paso de Robles, 2003). San Miguel CSD has a wastewater treatment plant that discharges recycled wastewater into the Paso Robles Groundwater Basin.
	Key Infiltration Zone	No complete study has been performed however the Salinas River/Highway 46 Recharge Area was identified by the SLO County Flood Control and Water Conservation District in 2008.
	Water Budget	Yes; Todd Engineers, 2013. Paso Robles Groundwater Basin Update. *Water budget figures are limited by unreported well data.*

Lower Salinas - Paso Robles Area Watershed

	Water Uses	
	Beneficial Uses	*Paso Robles Creek* - Municipal and Domestic Supply (MUN), Agricultural Supply (AGR),Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Warm Freshwater habitat (WARM),Migration of Aquatic Organisms (MIGR), Spawning, Reproduction, and/or Early Development (SPWN), Threatened, or Endangered Species (RARE), and Commercial and Sport Fishing (COMM) *San Marcos Creek* - Municipal and Domestic Supply (MUN), Agricultural Supply (AGR),Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Warm Freshwater habitat (WARM), and Commercial and Sport Fishing (COMM) *Salinas River (Nacimiento River-Santa Margarita Reservoir)* - Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Industrial Process Supply (PRO), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Cold Fresh Water Habitat (COLD), Warm Freshwater habitat (WARM),Migration of Aquatic Organisms (MIGR), Spawning, Reproduction, and/or Early Development (SPWN), Threatened, or Endangered Species (RARE) and Commercial and Sport Fishing (COMM). *Vineyard Canyon Creek* - Domestic Supply (MUN), Agricultural Supply (AGR), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Warm Freshwater habitat (WARM), and Commercial and Sport Fishing (COMM). (CCRWQCB, 2011)
	Other Unique Characteristics	
	Hot Springs	A geothermal pressure aquifer is located approximately 650 feet below the surface in the Paso Robles and Templeton areas. The water contained in this pressure aquifer is hot (122 degrees +), high in TDS and other minerals including boron. Improper construction of wells in the area may be contributing to contamination of the upper aquifer (CCRWQCB, 2002)
	Historical Resources	Rotta Winery (250 Winery Road, Templeton); York Mountain Winery (7505 York Mountain Rd, Templeton); San Marcos

		Cemetery (Chimney Rock Road & 24th Street West, Paso Robles); Willow Creek Cemetery (Vineyard & Dover Canyon Roads, Paso Robles); Estrella Adobe Church (Airport Rd, Paso Robles); Bethel Lutheran Church (295 Old County Road, Templeton); Geneseo School (moved in 2004); C.H. Phillips House (91 Main Street, Templeton); San Miguel Mission (775 Mission Street, San Miguel); Rios Caledonia Adobe (700 S. Mission Street, San Miguel) (PLN_DES_HISTORIC_POINTS GIS Layer) (PLN_DES_HISTORIC_POINTS GIS layer) The Juan Bautista de Anza Historic Trail (Anza Trail) is administered by the National Park Services (National Trail System 1990). The trail corridor extends from Atascadero through Paso Robles then northwest towards San Antonio Mission (County Parks and Recreation Element 2006; cities of Atascadero and Paso Robles)
	Camp Roberts	Thirteen ponds and reservoirs (65 acres) which are either natural or artificially created for use as livestock ponds or flood control. A total of 120 aquatic species representing 64 families of organisms were recorded from rivers, ponds, and reservoirs on Camp Roberts. Eight species of fish, 44% of species native to Salinas River drainage, have been recorded at Camp Roberts from Nacimiento River. There are over 100 known archeological prehistoric and historic sites including the Nacimiento Ranch House. 23 animal species designated as California Special Concern Species by CDFW occur at Camp Roberts. There are 32 State-listed species on the special plants list. In process of partnering with Agricultural Land Conservancy to acquire 612-acre Willard property and 1,300-acre Manini property. A population of Tule Elk was established in the early 1980s.
	Jack Creek Reservoir	Over 250 acres of designated Open Space
	Los Padres National Forest	Ecosystems in Los Padres National Forest range from semi-desert in interior areas to redwood forest on the coast. Forest vegetation classified into two major types: chaparral and forested lands. Provides a diverse wildlife habitat with 23 threatened and endangered animals. Member of the California Condor Recovery Program and has been an active player in the reintroduction of California condors in the wild. The Forest has one endangered plant, two threatened plant species and 71 sensitive plant species. Management of riparian vegetation focuses on supporting fish and wildlife populations. There are over 870,000 acres of livestock grazing allotments in the Forest.
	Templeton Park, Duveneck Regional Park (Undeveloped)	County operated day-use recreation areas.

Lower Salinas - Paso Robles Area Watershed

	Mission San Miguel de Archangel	Established in 1797, designated as State Historical Landmark No. 326.
	Rios Caledonia Adobe	Established between 1830-1846, adjacent to Mission San Miguel de Archangel, this site is considered one of the finest examples of early California architecture in the state. Contains preserves historic building, landscaped grounds, a gift shop and restrooms. Includes a 2.8 acre park and museum. Operated by the County of San Luis Obispo.
	San Miguel Park	Day-use recreation area operated by the County of San Luis Obispo.
	Wolf Property Natural Area	Operated by the County of San Luis Obispo.
	San Miguel Staging Area	Located on the Salinas River at the site of the former Camp Roberts swimming pool. Offers parking facilities for hiking and equestrian use along the Salinas River leading to Big Sandy Wildlife Area. Operated by the County of San Luis Obispo.
	Big Sandy Wildlife Area	850 acre grassland park that provides habitat to various species including California quail and wild boar. Provides season hunting and fishing activities to area residents and visitors. Portions of the riparian growth are virtually pristine; however much of the remaining area is highly disturbed. Habitat restoration activities are underway. The area is managed for hunting by California Department of Fish and Wildlife.
	Tom Jermin, Sr. Park	TCSD operated day-use recreation area.
	Salinas River Trails Master Trail Plan – Santa Margarita to San Miguel (Undeveloped)	SLOCOG 2014
	Climate Change Considerations	
		See IRWMP, 2014 Section H, Climate Change *Data is general for County, not watershed specific*

Watershed Codes

Calwater/DWR Number	HA	Hydrologic Area Name	HSA	Hydrologic Sub-Area Name	SWRCB Number	CDF Super Planning	CDF Watershed Name
3309.811406	8	Paso Robles	1	Atascadero	309.81	Atascadero Lake	Graves Creek
3309.811407	8	Paso Robles	1	Atascadero	309.81	Atascadero Lake	Asuncion
3309.811701	8	Paso Robles	1	Atascadero	309.81	Paso Robles Creek	San Francisco Canyon

Lower Salinas - Paso Robles Area Watershed

3309.811702	8	Paso Robles	1	Atascadero	309.81	Paso Robles Creek	Upper Paso Robles Creek
3309.811703	8	Paso Robles	1	Atascadero	309.81	Paso Robles Creek	Sheepcamp Creek
3309.811704	8	Paso Robles	1	Atascadero	309.81	Paso Robles Creek	Cienega Creek
3309.811705	8	Paso Robles	1	Atascadero	309.81	Paso Robles Creek	Santa Rita Creek
3309.811706	8	Paso Robles	1	Atascadero	309.81	Paso Robles Creek	Lower Paso Robles Creek
3309.811707	8	Paso Robles	1	Atascadero	309.81	Paso Robles Creek	Summit Creek
3309.811801	8	Paso Robles	1	Atascadero	309.81	Templeton to Paso Robles	Bethel School
3309.811802	8	Paso Robles	1	Atascadero	309.81	Templeton to Paso Robles	Neals Spring
3309.811803	8	Paso Robles	1	Atascadero	309.81	Templeton to Paso Robles	Golden Hill
3309.811804	8	Paso Robles	1	Atascadero	309.81	Templeton to Paso Robles	Fern Canyon
3309.811805	8	Paso Robles	1	Atascadero	309.81	Templeton to Paso Robles	Mustard Creek
3309.811806	8	Paso Robles	1	Atascadero	309.81	Templeton to Paso Robles	Templeton (aka Toad Creek)
3309.811901	8	Paso Robles	1	Atascadero	309.81	Lower Nacimiento River	Lower San Marcos Creek
3309.811904	8	Paso Robles	1	Atascadero	309.81	Lower Nacimiento River	Mahoney Canyon (majority)
3309.811907	8	Paso Robles	1	Atascadero	309.81	Lower Nacimiento River	McKay (ptn)
3309.811908	8	Paso Robles	1	Atascadero	309.81	Lower Nacimiento River	Upper San Marcos Creek
3309.812105	8	Paso Robles	1	Atascadero	309.81	Portugese Canyon	Lower Vineyard Canyon (ptn)

Source: Excerpt from California Interagency Watershed Map of 1999, Calwater 2.2.1 (CA Resource Agency, 2004 Update)

Major Changes in the Watershed

Lower Salinas - Paso Robles Area Watershed

- In 1797, Franciscan padres built Mission San Miguel near the Paso Robles hot springs to take advantage of the waters curative powers. They constructed a crude abutment of logs around the edge of the main spring and an aqueduct that brought the water to the mission. Later, the main spring became the center of the town of Paso Robles. With the demise of the Mission, the Mexican government granted the original 10,519 hectare (25,993 acres) of the Rancho de Paso Robles (Ranch of the Pass of the Oaks) to Pedro Narvaez in 1844. In 1857, with the decaying logs of the padres still at the spring, the Blackburn brothers and partner purchased the rancho for $8,000. A rough bathhouse was built over the main sulphur spring, a stagecoach station was established, and a small hotel was built to accommodate occasional travelers.
- Adelaida area first settled in the 1870's for immigrating European farmers. Included a general store, post office, school, church, and cemetery at its height
- In 1881 a portion of the Atlantic and Pacific Railway is established through San Miguel.
- In 1886, the Southern Pacific Railroad passed the small hotel in Paso Robles, and in 1889, the City of Paso Robles was incorporated. That same year, the Blackburns began construction of the Hotel El Paso de Robles near the main sulphur spring.
- Mining activity important: minerals extracted include cinnabar (mercury-bearing ore), quicksilver, and limestone.
- In 1889 San Miguel Fire District formed as a volunteer fire company
- The Templeton Fire District was formed in 1909 and today remains a volunteer fire company.
- The Templeton Community Services District was formed in 1976.
- San Miguel Community Services District formed (2000)
- On September 3, 1942 construction began on the Airfield, which was to be used as a Marine Corps Bomber Base. On April 8, 1943, the field was dedicated as Estrella Army Airfield to be used by the Army Air Corps. Estrella Army Airfield consisted of 1259 acres of land, two 4,700-foot long runways, an operations building and a small, three bay fire station.
- The Marine Corps Units occupied buildings to the west, across Airport Road in what is now the California Youth Authority. On August 29, 1947 the Federal Government transferred 1,057 acres to the County of San Luis Obispo to be used as a commercial airport, and 202 acres and buildings to the State of California to be used as a Correctional Facility.
- The County of San Luis Obispo extended runway 01/19 from 4,700 feet to 6,009 feet; installed high intensity lights; and built a large hangar, ten T-Hangars and a terminal building between 1949 and 1952. In 1952 commercial air service for San Luis Obispo County began, with Southwest Airways serving the area, became Pacific Airlines, and later yet merged into Hughes Air West. This service continued until 1974.
- On May 7, 1973, the County of San Luis Obispo sold the airport to the City of Paso Robles for $1.00. At that time the County was unable to derive enough income to support the cost of running the airport. The City subdivided unused land into 81 parcels for commercial development. The City formed an all-volunteer Fire, Crash and Rescue Department to serve the airport and the surrounding area. The City took over the water wells and the sewer treatment plant from the State to serve both the Airport and the Youth Authority. In 1973 there were four businesses employing 22 people on the airport. Today the Paso Robles Municipal Airport houses almost 40 businesses, employing over 700 people.

Lower Salinas - Paso Robles Area Watershed

Watershed Heath by Major Tributary

Tributary Name	**Ephemeral / Perennial**	**303d Listed/ TMDLs**	**Pollution Sources** NP (non-point) MP (Major Point)	**Environmental Flows**
Salinas River	Intermittent Perennial	Yes, Sodium and Chloride	Undetermined	Not assessed
Asuncion	Undetermined	Not assessed	Undetermined	Not assessed
Bethel School	Undetermined	Not assessed	Undetermined	Not assessed
Cienega Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Fern Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Graves Creek	Undetermined	Not assessed	Undetermined	**Upper**: Spring: 0.64 cfs. Summer: 0.28 cfs.
Lower Paso Robles Creek	Undetermined	Not assessed	Undetermined	Spring: 2.3 cfs. Summer: 0.7 cfs
Lower San Marcos Creek	Undetermined	Not assessed	Undetermined	Not assessed
Mustard Creek	Undetermined	Not assessed	Undetermined	Not assessed
Neals Spring	Undetermined	Not assessed	Undetermined	Not assessed
San Francisco Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Santa Rita Creek	Undetermined	Not assessed	Undetermined	Spring: 1.22 cfs. Summer: 0.43 cfs.
Sheepcamp Creek	Undetermined	Not assessed	Undetermined	Not assessed
Summit Creek	Undetermined	Not assessed	Undetermined	Not assessed
Templeton	Undetermined	Not assessed	Undetermined	Not assessed
Upper Paso Robles Creek	Undetermined	Not assessed	Undetermined	Not assessed
Upper San Marcos Creek	Undetermined	Not assessed	Undetermined	Not assessed
McKay	Undetermined	Not assessed	Undetermined	Not assessed
Mahoney Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Lower Vineyard Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Salinas River	Undetermined	Yes, for Sodium and Chloride	Undetermined	Not assessed

Lower Salinas - Paso Robles Area Watershed

Watershed Health by Major Groundwater Basin

Groundwater Basin	Estimated Safe Yield (Master Water Report)	Water Availability Constraints	Drinking Water Standard Exceedance	Water Quality Objective Exceedance
Paso Robles	97,700 AF	Physical Limitations, Water Rights, Water Quality Issues(Carollo, 2012).	Yes; see description below.	None (CCRWQCB, 2011

Groundwater Quality Description:

Paso Robles Groundwater Basin: The predominant cations are calcium and sodium and the predominant anion is bicarbonate (DWR 1981; Fugro West, 2001b). Analysis of 48 public supply wells in the subbasin show an average Total Dissoved Solid (TDS) content of 614 ppm and a range of 346 to 1,670 ppm.

In one study, (Fugro West 2001b), 23 of 74 samples collected exceeded one or more drinking water standards. The maximum contaminant level (MCL) for nitrate was exceeded in 4 samples (Fugro West, 2001b). Water quality trends indicate an increasing concentration of TDS and chloride in the deep, historically artesian aquifer northeast of Creston (Carollo, 2012).

Another major problem is the unpredictable occurrence of hydrogen sulfide in the ground water (DWR, 1981).

Increasing amounts of total dissolved solids and chlorides near San Miguel. Increasing nitrates in the Paso Robles Formation in the area south of San Miguel. High nitrates and arsenic, presence of gross alpha emitters (SLO County Public Works Master Water Report, 2012).

Primary Issues

Issue	*Potential Causes*	*Referenced from*
significant water level declines	range of groundwater uses in close proximity, including agricultural irrigation, municipal supply wells, golf course irrigation, and a relatively dense aggregation of rural “ranchette”) users	Carollo, 2012
Groundwater Quality	high concentrations of TDS, chlorides, sulfates, and boron	Carollo, 2012
Salinas River 303(d) listed for sodium, chloride		Carollo, 2012
Steelhead passage	Several tributaries and the	50 CFR *226* - National Marine

	Salinas are designated critical habitat which must be considered in planning water uses.	Fisheries Service - NOAA

Groundwater: Paso Robles Groundwater Basin

According to multiple studies of this basin, annual basin pumping is now at or near the basin's perennial yield (Paso Robles Groundwater Management Plan, 2011). From 1997–2009, water levels declined on average of 2–6 feet per year, depending on the location. A Todd Engineering monitoring report (2007) indicated that the Basin was not approaching the safe yield level and some areas were experiencing significant declines in groundwater elevations. A later study completed in 2009 suggested groundwater pumping was approaching the safe yield level of the Basin. The 2010 Resource Capacity Study prepared by the San Luis Obispo County Planning Department stated that the Basin is now near or at perennial yield levels. The County Board of Supervisors certified a Level of Severity III for the Paso Robles Basin in October, 2012, due to declining water levels. In August 2013, the County Board of Supervisors adopted an urgency ordinance to limit new draws from the Paso Robles Groundwater basin.

The Paso Robles Groundwater Basin encompasses an area of approximately 790 square miles and is the primary, and in many places the only, source of water available to property owners throughout Northern San Luis Obispo County. The basin extends from the Garden Farms area south of Atascadero to San Ardo in Monterey County, and from the Highway 101 corridor east to Shandon. The basin supplies water for 29% of SLO County's population and an estimated 40% of the agricultural production of the County (Paso Robles Groundwater Basin Blue Ribbon Committee, 2013).

Paso Robles, Atascadero, and Templeton draw their water from the groundwater basin (primarily the Atascadero sub-basin), the underflow of the Salinas River and from the Nacimiento Pipeline Project. The remaining communities (Shandon, San Miguel, Creston, Bradley, Camp Roberts, Whitley Gardens, and Garden Farms) are entirely dependent on the groundwater basin for their water supply.

An established bi-annual well monitoring program overseen by the SLO County Flood Control and Water Conservation District reported these water declines in groundwater dependent communities (Through April, 2013):

a. Shandon: Water levels have dropped approximately 17 feet from 2011 to 2013.
b. Creston: Water levels have dropped approximately 25 feet from 2011 to 2013.
c. Estrella: Water levels have dropped approximately 25 feet from 2011 to 2013.
d. San Juan: Water levels have dropped approximately 5 feet from 2012 to 2013.

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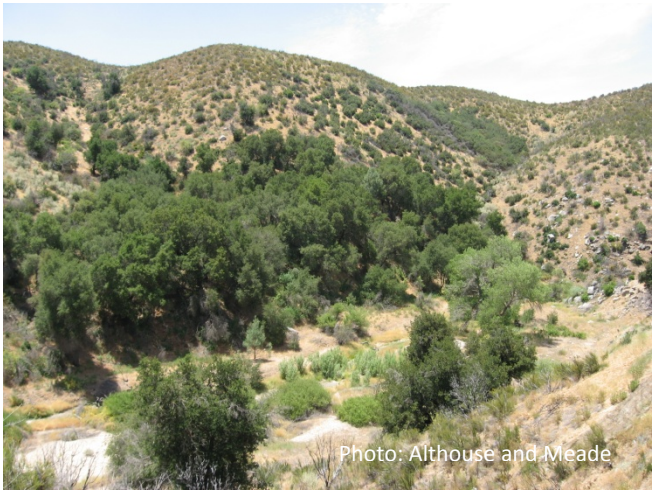
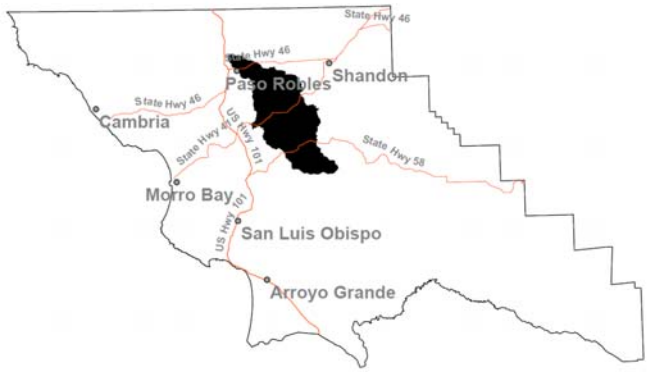
Significant Studies in Progress:

Regional Board Salt Balance Study – define the need and methods of salt reduction

Huer Huero Creek Watershed

Hydrologic Unit Name	Water Planning Area	Acreage	Flows to	Groundwater Basin(s)	Jurisdictions
Salinas 9	Salinas/ Estrella WPA 14	103,496 acres	Salinas River – to Pacific Ocean (Monterey Bay National Marine Sanctuary)	Paso Robles	County of San Luis Obispo, Creston (ptn),City of Paso Robles (ptn.), Los Padres National Forest





Description:

The Huer Huero watershed is located in the eastern portion of San Luis Obispo's North County region. The Huer Huero creek is an ephemeral underground stream which flows to directly to the Salinas River. The headwaters occur in the Coast Ranges, south of Creston and reach elevations of approximately 3312 feet. The confluence of the Huer Huero with the Salinas River occurs in Paso Robles. The dominant land use in the watershed is agriculture, with vineyards comprising a large percentage. The watershed is divided into two main drainages, the Upper Huer Huero and the Lower Huer Huero. Highway 41 East bisects the watershed. A portion of the Los Padres National Forest is located in the southeast portion of the watershed and contains the highest elevations in the watershed.

Watershed Plans:

No existing plans to date

Huer Huero Creek Watershed

Characteristics:

	Physical Setting	
	Rainfall	Average Annual: 13-18 in. (north portion), 18-24 in. (south portion) (NRCS shapefile, 2010)
	Air Temperature	Summer Range (August 1990-2012): 54°-94°F Winter Range (December 1990-2012): 34°-60°F (Paso Robles Airport, NOAA National Climatic Data Center, viewed 2013)
	Geology Description	Huerto Creek, Union School, Dry Canyon, Jackson and Reinhert Ranch and East Branch Huer Huero Creek sub-watersheds are composed of flat highly infiltrative Quaternary material – Category #3. Grassy sub-watershed is moderate steep moderately infiltrative early to mid-Tertiary headwaters and flat highly infiltrative Quaternary inland – Category #7. Wilson Canyon and the Middle and West Branches of Huer Huero Creek are moderately infiltrative early ot mid-Tertiary headwaters with flat Quaternary highly infiltrative valleys – Category #12 (Bell, pers. comm., 2013). Groundwater is found in Holocene age alluvium and the Pleistocene age Paso Robles Formation. Specific yield values in the Paso Robles Subbasin range from 7 to 11 percent, with an average specific yield of 9 percent (Fugro West 2001c). DWR (1958) estimated the average specific yield for the subbasin at 8 percent. DWR (1999) estimated the average specific yield at 15 percent for the alluvium and 9 percent for the Paso Robles Formation. Alluvium. Holocene age alluvium consists of unconsolidated, fine- to coarse-grained sand with pebbles and boulders. This alluvium provides limited amounts of groundwater and reaches 130 feet thick near the Salinas River, but is generally less than 30 feet thick in the minor stream valleys (DWR 1999). Its high permeability results in a well production capability that often exceeds 1,000 gpm (Fugro West 2001a). Groundwater in Holocene alluvium is mostly unconfined. The Pleistocene age Paso Robles Formation, which is the most important source of groundwater in the subbasin, is unconsolidated, poorly sorted, and consists of sand, silt, gravel, and clay (DWR 1979). This formation reaches a thickness of 2,000 feet and groundwater within it is generally confined (DWR 1958).

Huer Huero Creek Watershed

	Hydrology	
	Stream Gage	Yes; USGS 11147600 (Huer Huero Creek at Geneseo Road) (USGS, data last recorded in 1972, viewed August 2013)
	Hydrology Models	Yes; SLO County Flood Control and Water Conservation District, 2008, Paso Robles Groundwater Subbasin Water Banking Feasibility Study.
	Peak Flow	13,800 cfs (USGS, 1959-72, viewed August 2013) *Data last recorded in 1972*
	Base Flow	5.86 cfs (USGS, 1959-72, viewed August 2013) *Data last recorded in 1972*
	Flood Reports	No source identified
	Flood Control Structures	Bridges: 1 over Quail Creek on Creston Road; 8 on Huer Huero Creek on Creston Road, Old Donovan Road (3), Union Road (2), Linne Road, River Road (2); 1 over Dry Creek on Union Road (PWD Bridges GIS Layer)
	Areas of Flood Risk	San Luis Obispo County has identified several areas along Huer Huero Creek that are known flood hazards • All areas along Huer Huero Creek • The area south of the airport from Dry Creek • The area along Linne Road (City of Paso Robles, 2005)
	Biological Setting	
	Vegetation Cover	Primarily non-native annual grassland, cropland, and mixed chaparral including buck brush and chamise-redshank chaparral, (mainly continuous chamise) blue oak-foothill pine woodland, as well as, continuous blue oak woodland, orchards, vineyards, and nurseries. (SLO County vegetation shapefile, 1990) *Data limited by age of shapefile* Valley oak savanna is present, and wetlands, vernal pools, and riparian habitats also occur in this watershed. Huerhuero Creek is a dry wash in most locations. Flows are ephemeral. The sandy bed typically supports scattered shrubs and trees, and provides appropriate habitat for several native reptiles during the dry season (Althouse and Meade, 2013). *Data limited to observations, not complete inventory*
	Invasive Species	Silverleaf horsenettle (*Solanum elaeagnifolium*) is known from a small patch on the side of Highway 58 near Huerhuero Road. Tree of heaven (*Ailanthus altissima*) is widespread. Medusahead (*Elymus [=Taeniatherum] caput-medusae*) is known from rangelands in Paso Robles. Other invasive species may be present (Althouse and Meade, 2013). *Data limited to observations, not complete inventory*

Huer Huero Creek Watershed

Special Status Wildlife and Plants

Key: FE - Federal endangered, FT - Federal threatened, SE - State endangered, ST - State threatened, SSC - State Species of Special Concern; FP- Fully Protected, SA – Special Animal, CRPR – CA rare plant rank (CNDDB, viewed August, 2013)

Locations listed refer to USGS 7.5' quadrangle names. Only the portion overlapping the watershed boundary was considered.

Data limited to observations, not complete inventory

Special Status Species	Status	CAMATTA RANCH	CRESTON	ESTRELLA	PASO ROBLES	SANTA MARGARITA	SHANDON	SHEDD CANYON	TEMPLETON	WILSON CORNER
Animals										
American badger	SSC	x						x		x
golden eagle	FP				x					
prairie falcon	SA		x	x			x	x		
San Joaquin kit fox	FE; ST				x			x	x	
silvery legless lizard	SSC									x
Swainson's hawk	ST		x	x			x	x		
vernal pool fairy shrimp	FT		x	x	x					
western pond turtle	SSC							x		x
western spadefoot	SSC		x			x		x		x
Plants										
chaparral ragwort	CRPR 2B.2							x		x
dwarf calycadenia	CRPR 1B.1	x	x							
Hardham's evening-primrose	CRPR 1B.2					x				x
hooked popcornflower	CRPR 1B.2									x
La Panza mariposa-lily	CRPR 1B.3					x		x		x
pale-yellow layia	CRPR 1B.1									x
San Luis Obispo owl's-clover	CRPR 1B.2				x					
shining navarretia	CRPR 1B.2		x		x	x		x		

Huer Huero Creek Watershed

	Special Status Species	Status	CAMATTA RANCH	CRESTON	ESTRELLA	PASO ROBLES	SANTA MARGARITA	SHANDON	SHEDD CANYON	TEMPLETON	WILSON CORNER
	spreading navarretia	FT		x					x		
	straight-awned spineflower	CRPR 1B.3					x				
	yellow-flowered eriastrum	CRPR 1B.2					x				x

	Steelhead Streams	1982 DFG memo listed Huerhuero Creek as having a historical steelhead run (DFG 1982a, CEMAR). Staff from DFG consider Huerhuero Creek as lacking suitable *O. mykiss* habitat due to the seasonal nature of flows (Hill pers. comm., 2013).
	Stream Habitat Inventory	None
	Fish Passage Barriers	None Identified
	Designated Critical Habitat	Yes; Vernal Pool Fairy Shrimp (USFWS Critical Habitat Mapper viewed 2013)
	Habitat Conservation Plans	Yes; North San Luis Obispo County Habitat Conservation Programs – multiple species *HCP for North County not Watershed specific*
	Other Environmental Resources	Paso Robles Groundwater Basin
	Land Use	
	Jurisdictions & Local Communities	County of San Luis Obispo, City of Paso Robles (ptn), Community of Creston
	% Urbanized	4.5% Residential Rural; 3.5% City of Paso Robles; Less than 1% each Commercial Retail, Public Facility, Residential Suburban, Residential Single Family
	% Agricultural	67.3%; row crops, vineyards, fields and rangeland
	% Other	17.8% Rural Lands; 5.7% Open Space
	Planning Areas	El-Pomar/Estrella & Shandon-Carrizo Planning Areas
	Potential growth areas	City of Paso Robles, Creston (SLO County, 2013)
	Facilities Present	California Youth Authority, Paso Robles Airport & associated Wastewater treatment plant

Huer Huero Creek Watershed

	Commercial Uses	Creston Sand and Gravel Pit owned by Union Asphalt; Agriculture, retail, service providers
	Demographics	
	Population	5,894 in watershed (US Census Blocks, 2010)
	Race and Ethnicity	Watershed: 80.9% Caucasian; 14.2% Latino; 2.4% Mixed Race; 1.1% Asian; Less than 1% each African American, American Indian and Pacific Islander (US Census Blocks, 2010) Paso Robles: 77.7% Caucasian; 34.5% Hispanic; 3.9% Mixed Race; 2.1% Black or African American; 2% Asian; 0.2% Pacific Islander (US Census, 2010) Creston: 89.4% Caucasian; 6.4% Hispanic or Latino; 2.1% American Indian and Alaska Native; 1.1% Mixed Race; 1.1% Asian (US Census, 2010)
	Income	MHI $59,006 in watershed (US Census Tracts, 2010) (interpolated from 4 tracts which include multiple watersheds) MHI $ 85,357 in Creston (US Census, 2010) MHI $ 72, 991 in Paso Robles (US Census, 2010)
	Disadvantaged Communities	No (DWR); 10.2% of individuals are below poverty level in Paso Robles (US Census, 2007-2011); 0% of individuals are below poverty level in Creston (American Community Survey, 2007-2011)
	Water Supply	
	Water Management Entities	City of Paso Robles, outlying areas served by Individual wells
	Groundwater	Paso Robles Basin
	Surface Water	No public reservoirs.
	Imported Water	Nacimiento Pipeline
	Recycled/Desalinated Water	None
	Key groundwater percolation area(s)	No full watershed study identified – One area identified as East Branch Huer Huero Creek direct recharge area (Paso Robles Groundwater Subbasin Water Banking Feasiblity Study, 2008).
	Water budget	Yes; Todd Engineers, 2013 for Paso Robles Groundwater Subbasin Update
	Water Uses	
	Beneficial Uses	*Huer Huero Creek* - Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water

Huer Huero Creek Watershed

		Recreation (REC-2), Wildlife Habitat (WILD), Warm Freshwater habitat (WARM), Threatened, or Endangered Species (RARE), and Commercial and Sport Fishing (COMM). (CCRWQCB, 2011)
	Other Unique Characteristics	
	Historical Resources	Creston Cemetery (La Panza Road, Creston-Intersection of CA State Hwys 41 and 229); Creston Community Church (6265 Adams Street, Creston), Rinconada School (located in Chandler Ranch-Fontana & Linne Road, Paso Robles), Chandler House (Webster), Linne School (Creston & Stagecoach Road, Creston)(PLN_DES_HISTORIC_POINTS GIS Layer)
	Climate Change Considerations	
		See IRWMP, 2014 Section H, Climate Change *Data is general for County, not Watershed specific.*

Watershed Codes

Calwater/DWR Number	HA	Hydrologic Area Name	HSA	Hydrologic sub-Area Name	SRWCB Number	CDF Super Planning	CDF Watershed Name
3309.811501	-	Paso Robles	-	Atascadero	309.81	Upper Huerhuero Creek	East Branch Huer Huero Creek
3309.811502	-	Paso Robles	-	Atascadero	309.81	Upper Huerhuero Creek	Middle Branch Huer Huero Creek
3309.811503	8	Paso Robles	1	Atascadero	309.81	Upper Huerhuero Creek	Grassy
3309.811504	-	Paso Robles	-	Atascadero	309.81	Upper Huerhuero Creek	West Branch Huer Huero Creek
3309.811505	-	Paso Robles	-	Atascadero	309.81	Upper Huerhuero Creek	N. of Creston
3309.811506	0	Paso Robles	0	Atascadero	309.81	Upper Huerhuero Creek	Wilson Canyon
3309.811601	8	Paso Robles	1	Atascadero	309.81	Lower Huerhuerto Creek	Jackson and Reinhert Ranch
3309.811602	8	Paso Robles	1	Atascadero	309.81	Lower Huerhuerto	Geneseo

						Creek	
3309.811603	8	Paso Robles	1	Atascadero	309.81	Lower Huerhuerto Creek	Dry Canyon
3309.811604	8	Paso Robles	1	Atascadero	309.81	Lower Huerhuerto Creek	Union School
3309.811605	8	Paso Robles	1	Atascadero	309.81	Lower Huerhuerto Creek	El Pomar
3309.811606	8	Paso Robles	1	Atascadero	309.81	Lower Huerhuerto Creek	Huerto Creek
3309.811607	8	Paso Robles	1	Atascadero	309.81	Lower Huerhuerto Creek	Ryan

Source: Excerpt from California Interagency Watershed Map of 1999, Calwater 2.2.1 (CA Resource Agency, 2004 Update)

Major Changes in the Watershed

Excerpts from a California Genealogy & History Archive recall these historic conditions of the Huer Huero. (A Memorial and Biographical History of the Counties of Santa Barbara,San Luis Obispo, and Ventura, California, 1891).

- 1842 – Rancho Huerhuero – a 15,685 acre Mexican land grand given by Governor Juan Alvarado to Jose Mariano Bonilla. The rancho was composed of lands formerly a part of Mission San Miguel Arcangel.
- 1844 – Ranch Santa Ysabel (Arce) – 17,774 acre Mexican land grant by Governor Manuel Micheltorena to Francisco Arce.
- 1846 – Three square leagues given to Ranch Huerhuero by Governor Pio Pico.
- 1884 – The Huerhuero ranch was sold to Flint, Bixby & Co. who divide and sell the land. The town of Creston is founded.
- 1886 – Chauncey Hatch Phillips bought Ranch Santa Ysabel and subdivided it to be sold as farm lots to individuals ready to settle in the area being opened up by the arrival of the railroad.

Southeastward from the old Mission of San Miguel, the valley of the Estrella Creek stretches toward the mountains dividing San Luis from Kern County. This large tract remained unoccupied and useless for decades, save as grazing ground for a few cattle and sheep. Up to the 1870's it was regarded as a portion of some Mexican grant; then the discovery was made that this was Government land, open to settlement, and, while bare in appearance, of great fertility of soil, and well adapted to agriculture. Thus a rapid immigration set in, settlements were made, schoolhouses built, and a vast change effected. Good crops were had in 1876 and 1878, and by 1880 at least forty families had settled upon this wide and fertile tract. In 1887 the total acreage in wheat and barley, from Santa Margarita on

the south to San Miguel on the north, and from Paso de Robles to Sheid's, was 8,625 acres, of which thirteen-sixteenths was wheat. The land here is a rich, sandy loam, sparsely covered with nutritious grasses, and with live-oak and white-oak trees scattered at intervals. Water is had at an average depth of thirty feet…

… The Huer-Huero adjoins the Santa Ysabel and the Eureka on the east. It comprises 8,000 acres of valley, 23,000 acres of level and rolling farming lands, and 15,000 acres of hill grazing lands. In two years, 34,000 acres were sold to settlers, mostly of wealth and position, and the region is thickly settled. Wheat, olives, fruit and vines have been planted. About 12,000 acres of this rancho are still unsold…

… As an evidence of progress, the development of the Huer-Huero may be cited. This tract of land, comprising about 48,000 acres, was regarded as an exhausted sheep range, and less than four years ago was sold at $3 an acre. Mr. J. V. Webster, an experienced horticulturist of Alameda County, purchased a large area and soon commenced its cultivation. At the county fair, in the middle of October, 1888, he exhibited from the land grapes of the most choice varieties in large bunches. Also fig and peach trees of six feet growth in the last six months; samples of amber sugar cane, yielding at the rate of 144,000 pounds per acre, and sorghum at the rate of 175,000 pounds per acre. Ho also exhibited hops of exceedingly thrifty and rich growth, flax of good quality, melons, squashes and a great variety of products grown without irrigation, but with good cultivation…

- On September 3, 1942 construction began on the Airfield, which was to be used as a Marine Corps Bomber Base. On April 8, 1943, the field was dedicated as Estrella Army Airfield to be used by the Army Air Corps. Estrella Army Airfield consisted of 1259 acres of land, two 4,700-foot long runways, an operations building and a small, three bay fire station.
- The Marine Corps Units occupied buildings to the west, across Airport Road in what is now the California Youth Authority. On August 29, 1947 the Federal Government transferred 1,057 acres to the County of San Luis Obispo to be used as a commercial airport, and 202 acres and buildings to the State of California to be used as a Correctional Facility.
- The County of San Luis Obispo extended runway 01/19 from 4,700 feet to 6,009 feet; installed high intensity lights; and built a large hangar, ten T-Hangars and a terminal building between 1949 and 1952. In 1952 commercial air service for San Luis Obispo County began, with Southwest Airways serving the area, became Pacific Airlines, and later yet merged into Hughes Air West. This service continued until 1974.
- On May 7, 1973, the County of San Luis Obispo sold the airport to the City of Paso Robles for $1.00. At that time the County was unable to derive enough income to support the cost of running the airport. The City subdivided unused land into 81 parcels for commercial development. The City formed an all-volunteer Fire, Crash and Rescue Department to serve the airport and the surrounding area. The City took over the water wells and the sewer treatment plant from the State to serve both the Airport and the Youth Authority. In 1973 there were four businesses employing 22 people on the airport. Today the Paso Robles Municipal Airport houses almost 40 businesses, employing over 700 people.

Watershed Health by Major Tributary

Huer Huero Creek Watershed

Tributary Name	Ephemeral / Perennial	303d Listed/ TMDLs	Pollution Sources NP (non-point) MP (Major Point)	Environmental Flows
Dry Canyon	Undetermined	Not assessed	Undetermined	Not assessed
East Branch Huer Huero Creek	Undetermined	Not assessed	Undetermined	Not assessed
Grassy	Undetermined	Not assessed	Undetermined	Not assessed
Huerto Creek	Undetermined	Not assessed	Undetermined	Not assessed
Jackson and Reinhert Ranch	Undetermined	Not assessed	Undetermined	Not assessed
MIddle Branch Huer Huero Creek	Undetermined	Not assessed	Undetermined	Not assessed
Union School	Undetermined	Not assessed	Undetermined	Not assessed
West Branch Huer Huero Creek	Undetermined	Not assessed	Undetermined	Not assessed
Wilson Canyon	Undetermined	Not assessed	Undetermined	Not assessed

Watershed Health by Major Groundwater Basin

Groundwater Basin	Estimated Safe Yield	Water Availability Constraints	Drinking Water Standard Exceedance	Water Quality Objective Exceedance
Paso Robles	97,700 AF (SLO County RCS, 2011)	Physical limitations, water rights and water quality issues (Carollo, 2012).	Yes; see description below.	None (CCRWQCB, 2011)

Groundwater Quality Description: Paso Robles Groundwater Basin - The predominant cat ions are calcium and sodium and the predominant anion is bicarbonate (DWR, 1981; Fugro West, 2001b). Analyses of 48 public supply wells in the sub-basin show an average Total Dissolved Solid (TDS) content of 614 ppm and a range of 346 to 1,670 ppm.

In one study (Fugro West, 2001b), 23 of 74 samples collected exceeded one or more of the drinking water standards. The Maximum Contaminant Level (MCL) for TDS was exceeded in 14 samples (Fugro West, 2001b). The MCL for nitrate was exceeded in 4 samples (Fugro West, 2001b). Trends show an

increasing concentration of nitrate between the Salinas and Huer Huero rivers in two locations; north of Highway 46 and south of San Miguel (Fugro West, 2001b).

Increasing nitrates and chloride in the Paso Robles Formation in the area of Highway 46 between the Salinas River and Huer Huero Creek (SLO County Flood Control and Water Conservation District, 2008).

Primary Issues

Issue	*Potential Causes*	*Referenced from*
Significant water level declines	Range of groundwater uses in close proximity, including agricultural irrigation, municipal supply wells, golf course irrigation, and a relatively dense aggregation of rural "ranchette") users	Carollo, 2012
Groundwater Quality	High concentrations of TDS, chlorides, sulfates, and boron	Carollo, 2012

Groundwater: Paso Robles Groundwater Basin

According to multiple studies of this basin, annual basin pumping is now at or near the basin's perennial yield (Paso Robles Groundwater Management Plan, 2011). From 1997–2009, water levels declined on average of 2–6 feet per year, depending on the location. A Todd Engineering monitoring report (2007) indicated that the Basin was not approaching the safe yield level and some areas were experiencing significant declines in groundwater elevations. A later study completed in 2009 suggested groundwater pumping was approaching the safe yield level of the Basin. The 2010 Resource Capacity Study prepared by the San Luis Obispo County Planning Department stated that the Basin is now near or at perennial yield levels. The County Board of Supervisors certified a Level of Severity III for the Paso Robles Basin in October, 2012, due to declining water levels. In August 2013, the County Board of Supervisors adopted an urgency ordinance to limit new draws from the Paso Robles Groundwater basin.

The Paso Robles Groundwater Basin encompasses an area of approximately 790 square miles and is the primary, and in many places the only, source of water available to property owners throughout Northern San Luis Obispo County. The basin extends from the Garden Farms area south of Atascadero to San Ardo in Monterey County, and from the Highway 101 corridor east to Shandon. The basin supplies water for 29% of SLO County's population and an estimated 40% of the agricultural production of the County (Paso Robles Groundwater Basin Blue Ribbon Committee, 2013).

Paso Robles, Atascadero, and Templeton draw their water from the groundwater basin (primarily the Atascadero sub-basin), the underflow of the Salinas River and from the Nacimiento Pipeline Project. The remaining communities (Shandon, San Miguel, Creston, Bradley, Camp Roberts, Whitley Gardens, and Garden Farms) are entirely dependent on the groundwater basin for their water supply.

Huer Huero Creek Watershed

An established bi-annual well monitoring program overseen by the SLO County Flood Control and Water Conservation District reported these water declines in groundwater dependent communities (Through April, 2013):

a. Shandon: Water levels have dropped approximately 17 feet from 2011 to 2013.
b. Creston: Water levels have dropped approximately 25 feet from 2011 to 2013.
c. Estrella: Water levels have dropped approximately 25 feet from 2011 to 2013.
d. San Juan: Water levels have dropped approximately 5 feet from 2012 to 2013.

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Huer Huero Creek Watershed

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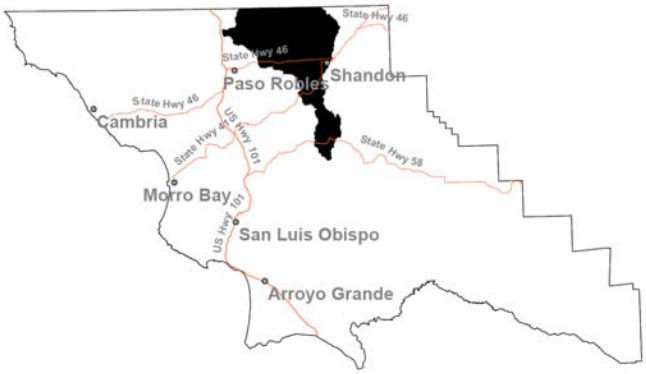
Significant Studies in Progress:

None identified

Estrella River Watershed

Hydrologic Unit Name	Water Planning Area	Acreage	Flows to	Groundwater Basin(s)	Jurisdictions
Estrella 17	Salinas/ Estrella WPA 14	177,631 acres total with 138,784 acres within San Luis Obispo County	Salinas River – to Pacific Ocean (Monterey Bay National Marine Sanctuary)	Paso Robles	County of San Luis Obispo, Shandon (ptn) Whitley Gardens, Los Padres National Forest



Existing Watershed Plans:

No existing plans to date

Description:

The Estrella River watershed is located in the northeastern San Luis Obispo County. A portion of the watershed is located in Monterey County with a majority of the acreage located within SLO County. The Estrella and some of its tributaries carry perennial underground flows that form a tributary of the Salinas River. The Estrella River forms from the confluence of San Juan Creek and Cholame Creek near Shandon, in the foothills of the Coast Ranges. The confluence of the Salinas and Estrella Rivers occurs at the town of San Miguel. The highest elevation in the watershed is approximately 2,854 feet, and the lowest elevation is around 607 feet. Vineyards slightly predominate over oak woodlands and grassland communities. Tree species such as blue oak, and valley oak dominate the oak woodland, while western sycamore, Fremont's cottonwood, and willows are found in the riparian woodlands along the Estrella River. Agriculture is the dominant use. The Estrella River Valley is generally used most intensively for agriculture because of better soils and water availability. Irrigated production has increased during the last 10 years, particularly in vineyards and alfalfa. Dry farming and grazing operations encompass the rest of the agricultural uses.

Estrella River Watershed

Characteristics

	Physical Setting	
	Rainfall	Mean Annual: 14-24 in. (NRCS shapefile, 2010)
	Air Temperature	Summer Range (August 1990-2012): 54°-94°F Winter Range (December 1990-2012): 34°-60°F (Paso Robles Airport, NOAA National Climatic Data Center, viewed 2013)
	Geology Description	Lower San Jacinto Creek, Lower Ranchito Canyon, Estrella, Upper and Lower Hog Canyon, Mile 9 to 11 Estrella River, Upper and Lower Keys Canyon, Freeman Canyon, Willow Springs Canyon, Sheep Camp Canyon, Indian Creek, Pine Canyon, Taylor Canyon, Upper and Lower Shimmin Canyon, Bud Canyon, Hopper Canyon, Wood Canyon, Shed Canyon and Upton Canyon are flat highly infiltrative Quaternary – Category #3. Upper Ranchito Canyon which is moderate steep moderately infiltrative early to mid-Tertiary headwaters with flat highly infiltrative Quaternary inland – Category #7. Quail Water Creek is steep moderately infiltrative early to mid-Tertiary headwaters with flat pre Quaternary moderately infiltrative valley – Category #11 (Bell, pers. comm., 2013). Groundwater is found in Holocene age alluvium and the Pleistocene age Paso Robles Formation. Specific yield values in the Paso Robles Sub-Basin range from 7 to 11 percent, with an average specific yield of 9 percent (Fugro West 2001c). DWR (1958) estimated the average specific yield for the sub-basin at 8 percent. DWR (1999) estimated the average specific yield at 15 percent for the alluvium and 9 percent for the Paso Robles Formation. Alluvium. Holocene age alluvium consists of unconsolidated, fine- to coarse-grained sand with pebbles and boulders. This alluvium provides limited amounts of groundwater and reaches 130 feet thick near the Salinas River, but is generally less than 30 feet thick in the minor stream valleys(DWR 1999). Its high permeability results in a well production capability that often exceeds 1,000 gpm (Fugro West 2001a). Groundwater in Holocene alluvium is mostly unconfined. Paso Robles Formation. Pleistocene age Paso Robles Formation, which is the most important source of groundwater in the subbasin, is unconsolidated, poorly sorted, and consists of sand, silt, gravel, and clay (DWR 1979). This formation reaches a thickness of 2,000 feet and groundwater within it is generally confined (DWR 1958).

Estrella River Watershed

	Hydrology	
	Stream Gage	Yes; USGS 11148500 (Estrella River at Airport Road)(USGS, viewed August 2013)
	Hydrology Models	Yes; SLO County Flood Control and Water Conservation District, 2008, Paso Robles Groundwater Sub-basin Water Banking Feasibility Study.
	Peak Flow	Average annual peak flow (highest peak flow for each year) 3,746 cfs) (USGS, viewed August 2013)
	Base Flow	1.66 cfs (USGS, viewed August 2013)
	Flood Reports	No source identified
	Flood Control Structures	Bridges: 5 over Ranchita Creek Road on Estrella Road and Ranchita Canyon Road (4); 3 over Estrella River on Estrella Road, River Grove Drive and West Center Road; 1 over Hog Canyon Creek over Hog Canyon Road; 1 over McMillian Canyon Creek over West Center Road (PWD Bridges GIS Layer)
	Areas of Known Flood Risk	Shandon: flooding of properties on the side of and adjacent to Highway 41 near the community park in the center of town.
	Biological Setting	
	Vegetation Cover	Primarily non-native annual grassland with cropland, blue oak-foothill pine consisting mainly of blue oak, chamise-redshank chaparral consisting mainly of chamise, coastal scrub consisting mainly of sagebrush and buckwheat, orchards, vineyards and nurseries. (SLO County vegetation shapefile, 1990) *Data limited by age of shapefile* Wetlands, dry washes, and riparian woodlands in the Estrella watershed provide important wildlife habitat and ecosystem functions despite their small areal extent in the watershed (Althouse and Mead, 2013). *Data limited to observations, not complete inventory*
	Invasive Species	European starling, English sparrow, wild pig are in most watersheds in North County. Perennial pepperweed (*Lepidium latifolium*) known from San Miguel near Estrella River confluence, first reported County occurrence was in this region. The following species were identified in Cross Canyon subwatershed in 2009: Russian olive (*Eleagnus angustifolia*), Cardoon (*Cynara cardunculus*) The following species were identified in Estrella River (mile 9-11) subwatershed in 2008: Tree of heaven (*Ailanthus altissima*), Tamarisk (*Tamarix* sp.), Rush skeleton weed (*Chondrilla juncea*), Medusahead (*Elymus [=Taeniatherum] caput-medusae* (Althouse and Mead, 2013). *Data limited to observations, not complete inventory*

Estrella River Watershed

Special Status Wildlife and Plants	Key: FE - Federal endangered, FT - Federal threatened, SE - State endangered, ST - State threatened, SSC - State Species of Special Concern; FP- Fully Protected, SA – Special Animal, CRPR – CA rare plant rank (CNDDB, viewed August, 2013) Locations listed refer to USGS 7.5' quadrangle names. Only the portion overlapping the watershed boundary was considered. *Data limited to observations, not complete inventory.*

Special Status Species	**Status**	**CAMATTA CANYON**	**CAMATTA RANCH**	**CHOLAME**	**CHOLAME HILLS**	**CHOLAME VALLEY**	**ESTRELLA**	**PARKFIELD**	**PASO ROBLES**	**RANCHITO CANYON**	**SHANDON**	**SHEDD CANYON**	**STOCKDALE MTN**	**WILSON CORNER**
Animals														
American badger	SSC	x	x								x	x		x
bank swallow	ST			x							x			
Nelson's antelope squirrel	ST										x			
pallid bat	SSC				x			x		x			x	
prairie falcon	SA	x	x	x	x	x	x			x	x	x	x	x
San Joaquin kit fox	FE; ST		x				x				x	x		
San Joaquin pocket mouse	SA		x						x		x			x
silvery legless lizard	SSC													x
Swainson's hawk	ST				x		x				x	x		
Tulare grasshopper mouse	SSC			x							x			
western pond turtle	SSC										x			
western spadefoot	SSC						x							
Plants														
delicate bluecup	CRPR 1B.3												x	
Hardham's evening-primrose	CRPR 1B.2		x											
Jared's pepper-grass	CRPR 1B.2						x		x					
Kellogg's horkelia	CRPR 1B.1								x					
La Panza mariposa-lily	CRPR 1B.3		x											x
Lemmon's jewel-flower	CRPR 1B.2								x					x
oval-leaved snapdragon	CRPR 4.2						x		x					
round-leaved filaree	CRPR 1B.1		x				x		x					

Estrella River Watershed

Special Status Species	Status	CAMATTA CANYON	CAMATTA RANCH	CHOLAME	CHOLAME HILLS	CHOLAME VALLEY	ESTRELLA	PARKFIELD	PASO ROBLES	RANCHITO CANYON	SHANDON	SHEDD CANYON	STOCKDALE MTN	WILSON CORNER
shining navarretia	CRPR 1B.2								x					
Temblor buckwheat	CRPR 1B.2										x			
yellow-flowered eriastrum	CRPR 1B.2													x

Steelhead Streams	None (National Marine Fisheries Service, 2012).
Stream Habitat Inventory	No source identified
Fish Passage Barriers	None identified (PAD Database viewed 2013)
Designated Critical Habitat	Yes; Vernal Pool Fairy Shrimp (USFWS Critical Habitat Portal, viewed 2013) (None listed in NMFS CFR-50)
Habitat Conservation Plans	Yes; Shandon Community Plan Habitat Conservation Plan, North San Luis Obispo County Habitat Conservation Program
Other Environmental Resources	Estrella River, Paso Robles Groundwater Basin, San Andreas Fault Zone. (SLO County Flood Control and Water Conservation District, 2007) Tree species such as blue oak (*Quercus douglasii*) and valley oak (*Quercus lobata*) dominate the oak woodland, while western sycamore (*Platanus racemosa*), Fremont's cottonwood (*Populus fremontii*) and willows (*Salix spp.*) are found in the riparian woodlands along the Estrella River. Riparian woodlands have limited extent in interior San Luis Obispo County and provide important habitat and movement corridors for wildlife. Sycamore woodlands considered to be a rare vegetation type. Wetlands provide filtration, sediment removal, and nutrient removal. Rare reptiles such as silvery legless lizard and coast horned lizards can utilize dry wash habitat in the dry season. Dry washes are also important movement corridors for wildlife (Althouse and Meade, 2013).
Land Use	
Jurisdictions & Local Communities	County of San Luis Obispo, Shandon, Whitley Gardens
% Urbanized	1.4% (City, Commercial Retail, Public Facility, Residential Suburban, Residential Single Family) (SLO County LUC)
% Agricultural	93.1% (SLO County LUC)

Estrella River Watershed

% Other	2.2% Rural Lands; 2.1% Rural Residential; 1.2% Open Space (SLO County LUC)
Planning Areas	El-Pomar/Estrella, Shandon-Carrizo Planning Areas
Potential growth areas	Whitley Gardens, Shandon
Facilities Present	Green River Mutual Water Company (Whitley Gardens)
Commercial Uses	Agriculture
Demographics	
Population	3,527 in watershed (US Census Block, 2010)
Race and Ethnicity	Watershed: 67.8% Caucasian; 27.2% Latino; 2.4% Mixed Race; Less than 1% each African American, American Indian, Asian, Pacific Islander (US Census Block, 2010) Shandon: 53.5% Latino; 41.1% Caucasian; 2.6% Black or African American; 0.9% American Indian and Alaska Native; 0.5% Asian; 0.2% Pacific Islander; 1.2% Mixed Race (US Census, 2010) Creston: 89.4% Caucasian; 6.4% Hispanic or Latino; 2.1% American Indian and Alaska Native; 1.1% Mixed Race; 1.1% Asian (US Census, 2010)
Income	MHI $66,966 in watershed (US Census, 2011) (includes Cholame Creek, Lower San Juan Creek and Huer Huero Creek watersheds) MHI $65,260 in Shandon (US Census, 2010) MHI $85,357 in Creston (US Census, 2010)
Disadvantaged Communities	No; 4% of individuals are below poverty level in the watershed (US Census Tract, 2010) (includes Cholame Creek, Lower San Juan Creek and Huer Huero Creek watersheds) 19.1% of individuals are below poverty level in Shandon (US Census, 2010) 0% of individuals are below poverty level in Creston (US Census, 2010)
Water Supply	
Water Management Entities	Green River Mutual Water Company (Whitley Gardens); County Service Area (CSA) No. l6 (Shandon); other properties served by individual wells
Groundwater	Yes; Paso Robles Basin
Surface Water	No public reservoirs.
Imported Water	CSA 16 holds an allocation for 100 acre-feet per year (AFY) of the State Water Project supply. In order to use this allocation, a turn-out on the State Water Project, which runs north-south along the eastern edge of San Juan Road, would have to be built. (SLO County, 2012)

Estrella River Watershed

	Recycled / Desalinated Water	None
	Key groundwater percolation area(s)	No complete study identified - Creston Recharge Area Identified as possible key percolation area Natural recharge in the basin is derived from infiltration of precipitation, seepage from streams, and return flow from irrigation and other uses (SLOCFCWCD, 2008)
	Water budget	Yes; Todd Engineers, 2013 for Paso Robles Groundwater Basin Update
	Water Uses	
	Beneficial Uses	*Estrella* - Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Warm Freshwater habitat (WARM), Spawning, Reproduction, and/or Early Development (SPWN), and Commercial and Sport Fishing (COMM). (CCRWQCB, 2011)
	Other Unique Characteristics	
	Shandon Vicinity Creek Area and Habitat Area	The riparian forest and a portion of the adjacent upland areas associated with the Estrella River and San Juan Creek in the vicinity of Shandon are important wildlife habitat, and serve as important corridors for wildlife movement. San Joaquin kit fox and Western burrowing owl occur in open grasslands. Another important wildlife movement corridor is located near the base of the hillside near the eastern edge of Shandon.
	Climate Change Considerations	
		See IRWMP, 2014 Section H, Climate Change *Data is general to county, not Watershed specific*

Watershed Codes

Calwater/DWR Number	HA	Hydrologic Area Name	HSA	Hydrologic Sub-Area Name	SWRCB Number	CDF Super Planning	CDF Watershed Name
3317.000503	0	Undefined	0	Undefined	317.00	Shandon	Hopper Canyon (ptn – also in Cholame)
3317.000504	0	Undefined	0	Undefined	317.00	Shandon	Quail Water Creek
3317.000505	0	Undefined	0	Undefined	317.00	Shandon	Upton Canyon
3317.000506	0	Undefined	0	Undefined	317.00	Shandon	Shed Canyon
3317.000507	0	Undefined	0	Undefined	317.00	Shandon	Wood Canyon

3317.000508	0	Undefined	0	Undefined	317.00	Shandon	Bud Canyon
3317.000601	0	Undefined	0	Undefined	317.00	Whitley Gardens	Taylor Canyon
3317.000602	0	Undefined	0	Undefined	317.00	Whitley Gardens	Lower Shimmin Canyon
3317.000603	0	Undefined	0	Undefined	317.00	Whitley Gardens	Pine Canyon
3317.000604	0	Undefined	0	Undefined	317.00	Whitley Gardens	Indian Creek
3317.000605	0	Undefined	0	Undefined	317.00	Whitley Gardens	Sheep Camp Canyon
3317.000606	0	Undefined	0	Undefined	317.00	Whitley Gardens	Freeman Canyon
3317.000607	0	Undefined	0	Undefined	317.00	Whitley Gardens	Willow Springs Canyon
3317.000608	0	Undefined	0	Undefined	317.00	Whitley Gardens	Upper Shimmin Canyon
3317.000701	0	Undefined	0	Undefined	317.00	Lower Estrella River	Lower San Jacinto Creek
3317.000703	0	Undefined	0	Undefined	317.00	Lower Estrella River	Upper Ranchito Canyon
3317.000704	0	Undefined	0	Undefined	317.00	Lower Estrella River	Lower Ranchito Canyon
3317.000705	0	Undefined	0	Undefined	317.00	Lower Estrella River	Upper Hog Canyon
3317.000706	0	Undefined	0	Undefined	317.00	Lower Estrella River	Estrella
3317.000707	0	Undefined	0	Undefined	317.00	Lower Estrella River	Lower Hog Canyon
3317.000708	0	Undefined	0	Undefined	317.00	Lower Estrella River	Mile 9 to 11 Estrella River
3317.000709	0	Undefined	0	Undefined	317.00	Lower Estrella River	Lower Keyes Canyon
3317.000711	0	Undefined	0	Undefined	317.00	Lower Estrella River	Upper Keyes Canyon

Major Changes in the Watershed

1857 – Paso de Robles Land Grant sold by Petronilo Rios to James H. Blackburn, Daniel Drew Blackburn, and Lazarus Godehaux for $8,000.

1920s – State Route 46 built and improved along Estrella River. Was fully paved by 1930, and is a major crossing for the Coast Ranges, connecting the Central Coast near Cambria and US 101 with SR 99 in the San Joaquin Valley

Estrella River Watershed

1942 – Construction of Estrella Army Airfield which was to be used as a Marine Corps Bomber Base begins. San Luis Obispo County gained control of the facilities n 1947, and began offering commercial air service in 1952. In 1973 the county sold the airport to the city of Paso Robles for $1.00.

Watershed Health by Major Tributary

Tributary Name	**Ephemeral / Perennial**	**303d Listed/ TMDLs**	**Pollution Sources** NP (non-point) MP (Major Point)	**Environmental Flows**
Bud Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Estrella (Watershed)	Ephemeral	Not assessed	Undetermined	Not assessed
Freeman Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Hopper Canyon (ptn)	Undetermined	Not assessed	Undermined	Not assessed
Indian Creek	Undetermined	Not assessed	Undetermined	Not assessed
Lower Hog Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Lower Keys Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Lower Ranchito Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Lower San Jacinto Creek	Undetermined	Not assessed	Undetermined	Not assessed
Lower Shimmin Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Estrella River (Mile 9 to 11)	Undetermined	Boron, Chloride, Fecal Coliform, Sodium, pH	Agriculture, Grazing-Related sources, Natural Sources,	Not assessed
Tributary Name	**Ephemeral / Perennial**	**303d Listed/ TMDLs**	**Pollution Sources** NP (non-point) MP (Major Point)	**Environmental Flows**
Pine Canyon	Perennial	Not assessed	Undetermined	Not assessed
Quail Water Creek	Undetermined	Not assessed	Undetermined	Not assessed
Shed Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Sheep Camp Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Taylor Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Upper Hog Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Upper Keys Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Upper Ranchito Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Upper Shimmin Canyon	Undetermined	Not assessed	Undetermined	

Watershed Health by Major Groundwater Basin

Estrella River Watershed

Groundwater Basin	Estimated Safe Yield	Water Availability Constraints	Drinking Water Standard Exceedance	Water Quality Objective Exceedance
Paso Robles	97,700 AF (SLO County, 2012)	Physical limitations, water rights and water quality (Carollo, 2012)	Yes; see description below.	None (CCRWQCB, 2011)

Groundwater Quality Description: The predominant cations in the watershed are calcium and sodium and the predominant anion is bicarbonate (DWR 1981; Fugro West 2001b). Analysis of 48 public supply wells in the sub-basin show an average Total Dissolved Solid (TDS) content of 614 ppm and a range of 346 to 1,670 ppm.

In one study (Fugro West 2001b), 23 of 74 samples collected exceeded one or more of the drinking water standards. The Maximum Contaminant Level (MCL) for TDS was exceeded in 14 samples (Fugro West 2001b). The MCL for nitrate was exceeded in 4 samples. The Bradley portion of the sub-basin had the highest percentage of samples with constituents higher than the drinking water standards (Fugro West, 2001b) Trends show an increasing concentration of nitrate between the Salinas and Huer Huero rivers south of San Miguel (Carollo, 2012)

Generally high concentrations of TDS, chlorides, sulfates, and boron were identified for the Cholame Valley Basin (Chipping, et al., 1993). Increasing chlorides in the deep, historically artesian aquifer northeast of Creston (Carollo, 2012)

Primary Issues

Issue	*Potential Causes*	*Referenced from*
Significant water level declines	Range of groundwater uses in close proximity, including agricultural irrigation, municipal supply wells, golf course irrigation, and a relatively dense aggregation of rural "ranchette") users	Carollo, 2012
Groundwater Quality	High concentrations of TDS, chlorides, sulfates, and boron	Carollo, 2012
Estrella River 303(d) listed for boron, chloride, fecal coliform, sodium and pH	Agriculture, grazing-related, natural sources	Carollo, 2012

According to multiple studies of this basin, annual basin pumping is now at or near the basin's perennial yield (Paso Robles Groundwater Management Plan, 2011). From 1997–2009, water levels declined on

average of 2–6 feet per year, depending on the location. A Todd Engineering monitoring report (2007) indicated that the Basin was not approaching the safe yield level and some areas were experiencing significant declines in groundwater elevations. A later study completed in 2009 suggested groundwater pumping was approaching the safe yield level of the Basin. The 2010 Resource Capacity Study prepared by the San Luis Obispo County Planning Department stated that the Basin is now near or at perennial yield levels. The County Board of Supervisors certified a Level of Severity III for the Paso Robles Basin in October, 2012, due to declining water levels. In August 2013, the County Board of Supervisors adopted an urgency ordinance to limit new draws from the Paso Robles Groundwater basin.

The Paso Robles Groundwater Basin encompasses an area of approximately 790 square miles and is the primary, and in many places the only, source of water available to property owners throughout Northern San Luis Obispo County. The basin extends from the Garden Farms area south of Atascadero to San Ardo in Monterey County, and from the Highway 101 corridor east to Shandon. The basin supplies water for 29% of SLO County's population and an estimated 40% of the agricultural production of the County (Paso Robles Groundwater Basin Blue Ribbon Committee, 2013).

Paso Robles, Atascadero, and Templeton draw their water from the groundwater basin (primarily the Atascadero sub-basin), the underflow of the Salinas River and from the Nacimiento Pipeline Project. The remaining communities (Shandon, San Miguel, Creston, Bradley, Camp Roberts, Whitley Gardens, and Garden Farms) are entirely dependent on the groundwater basin for their water supply.

An established bi-annual well monitoring program overseen by the SLO County Flood Control and Water Conservation District reported these water declines in groundwater dependent communities (Through April, 2013):

a. Shandon: Water levels have dropped approximately 17 feet from 2011 to 2013.
b. Creston: Water levels have dropped approximately 25 feet from 2011 to 2013.
c. Estrella: Water levels have dropped approximately 25 feet from 2011 to 2013.
d. San Juan: Water levels have dropped approximately 5 feet from 2012 to 2013.

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Significant Studies in Progress:

None identified

Cholame Creek Watershed

Hydrologic Unit Name	Water Planning Area	Acreage	Flows to	Groundwater Basin(s)	Jurisdictions
Estrella 17	Cholame WPA 15	151,701 acres total with 47,300 acres in San Luis Obispo County	Estrella River– to Salinas River and Pacific Ocean (Monterey bay National Marine Sanctuary)	Paso Robles	County of San Luis Obispo, Shandon (ptn)

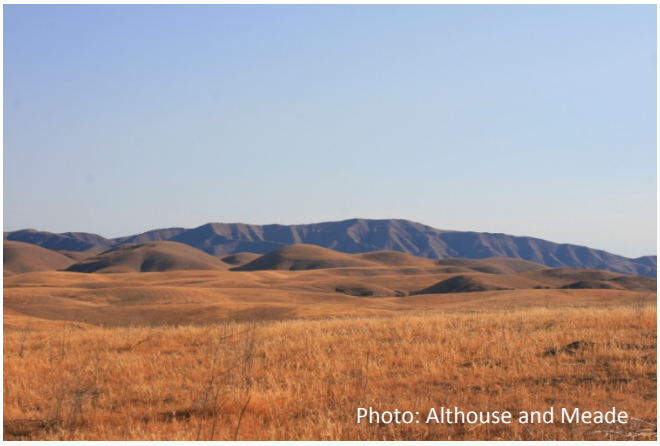
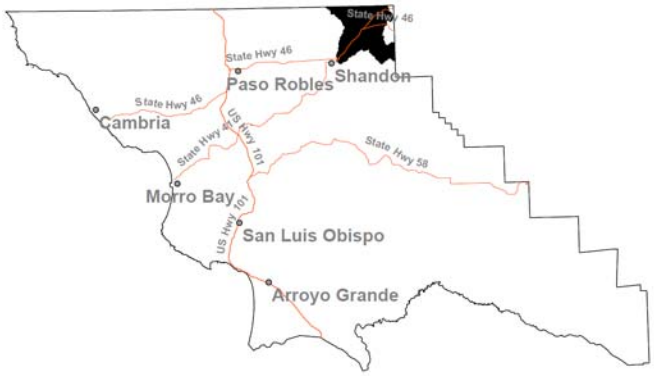


Photo: Althouse and Meade



Existing Watershed Plans:

No existing plans to date

Description:

The Cholame Watershed is located in the North easterly portion of San Luis Obispo County and crosses the county line entering Monterey County to the North. 47,300 acres of the total 151,701 acres are located in SLO County. The watershed is drained by Cholame Creek and its tributaries southeastward and westward into the Estrella River (a tributary to the Salinas River) with the confluence of the Estrella River and Cholame Creek occurring at the town of Shandon. The Cholame Creek watershed is a lightly-populated rural setting and drains into an alluvial valley and surrounding mountains within an ecosystem characterized of grassland, chaparral, oak woodland, and sagebrush and minor amounts of cropland, primarily consisting of grain or hay crops. The dominant land use is agriculture. The area around Shandon Valley is generally used most intensively for agriculture because of better soils and water availability. Irrigated production has increased during the last 10 years, particularly in vineyards and alfalfa. Dry farming and grazing operations encompass the rest of the agricultural uses. The highest watershed elevation within the County limits is at approximately 2,476-feet with the lowest elevation occurring at approximately 1,017-feet. The watersheds headwaters are in Diablo Range in Monterey County.

Cholame Creek Watershed

Characteristics

	Physical Setting	
	Rainfall	Average Annual: 11-14 in. (NRCS shapefile, 2010)
	Air Temperature	Summer Range (August 1990-2012): 53°-96°F Winter Range (December 1990-2012): 32°-60°F (Parkfield, not in Watershed, NOAA National Climatic Data Center, viewed 2013)
	Geology Description	Hopper Canyon and Palo Prieto Canyon sub-watersheds are composed of flat highly infiltrative Quaternary material – Category #3. Cholame Valley sub-watershed is moderate steep moderately infiltrative early to mid-Tertiary headwaters with flat highly infiltrative Quaternary inland – Category #7. Blue Point and Red Rock Canyon are steep moderately infiltrative early to mid-Tertiary geologic materials – Category #8 (Bell, pers. comm., 2013). Groundwater is found in Holocene age alluvium and the Pleistocene age Paso Robles Formation. Specific yield values in the Paso Robles Sub-basin range from 7 to 11 percent, with an average specific yield of 9 percent. DWR (1958) estimated the average specific yield for the sub-basin at 8 percent. DWR (1999) estimated the average specific yield at 15 percent for the alluvium and 9 percent for the Paso Robles Formation. Alluvium. Holocene age alluvium consists of unconsolidated, fine- to coarse-grained sand with pebbles and boulders. This alluvium provides limited amounts of groundwater and reaches 130 feet thick near the Salinas River, but is generally less than 30 feet thick in the minor stream valleys (DWR 1999). Its high permeability results in a well production capability that often exceeds 1,000 gallons per minute. Groundwater in Holocene alluvium is mostly unconfined. The Pleistocene age Paso Robles Formation, which is the most important source of groundwater in the sub-basin, is unconsolidated, poorly sorted, and consists of sand, silt, gravel, and clay. This formation reaches a thickness of 2,000 feet and groundwater within it is generally confined (Chipping 1987). The Rinconada fault zone forms a leaky barrier that restricts flow from the Atascadero portion of the subbasin to the main part of the Paso Robles Subbasin (Fugro West 2001a). The San Andreas fault restricts subsurface flow (Ca. Dept. of Water Resources, 2003).

Cholame Creek Watershed

	Hydrology	
	Stream Gage	Yes; USGS 11147800 (Cholame Creek near Highway 41)(USGS, viewed August 2013) *Last data recorded in 1973*
	Hydrology Models	Yes; CCRWQCB. 2011. Synthetic flow record to determine Pathogen TMDL; SLO County Flood Control and Water Conservation District, 2008, Paso Robles Groundwater Sub-basin Water Banking Feasibility Study. *Limited Information for Cholame Valley Basin, Study area is Paso Subbasin as a whole*
	Peak Flow	750 cfs (USGS, 1959-73) (USGS, viewed August 2013).
	Base Flow	5.79 cfs (USGS, 1959-1972) (USGS, viewed August 2013).
	Flood Reports	No source identified
	Flood Control Structures	Bridges: 2 over Cholame Creek on Cholame Valley Road and N. Bitterwater Road (PWD Bridges GIS Layer)
	Areas of Flood Risk	No data available
	Biological Setting	
	Vegetation Cover	Primarily non-native annual grassland with cropland, blue oak-foothill pine consisting mainly of blue oak, coastal scrub consisting mainly of California sagebrush, montane hardwood consisting mainly of oak (SLO County vegetation shapefile, 1990). *Data limited by age of shapefile* Wetlands, perennial grasslands, and riparian woodland are also present in this watershed (Althouse and Meade, 2013). There is a great diversity of plant communities including Central Coast Scrub, Serpentine Scrub, Coast Live Oak Woodland, and Central Coast Cottonwood-Sycamore Riparian Forest in addition to vast areas of non-native grassland. (U.S. Department of Transportation, 2006) *Data limited to observations, not complete inventory*
	Invasive Species	Invasive species known to occur in this watershed include: Tree of Heaven (*Ailanthus altissima*), Tamarisk (*Tamarix* spp.), Russian knapweed (*Acroptilon repens*), Russian thistle (*Salsola tragus*) (Althouse and Mead, 2013). *Data limited to observations, not complete inventory*
	Special Status Wildlife and Plants	Key: FE - Federal endangered, FT - Federal threatened, SE - State endangered, ST - State threatened, SSC - State Species of Special Concern; FP- Fully Protected, SA – Special Animal, CRPR – CA rare plant rank (CNDDB, viewed August, 2013) Locations listed refer to USGS 7.5’ quadrangle names. Only the portion overlapping the watershed boundary was considered.

Cholame Creek Watershed

Data limited to observations, not complete inventory

Special Status Species	Status	CHOLAME	CHOLAME HILLS	CHOLAME VALLEY	CURRY MOUNTAIN	GARZA PEAK	ORCHARD PEAK	PARKFIELD	SMITH MOUNTAIN	STOCKDALE MTN	TENT HILLS	THE DARK HOLE
Animals												
American badger	SSC	x										x
bank swallow	ST	x										
burrowing owl	SSC (Burrow sites, some wintering sites)	x					x					
California red-legged frog	FT						x				x	
California tiger salamander	FT; ST		x	x			x					
coast horned lizard	SSC	x		x			x					
giant kangaroo rat	FE; SE	x										
grasshopper sparrow	SSC (Nesting)	x										
mountain plover	SSC (Wintering)	x		x								
Nelson's antelope squirrel	ST										x	
pallid bat	SSC	x	x		x		x	x		x		
prairie falcon	SA (Nesting)	x	x	x	x	x	x	x	x	x	x	x
San Joaquin kit fox	FE; ST	x		x								
San Joaquin whipsnake	SSC	x										
silvery legless lizard	SSC	x										
Tulare grasshopper mouse	SSC	x					x					
western pond turtle	SSC	x						x				
western spadefoot	SSC		x	x			x					
Plants												
delicate bluecup	CRPR 1B.3									x		
Eastwood's buckwheat	CRPR 1B.3				x			x				
Hall's tarplant	CRPR 1B.1	x		x							x	x
Hernandez spineflower	CRPR 1B.2		x									
Indian Valley bush-mallow	CRPR 1B.2									x		
Lemmon's jewel-flower	CRPR 1B.2	x					x				x	

Cholame Creek Watershed

Species	Status	CHOLAME	CHOLAME HILLS	CHOLAME VALLEY	CURRY MOUNTAIN	GARZA PEAK	ORCHARD PEAK	PARKFIELD	SMITH MOUNTAIN	STOCKDALE MTN	TENT HILLS	THE DARK HOLE
Mason's neststraw	CRPR 1B.1	x		x								
Munz's tidy-tips	CRPR 1B.2	x										
oval-leaved snapdragon	CRPR 4.2	x		x			x				x	
pale-yellow layia	CRPR 1B.1			x			x				x	
Panoche pepper-grass	CRPR 1B.2						x					
round-leaved filaree	CRPR 1B.1	x										
shining navarretia	CRPR 1B.2	x										
showy golden madia	CRPR 1B.1	x		x			x				x	x
straight-awned spineflower	CRPR 1B.3	x										
Temblor buckwheat	CRPR 1B.2						x	x			x	

Steelhead Streams	None (CNDDB Database. Viewed 2013)
Stream Habitat Inventory	No source identified
Fish Passage Barriers	None (PAD Database viewed 2013)
Designated Critical Habitat	Yes; California Red-legged Frog, California Tiger Salamander Area (USFWS Critical Habitat Portal, viewed 2013)
Habitat Conservation Plans	Yes; North San Luis Obispo County Habitat Conservation Program, multiple species *HCP for North County as a whole, not watershed specific*
Other Environmental Resources	Paso Robles Groundwater Basin (SLO County Flood Control and Water Conservation District, 2007)
Land Use	
Jurisdictions & Local Communities	County of San Luis Obispo, Shandon
% Urbanized	1.4% (Commercial Service, Rural Residential, Rural Suburban, Rural Single Family) (SLO County LUC)
% Agricultural	98.4%, (SLO County LUC)
% Other	0%
Planning Areas	Shandon – Carrizo Planning Area
Potential growth areas	Shandon

Cholame Creek Watershed

	Facilities Present	None identified
	Commercial Uses	Agriculture
	Demographics	
	Population	74 in watershed (US Census Block, 2010)
	Race and Ethnicity	Watershed: 63.5% Caucasian; 35.1% Latino; 1.4% Other (US Census Block, 2010) Shandon: 53.5% Latino; 41.1% Caucasian; 2.6% Black or African American; 0.9% American Indian and Alaska Native; 0.5% Asian; 0.2% Pacific Islander; 1.2% Mixed Race (US Census, 2010)
	Income	MHI $66,966 in watershed (tract spans 6 watershed) (U.S. Census Tract, 2010). MHI $65,260 in Shandon (US Census, 2010)
	Disadvantaged Communities	No; 4% of individuals below poverty level in watershed (U.S. Census Tract, 2010) (tract spans 6 watershed). 19.1% of individuals are below poverty level in Shandon (US Census, 2010)
	Water Supply	
	Water Management Entities	County Service Area (CSA) No. l6 (Shandon); outlying properties served by individual wells - Depths of wells ranged from 100 to 665 feet (Carollo, 2012)
	Groundwater	Yes; Paso Robles and Cholame Valley Basins Cholame Basin: Subsurface groundwater inflow and outflow has been reported to occur through the Paso Robles Formation (Bader 1969)(Ca. Dept. of Water Resources, 2003).
	Surface Water	No public reservoirs.
	Imported Water	CSA 16 holds an allocation for 100 acre-feet per year (AFY) of the State Water Project supply. In order to use this allocation, a turn-out on the State Water Project, which runs north-south along the eastern edge of San Juan Road, would have to be built. (SLO County, 2012)
	Recycled/ Desalinated Water	None
	Key groundwater percolation area(s)	No data on key areas identified Natural recharge in the basin is derived from infiltration of precipitation, seepage from streams, and return flow from irrigation and other uses (Ca. Dept. of Water Resources, 2003)
	Water budget	Yes; Todd Engineers, 2013, for Paso Robles Groundwater Subbasin Update

Cholame Creek Watershed

	Water Uses	
	Beneficial Uses	*Cholame Valley* - Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Warm Freshwater habitat (WARM), Threatened, or Endangered Species (RARE), and Commercial and Sport Fishing (COMM) (CCRWQCB, 2011)
	Other Unique Characteristics	
	Cholame Creek	Cholame Valley and the large alkali salt flat in the area offer unique habitat to specialized plant species. A unique natural community known as valley sink scrub exists in the watershed. Characterized by low, open succulent shrublands dominated by alkali tolerant plant species such as frankenia (*Frankenia salina*), spear oracle (*Atriplex patula*), wedge scale (*Atriplex truncata*), alkali weed (*Cressa truxillensis*) and saltgrass (*Districhlis spicata*). Valley scrub soil are typically dark, sticky clay soils that often have a brilliant white salty crust over them. Grazing has altered much of this community where non-native grasses now dominate much of the Cholame Valley floor.
	Palo Prieto Canyon	Located at an important crossroads for San Joaquin kit fox populations of the the Carrizo Plain, the Ciervo-Panoche, and the Salinas River Valley. Properties contain a natural lake (sag pond), Grant Lake, and numerous small vernal and seasonal ponds and pools. Wetlands support rare amphibians, crustaceans and flora. Sag ponds historically habitat for California tiger salamander, Western spadefoot toad and California toad.
	Shandon Vicinity Creek Area and Habitat Area	The riparian forest and a portion of the adjacent upland areas associated with the Estrella River and San Juan Creek in the vicinity of Shandon are important wildlife habitat for the San Joaquin kit fox, Western burrowing owl and other wildlife species, and serve as important corridors for wildlife movement. Another important wildlife movement corridor is located near the base of the hillside near the eastern edge of Shandon.
	Climate Change Considerations	
		See IRWMP, 2014 Section H, Climate Change *Data is general to County, not Watershed specific*

Watershed Codes

Cholame Creek Watershed

CalWater / DWR Number	HA	Hydrologic Area Name	HSA	Hydrologic Sub-Area Name	SWRCB Number	CDF Super Planning	CDF Watershed Name
3317.000903	0	Undefined	0	Undefined	317.00	Cholame	Blue Point
3317.000904	0	Undefined	0	Undefined	317.00	Cholame	Cholame Valley
3317.000503	0	Undefined	0	Undefined	317.00	Cholame	Hopper Canyon (ptn)
3317.000906	0	Undefined	0	Undefined	317.00	Cholame	Palo Prieto Canyon
3317.000902	0	Undefined	0	Undefined	317.00	Cholame	Red Rock Canyon
3317.000907	0	Undefined	0	Undefined	317.00	Cholame	West side Cholame Valley
3317.000905	0	Undefined	0	Undefined	317.00	Cholame	E. of Palo Preito Canyon

Source: Excerpt from California Interagency Watershed Map of 1999, Calwater 2.2.1 (CA Resource Agency, 2004 Update)

Major Changes in the Watershed

- Historic junction where different Native American tribes have met to trade goods from their respective areas. Coastal tribes met with valley tribes and tribes of the Sierra Nevada to exchange food, materials for tools and ceremonial pieces.
- The Migueleno people, a subset of the Salinan cultural group, were the native residents project area. Because of the early impact on them by Spanish colonization beginning in 1769, ethnographic data is limited.
- The Salinan people are believed to have occupied the region for at least several thousand years. Population figures suggest that their numbers probably never surpassed 3,000. The eastern boundary, which followed summit of the Diablo Range, appears to have been somewhat fluid and shared with bands of the Southern Valley Yokut.
- 1844 – Rancho Cholame established. A 26,622 acre Mexican land grant given by Governor Manuel Micheltorena to Mauricio Gonzales from the holdings of Mission San Miguel Arcangel.
- 1867 – William Welles Hollister (1818-1886) purchased Rancho Cholame, sells to Edgar Jack in 1869 who uses it mainly as a sheep range.
- Cholame has long been an area of activity and a place to congregate for residents of the area. A post office was first established there on May 14, 1873.
- The Jack Ranch Café was built in 1923, serving locals and travelers alike. A clump of ailanthus (tree of heaven) trees marks the spot of the former Cholame-Orange schoolhouse.

Cholame Creek Watershed

- In November 1966, Howard Jack sold the 21,450 hectares (53,000 acres) Cholame Ranch to the Hearst Corp., which still owns and operates the Jack Ranch as it is commonly known.

Watershed Health by Major Tributary

Tributary Name	Ephemeral / Perennial	303d Listed/ TMDLs	Pollution Sources NP (non-point) MP (Major Point)	Environmental Flows
Blue Point	Undetermined	Not assessed	Undetermined	Not assessed
Cholame Valley	Perennial	Yes; Boron, Chloride, Electrical Conductivity, Escherichia coli (E. coli), Fecal Coliform, Low Dissolved Oxygen, Sodium	Grazing Related sources, Natural Sources, Source Unknown	Not assessed
Hopper Canyon (ptn)	Undetermined	Not assessed	Undetermined	Not assessed
Palo Prieto Canyon	Undetermined	Not assessed	Undetermined	Not assessed
Red Rock Canyon	Undetermined	Not assessed	Undetermined	Not assessed

Watershed Health by Major Groundwater Basin

Groundwater Basin	Estimated Safe Yield	Water Availability Constraints (Carollo, 2012)	Drinking Water Standard Exceedance	Water Quality Objective Exceedance (CCRWQCB, 2011)
Paso Robles	97,700 AF (SLO County, 2012)	Physical limitations, water rights and water quality	Yes; see description below.	None
Cholame Valley*	No data available	Physical limitations and water quality	None	None

Cholame Creek Watershed

**Last specific groundwater study in 1969.*

Groundwater Qualty Description: The predominant cations in the watershed are calcium and sodium and the predominant anion is bicarbonate (DWR 1981; Fugro West 2001b). Analysis of 48 public supply wells in the sub-basin show an average Total Dissolved Solid (TDS) content of 614 ppm and a range of 346 to 1,670 ppm.

In one study (Fugro West 2001b), 23 of 74 samples collected exceeded one or more of the drinking water standards. The Maximum Contaminant Level (MCL) for TDS was exceeded in 14 samples (Fugro West 2001b). The MCL for nitrate was exceeded in 4 samples. The Bradley portion of the sub-basin had the highest percentage of samples with constituents higher than the drinking water standards (Fugro West, 2001b) Trends show an increasing concentration of nitrate between the Salinas and Huer Huero rivers south of San Miguel (Fugro West, 2001b; Carollo, 2012)

Generally high concentrations of TDS, chlorides, sulfates, and boron were identified for the Cholame Valley Basin (Chipping, et al., 1993).

Primary Issues

Issue	***Potential Causes***	***Referenced from***
Significant water level declines	Range of groundwater uses in close proximity, including agricultural irrigation, municipal supply wells, golf course irrigation, and a relatively dense aggregation of rural "ranchette" users	Carollo, 2012
Limited groundwater quality information – Cholame Valley basin		Carollo, 2012
No yield information and limited hydrogeologic information for Cholame Basin		Carollo, 2012
Groundwater Quality	high concentrations of TDS, chlorides, sulfates, and boron	Carollo, 2012
Cholame Creek 303(d) listed for Boron, Chloride, Electrical Conductivity, Escherichia coli (E. coli), Fecal Coliform, Low Dissolved Oxygen, Sodium	Grazing Related sources, Natural Sources	Carollo, 2012

Paso Robles Groundwater Basin: According to multiple studies of this basin, annual basin pumping is now at or near the basin's perennial yield (Paso Robles Groundwater Management Plan, 2011). From 1997–2009, water levels declined on average of 2–6 feet per year, depending on the location. A Todd Engineering monitoring report (2007) indicated that the Basin was not approaching the safe yield level and some areas were experiencing significant declines in groundwater elevations. A later study

completed in 2009 suggested groundwater pumping was approaching the safe yield level of the Basin. The 2010 Resource Capacity Study prepared by the San Luis Obispo County Planning Department stated that the Basin is now near or at perennial yield levels. The County Board of Supervisors certified a Level of Severity III for the Paso Robles Basin in October, 2012, due to declining water levels. In August 2013, the County Board of Supervisors adopted an urgency ordinance to limit new draws from the Paso Robles Groundwater basin.

The Paso Robles Groundwater Basin encompasses an area of approximately 790 square miles and is the primary, and in many places the only, source of water available to property owners throughout Northern San Luis Obispo County. The basin extends from the Garden Farms area south of Atascadero to San Ardo in Monterey County, and from the Highway 101 corridor east to Shandon. The basin supplies water for 29% of SLO County's population and an estimated 40% of the agricultural production of the County (Paso Robles Groundwater Basin Blue Ribbon Committee, 2013).

Paso Robles, Atascadero, and Templeton draw their water from the groundwater basin (primarily the Atascadero sub-basin), the underflow of the Salinas River and from the Nacimiento Pipeline Project. The remaining communities (Shandon, San Miguel, Creston, Bradley, Camp Roberts, Whitley Gardens, and Garden Farms) are entirely dependent on the groundwater basin for their water supply.

An established bi-annual well monitoring program overseen by the SLO County Flood Control and Water Conservation District reported these water declines in groundwater dependent communities (Through April, 2013):

a. Shandon: Water levels have dropped approximately 17 feet from 2011 to 2013.
b. Creston: Water levels have dropped approximately 25 feet from 2011 to 2013.
c. Estrella: Water levels have dropped approximately 25 feet from 2011 to 2013.
d. San Juan: Water levels have dropped approximately 5 feet from 2012 to 2013.

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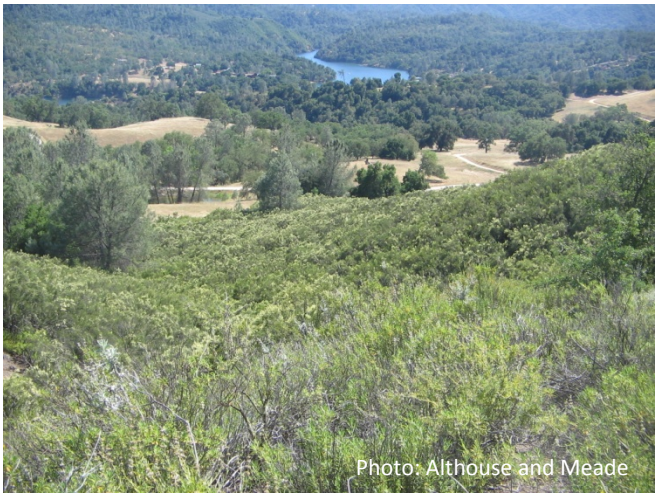
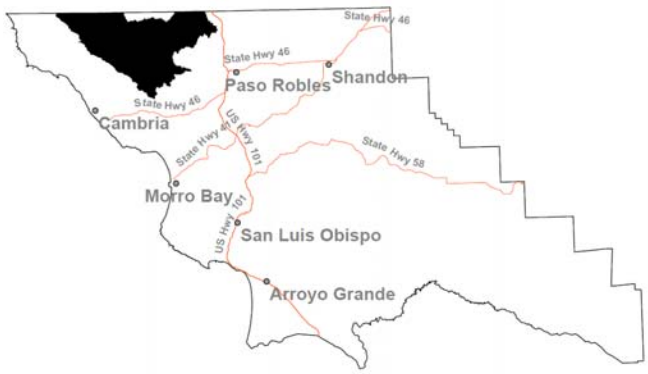
Significant Studies in Progress:

None identified

Nacimiento River Watershed

Hydrologic Unit Name	Water Planning Area	Acreage	Flows to	Groundwater Basin(s)	Jurisdictions
Salinas 9	Nacimiento WPA 16	237,886 acres total with 128,974 acres within San Luis Obispo County (includes 6,578 acres of San Antonio Watershed)	Salinas River (through Monterey County) to Pacific Ocean (Monterey Bay National Marine Sanctuary)	Paso Robles; Tierra Redonda Mountain (San Antonio watershed)	County of San Luis Obispo, Heritage Ranch, Oak Shores, Camp Roberts (ptn)





Description:

The Nacimiento River Watershed is located at the northern boundary of San Luis Obispo County with a few sub-watersheds located in Monterey County. For the purposes of this snapshot, only those sub-watersheds within SLO County are included in this data compilation. This watershed also contains 6,578 acres of land from the San Antonio Watershed, however, the area within the County is relatively small and best categorized with its neighboring Nacimiento Watershed for the purposes of this project. The Nacimiento Watershed contains Lake Nacimiento, the largest reservoir in San Luis Obispo County totaling 2.26 square miles. The highest elevation in the watershed occurs in the Santa Lucia Range, within the Los Padres National Forest, reaching approximately 3,560 feet above sea level. Lake Nacimiento supplies water to the Salinas Valley and, as of 2010, supplies supplemental water to some communities in San Luis Obispo County. The dominant land use is agriculture with a majority of land used for rural grazing activities.

Existing Watershed Plans:

San Antonio and Nacimiento Rivers Watershed Management Plan (MCWRA, 2008)

Nacimiento River Watershed

Characteristics

	Physical Setting	
	Rainfall	Average Annual: 11 in. (valley floor) - 41 in. (mountain) (NRCS shapefile, 2010)
	Air Temperature	Summer Range (August 1990-2012): 49°-95°F Winter Range (December 1990-2012): 32°-62°F (Las Tablas Creek, NOAA National Climatic Data Center, viewed 2013)
	Geology Description	Franklin Creek and Town Creek are steep Franciscan non-infiltrative headwaters with flat pre-Quaternary moderate infiltrative valleys – Category #1. Nacimiento Ranch sub-watershed is flat highly infiltrative Quaternary – Category #3. Oro Fino Canyon is moderate steep moderately infiltrative early to mid-Tertiary headwaters and flat highly infiltrative Quaternary inland – Category #6. Little Burnett Creek, Gould Creek, Bee Rock Canyon and Tobacco Creek have steep Franciscan non-infiltrative headwaters – Category #7. Las Tablas Creek is steep moderately infiltrative early to mid-Tertiary material – Category #8. Asbury Creek, Kavanaugh Creek and Pebblestone Creek are steep moderately infiltrative early to mid-Tertiary headwaters with flat pre-Quaternary moderately infiltrative valleys – Category #11. Turtle Creek, Gulch House Creek, Snake Creek, Nacimiento Reservior and Dip Creek have steep pre-Quaternary non-infiltrative headwaters – Category #13. Mile 7 to 11 Nacimiento River is moderately infiltrative early to mid-Tertiary headwaters with a flat Quaternary highly infiltrative valley – Category #14 (Bell, pers. comm., 2013). Paso Robles Formation and Vaqueros Formation are important for groundwater in the Nacimiento River watershed. Paso Roble Formation are mid to late Pliocene aged alluvial sediments. Early stream channels supplied sediment to the Nacimiento basin, allowing for the formation of sedimentary structures from mineral grains, and pebbles. (Chipping, 1987). Vaqueros Formation is well-developed east of Nacimiento and San Antonio Lakes. It is evidenced by bold sandstone and conglomerate outcroppings with beds of shale. The sandstone here is subject to cave formation due to the dissolution of calcareous cements. Lime Mountain has enough shell debris such that mine operations for liming materials is economically viable. The environment in which these fossils and associated Vaqueros materials were deposited is consistent with shallow tropical seas. Pancho Rico Formation is present near the Nacimiento Dam. It is considered to be the deep-water equivalent of the Santa Margarita Formation. The Pancho Rico contains Pliocene aged fossils and has been mapped up to 20

Nacimiento River Watershed

		feet thick in the Adelaida area (Chipping, 1987).
	Hydrology	
	Stream Gage	Yes; USGS 11149500 (near San Miguel); USGS 11149400 (Nacimiento Dam near Bradley); USGA 11148900 (Sapaque Creek near Bryson) (USGS, viewed August 2013)
	Hydrology Models	Yes; Monterey County Water Resources Association. 2001. Hydrologic impact of Salinas Valley Water Project.
	Peak Flow	Near Bryson: 57,600 cfs. (USGS, 1971-2012) Near Bradley: 8,110 cfs. (USGS, 1958-2012) (north of SLO County)
	Base Flow	Bradley: 402 cfs. (USGS, viewed August 2013) (north of SLO County)
	Flood Reports	No source identified
	Flood Control Structures	Nacimiento River Dam Bridges: 4 over Las Tablas Creek on Klau Mine Road, Chimney Rock Road and Cypress Mountain Drive (2); 2 over Klau Creek on Cypress Mountain Drive (PWD Bridges GIS Layer)
	Areas of Flood Risk	Nacimiento River and Canyon; Dip, Franklin, Las Tablas, Snake and Town Creeks; and Lake Nacimiento - Flood Hazard (FH). These water courses are identified as having potential flood hazards and development proposals must incorporate mitigation measures. All are natural drainage courses which should be maintained in their natural state with native vegetation and habitats retained. At Lake Nacimiento, the 800 foot elevation constitutes the lake's high water level and no habitable structures are permitted below the 825 foot elevation. (Heritage Ranch Village Plan, 2013)
	Biological Setting	
	Vegetation Cover	Primarily blue oak and foothill pine; chamise chaparral; coastal oak woodland with blue oak and coast live oak; blue oak woodland with non-native annual grassland; valley oak woodland with; coast live oak, foothill pine and valley oak; mixed chaparral consisting mainly of chamise and serpentine Manzanita; orchards, vineyards, and nurseries; and montane hardwood-conifer consisting mainly of coulter pine. (SLO County vegetation shapefile, 1990) *Data limited by age of shapefile* Grassland, scrub/shrub, mixed forest (MCWRA, 2008) Native perennial bunchgrasses occur within the watershed. Valley needlegrass grassland habitat occurs within the watershed; valley needlegrass grassland is designated as a sensitive natural community by the California Department of Fish and Wildlife (Althouse and Meade, Inc. 2006). Valley oak woodland occurs within the watershed, and is designated a sensitive natural community by the California Department of Fish and Wildlife (Althouse and Meade, 2013).

Nacimiento River Watershed

	Wetlands and riparian woodland are present in this watershed, and although their areal extent is small relative to the size of the watershed these habitats provide crucial ecosystem functions (Althouse and Meade, 2013). *Data limited to observations, not complete inventory*
Invasive Species	Bromus spp. (MCWRA, 2008) *Data limited to observations, not complete inventory*
Special Status Wildlife and Plants	Key: FE - Federal endangered, FT - Federal threatened, SE - State endangered, ST - State threatened, SSC - State Species of Special Concern; FP- Fully Protected, SA – Special Animal, CRPR – CA rare plant rank (CNDDB, viewed August, 2013) Locations listed refer to USGS 7.5' quadrangle names. Only the portion overlapping the watershed boundary was considered. *Data limited to observations, not complete inventory*

Species	Status	ADELAIDA	ALDER PEAK	BEAR CANYON	BRADLEY	BRYSON	BURNETT PEAK	BURRO MOUNTAIN	CAPE SAN MARTIN	CONE PEAK	CYPRESS MTN	JOLON	LIME MTN	PASO ROBLES	PEBBLESTONE SHUT-IN	SAN MIGUEL	SAN SIMEON	TIERRA REDONDO MOUNTAIN
Animals																		
American badger	SSC	x			x									x		x		
bald eagle	Federally Delisted; SE; FP				x							x	x					
Burrowing owl	SSC (Burrow sites, some wintering sites)				x											x		
California linderiella	SA											x						
California red-legged frog	FT										**x**		**x**					
California tiger salamander	FT; ST		x									x						
Coast Range newt	SSC								x									
ferruginous hawk	SA (Wintering)				x													
foothill yellow-legged frog	SSC							x										
golden eagle	FP				x													
hoary bat	SSC				x													
monarch butterfly	SA		x				x	x									x	

Nacimiento River Watershed

Species	Status	ADELAIDA	ALDER PEAK	BEAR CANYON	BRADLEY	BRYSON	BURNETT PEAK	BURRO MOUNTAIN	CAPE SAN MARTIN	CONE PEAK	CYPRESS MTN	JOLON	LIME MTN	PASO ROBLES	PEBBLESTONE SHUT-IN	SAN MIGUEL	SAN SIMEON	TIERRA REDONDO MOUNTAIN
Monterey dusky-footed woodrat	SSC	x																
pallid bat	SSC				x				x									
prairie falcon	SA (Nesting)	x			x	x	x	x				x	x		x		x	x
Salinas pocket mouse	SSC	x			x											x		
San Joaquin kit fox	FE; ST	x			x									x		x		
San Joaquin whipsnake	SSC				x													
silvery legless lizard	SSC				x	x												
tricolored blackbird	SSC (Nesting)						x					x						
vernal pool fairy shrimp	FT	x			x							x				x		
western pond turtle	SSC		x	x	x					x		x	x			x		
western spadefoot	SSC	x			x											x		
						Plants												
Abbott's bush-mallow	CRPR 1B.1					x												
Arroyo de la Cruz manzanita	CRPR 1B.2														x		x	
bristlecone fir	CRPR 1B.3		x						x									
caper-fruited tropidocarpum	CRPR 1B.1						x					x						
Carmel Valley bush-mallow	CRPR 1B.2										x							
Carmel Valley malacothrix	CRPR 1B.2				x													
chaparral ragwort	CRPR 2B.2						x					x						
Cone Peak bedstraw	CRPR 1B.3		x				x	x	x	x								
Cook's triteleia	CRPR 1B.3	x					x	x			x		x		x			

Nacimiento River Watershed

Species	Status	ADELAIDA	ALDER PEAK	BEAR CANYON	BRADLEY	BRYSON	BURNETT PEAK	BURRO MOUNTAIN	CAPE SAN MARTIN	CONE PEAK	CYPRESS MTN	JOLON	LIME MTN	PASO ROBLES	PEBBLESTONE SHUT-IN	SAN MIGUEL	SAN SIMEON	TIERRA REDONDO MOUNTAIN
Davidson's bush-mallow	CRPR 1B.2					x	x					x						x
dwarf calycadenia	CRPR 1B.1	x	x		x		x	x		x		x	x					
Hardham's bedstraw	CRPR 1B.3		x				x	x			x						x	
Hardham's evening-primrose	CRPR 1B.2				x													
Hickman's checkerbloom	CRPR 1B.3		x	x			x	x				x						
hooked popcorn-flower	CRPR 1B.2		x		x		x	x				x	x					
Jolon clarkia	CRPR 1B.2									x								
Kellogg's horkelia	CRPR 1B.1													x				
Koch's cord moss	CRPR 1B.3				x													
late-flowered mariposa-lily	CRPR 1B.2		x				x	x							x			
Lemmon's jewel-flower	CRPR 1B.2	x			x													
most beautiful jewel-flower	CRPR 1B.2		x				x	x			x		x		x		x	
Norris' beard moss	CRPR 2B.2						x					x						
pale-yellow layia	CRPR 1B.1	x			x	x	x											x
Palmer's monardella	CRPR 1B.2		x				x	x										
Pecho manzanita	CRPR 1B.2										x		x					
prostrate vernal pool navarretia	CRPR 1B.1				x													
round-leaved filaree	CRPR 1B.1																	x
San Antonio collinsia	CRPR 1B.2						x					x						
San Benito fritillary	CRPR 1B.2		x						x									

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Species	Status	ADELAIDA	ALDER PEAK	BEAR CANYON	BRADLEY	BRYSON	BURNETT PEAK	BURRO MOUNTAIN	CAPE SAN MARTIN	CONE PEAK	CYPRESS MTN	JOLON	LIME MTN	PASO ROBLES	PEBBLESTONE SHUT-IN	SAN MIGUEL	SAN SIMEON	TIERRA REDONDO MOUNTAIN
San Luis Obispo owl's-clover	CRPR 1B.2	x			x													
San Luis Obispo sedge	CRPR 1B.2					x	x								x		x	
San Simeon baccharis	CRPR 1B.2							x										
Santa Cruz Mountains pussypaws	CRPR 1B.1		x				x	x				x						
Santa Lucia bedstraw	CRPR 1B.3							x		x								
Santa Lucia bush-mallow	CRPR 1B.2										x							
Santa Lucia dwarf rush	CRPR 1B.2	x																
Santa Lucia manzanita	CRPR 1B.2										x		x					
Santa Lucia mint	SE		x				x	x				x						
Santa Lucia purple amole	FT				x		x					x						
shining navarretia	CRPR 1B.2	x			x									x				
small-flowered calycadenia	CRPR 1B.2		x					x										
straight-awned spineflower	CRPR 1B.3				x													
Toro manzanita	CRPR 1B.2						x											
umbrella larkspur	CRPR 1B.3	x																
yellow-flowered eriastrum	CRPR 1B.2		x									x	x					x

Steelhead Streams	Yes; Lower Nacimiento River (San Antonio and Nacimiento Rivers Watershed Management Plan)
Stream Habitat Inventory	Yes; DFG, lower Nacimiento River 2001; upper Nacimiento River 2002.
Fish Passage Barriers	PAD ID: 718837- Dam at Nacimiento Lake on Nacimiento River. Total Barrier. PAD ID: 719387- Dam at Las Tables Creek on Nacimiento River. Unknown Status. PAD ID: 719878- Dam at Hughes Reservoir on Aqua Fria Creek, tributary

Nacimiento River Watershed

		to Nacimiento River. Total Barrier. 3.95239 miles upstream. PAD ID: 719877- Dam at El Piojo on El Piojo Creek, tributary to Nacimiento River. Total Barrier. 6.01579 miles upstream PAD ID: 718839- Dam at Lower Stony Valley on Stony Creek, tributary to Nacimiento River. Total Barrier. 52.86096 miles upstream. PAD ID: 705325- Non-structural barrier (waterfall, grade, temperature etc) on Salmon Creek, a tributary to Nacimiento River. Total Barrier (End of anadromy). 37.1145 miles upstream.
	Designated Critical Habitat	Yes; Nacimiento *River (*50 CFR *226* - National Marine Fisheries Service - NOAA) and Vernal Pool Fairy Shrimp (US Fish and Wildlife – Critical Habitat Mapper)
	Habitat Conservation Plans	Yes; North San Luis County Habitat Conservation Program – Multiple species, initially San Joaquin kit fox *General for North County, not watershed specific*
	Other Environmental Resources	Paso Robles Groundwater Basin, Nacimiento Reservoir, Lake Nacimiento, Tierra Redonda Mountain National Area, various fisheries
	Land Use	
	Jurisdictions & Local Communities	County of San Luis Obispo, Oak Shores (Lake Nacimiento), Heritage Ranch (Lake Nacimiento), Camp Roberts
	% Urbanized	5.02% [0.02% commercial retail; 5% residential (oak shores & Heritage Ranch)] (SLO County LUC)
	% Agricultural	46%: fields, vineyards, orchards and rangeland (SLO County LUC)
	% Other	49.4 % (9.4% open space; 15.7% public facilities (majority Camp Roberts); 2.3% recreation; 22% rural lands)(SLO County LUC)
	Planning Areas	Nacimiento and Adelaida Planning Areas (SLO County)
	Potential growth areas	Oak Shores, Heritage Ranch (SLO County General Plan, 2011)
	Facilities Present	Camp Roberts, Lake Nacimiento , Heritage Ranch CSD pump station at the southerly bank of Nacimiento River downstream from lake (Heritage Ranch CSD); Jim McWilliams Water Treatment Plant (Heritage Ranch CSD); Heritage Ranch Sewer Treatment Plant; Oak Shores Wastewater Treatment Plant (County service area 7A);
	Commercial Uses	Recreation at Lake Nacimiento, grazing, mining, agriculture, retail and service providers.
	Demographics	
	Population	3,108 in watershed (US Census Blocks, 2010) 337 in the community of Oak Shores (US Census, 2010)
	Race and Ethnicity	Watershed: Caucasian, representing 84%. Latinos represent 10.4%. Mixed-race representing 2.5%. The remaining races each represent less than 4%, including African American, American Indian, Pacific Islander, and Asian. (US Census Blocks, 2010) Oak Shores: 86.9% Caucasian; 9.2% Latino and Hispanic; 1.5% Mixed Race; 0.9%

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		Black or African American; 0.9% Asian (2010 Demographic Profile Data, US Census Bureau)
	Income	MHI $62,721 in watershed (US Census Tracts, 2010) MHI $ 97,639 in Oak Shores (US Census, 2010)
	Disadvantaged Communities	No; 4.0% of individuals are below poverty level in Watershed (US Census Tracts, 2010) 8.6% of individuals below poverty level in Oak Shores (2007-2011 American Community Survey 5-Year Estimates)
	Water Supply	
	Water Management Entities	Heritage Ranch CSD; Nacimiento Water company (Oak Shores); outlying areas served by Individual wells
	Groundwater	Yes; Paso Robles Basin; Tierra Redonda Mountain (San Antonio watershed); Understream flows (Heritage Ranch CSD – Nacimiento River)
	Surface Water	Yes. Lake Nacimiento (SLOCountyWater.org) San Luis Obispo County Flood Control and Water Conservation District has an entitlement for 17,500 acre feet per year from the lake (secured in 1959). Of this amount, the proposed Nacimiento Water Supply Project will transport a maximum of 15,750 acre feet of water per year from the lake for delivery to 5 purveyors throughout San Luis Obispo County. (San Luis Obispo County Nacimiento Water project website) Atascadero Mutual Water Company – 2,000 afy City of Paso Robles – 4,000 afy Templeton Community Services District – 250 afy City of San Luis Obispo Community Services Area 10, Benefit Zone A (Southern Cayucos)
	Imported Water	None
	Recycled/Desalinated Water	None
	Key aquifer percolation zone	No data available
	Water budget	Yes; Todd Engineers, 2013 for Paso Robles Groundwater Sub-basin Management Plan Update
	Water Uses	
	Beneficial Uses	*Nacimiento Reservoir* – Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Cold Fresh Water Habitat (COLD), Warm Freshwater habitat (WARM), Spawning, Reproduction, and/or Early Development (SPWN), Threatened, or Endangered Species (RARE), Freshwater Replenishment (FRESH), Navigation (NAV), and Commercial and Sport Fishing (COMM).

Nacimiento River Watershed

	Upper Las Tablas Creek - Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Cold Fresh Water Habitat (COLD), Spawning, Reproduction, and/or Early Development (SPWN), Threatened, or Endangered Species (RARE), and Commercial and Sport Fishing (COMM). *Salinas River (Nacimiento River-Santa Margarita Reservoir)* - Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Industrial Process Supply (PRO), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Cold Fresh Water Habitat (COLD), Warm Freshwater habitat (WARM), Migration of Aquatic Organisms (MIGR), Spawning, Reproduction, and/or Early Development (SPWN), Threatened, or Endangered Species (RARE) and Commercial and Sport Fishing (COMM). (CCRWQCB, 2011)
Other Unique Characteristics	
Historical Resources	Adelaida School (9001 Chimney Rock Road, Paso Robles); Adelaida Cemetery (Chimney Rock & Adelaida Road, Paso Robles); J.F. MacGillivray Residence (PLN_DES_HISTORIC_POINTS GIS layer)
Tierra Redonda Mountain	Broad table-top mountain that encompasses approximately 1,300 acres in the Santa Lucia Range. Has outstanding ecological importance and been given high priority for preservation by State Department of Parks and Recreation
Camp Roberts	Thirteen ponds and reservoirs (65 acres) which are either natural or artificially created for use as livestock ponds or flood control. A total of 120 aquatic species representing 64 families of organisms were recorded from rivers, ponds, and reservoirs on Camp Roberts. Eight species of fish, 44% of species native to Salinas River drainage, have been recorded at Camp Roberts from Nacimiento River
Buena Vista and Klau mines	Identified as the primary point and nonpoint sources of mercury contamination in the watershed. Annual mercury loadings depend on the proportion of mercury rich sediment that reaches the lake in any given year. Mercury mining and ore processing operations occurred at the mines between 1868 and 1970. The site consists of mining wastes and releases from two abandoned mercury mines located on contiguous properties on a northwest-southeast trending ridge of the Santa Lucia Range in the California coastal mountains
Nacimiento Dam	Facilities include the embankment dam, powerplant, spillway, and high and low-level reservoir outlets. Created primarily for water conservation, flood control and replenishment of the Salinas River groundwater basin, it is one of the major recreational attractions on the Central Coast. It has 165 miles of shoreline and a maximum pool surface of 5,400 acres supporting swimming, boating, water skiing, and fishing
Los Padres National	Forest vegetation classified into two major types: chaparral and forested lands. Provides a diverse wildlife habitat with 23 threatened and endangered animals.

Nacimiento River Watershed

	Forest	Member of the California Condor Recovery Program and has been an active player in the reintroduction of California condors in the wild. The Forest has one endangered plant, two threatened plant species and 71 sensitive plant species. Management of riparian vegetation focuses on supporting fish and wildlife populations. There are over 870,000 acres of livestock grazing allotments in the Forest. Considerable risk of wildfire in the forest, with historic average of 25,000 acres burned per year.
	Hearst Ranch	Hearst Ranch encompasses an impressive variety of habitats and topography - elevations on the Ranch rise from sea level along the coastline to 3,600 feet on some of the peaks along the ridgeline of the Santa Lucia Mountains. Grassland-covered coastal terraces extend to natural sea bluffs, rocky headlands and sandy beaches. Over 1,400 acres of riparian woodland is present on the property. Riparian woodland species include Sycamore and Coast live oak.
	Grasslands Reserve Program	1478 acres held by the Natural Resource Conservation Service (National Conservation Easement Database, viewed 2013)
	Lake Nacimiento Drive Interlake Road – Sensitive Resource Area (SRA).	The portion of this route from Chimney Rock Road northwest to the Monterey County line is an adopted State scenic highway route. All development in this corridor must be sited to minimize visual impacts. (Heritage Ranch Village Plan, 2013)
	Climate Change Considerations	
		See IRWMP, 2014 Section X. Climate Change *Data is general for County, not watershed specific*

Watershed Codes

CalWater / DWR Number	HA	Hydrologic Area Name	HSA	Hydrologic Sub-Area Name	SWRCB Name	CDF Super Planning Watershed Name	CDF Watershed Name
3309.810504	8	Paso Robles	1	Atascadero	309.81	Bradley	Oro Fino Canony
3309.810504	8	Paso Robles	1	Atascadero	309.81	S. Side San Antonio Res.	Bee Rock Canyon
3309.810504	8	Paso Robles	1	Atascadero	309.81	Bryson	Turtle Creek
3309.810504	8	Paso Robles	1	Atascadero	309.81	Bryson	Gulch House Creek (ptn in Monterey Co.)
3309.810504	8	Paso Robles	1	Atascadero	309.81	Lynch Canyon	Asbury Creek
3309.810504	8	Paso Robles	1	Atascadero	309.81	Lynch Canyon	Pebblestone
3309.810504	8	Paso Robles	1	Atascadero	309.81	Lynch Canyon	Kavanaugh Creek

Nacimiento River Watershed

3309.810504	8	Paso Robles	1	Atascadero	309.81	McLaughlin Canyon	Tobacco Creek
3309.810504	8	Paso Robles	1	Atascadero	309.81	McLaughlin Canyon	Gould Creek
3309.810504	8	Paso Robles	1	Atascadero	309.81	McLaughlin Canyon	Town Creek
3309.810504	8	Paso Robles	1	Atascadero	309.81	McLaughlin Canyon	S. Shore Nacimiento Res.
3309.810504	8	Paso Robles	1	Atascadero	309.81	McLaughlin Canyon	Little Burnett Creek
3309.810504	8	Paso Robles	1	Atascadero	309.81	Adelaida	Lower Las Tablas Creek
3309.810504	8	Paso Robles	1	Atascadero	309.81	Adelaida	Franklin Creek
3309.810504	8	Paso Robles	1	Atascadero	309.81	Adelaida	Dip Creek
3309.810504	8	Paso Robles	1	Atascadero	309.81	Adelaida	Snake Creek
3309.810504	8	Paso Robles	1	Atascadero	309.81	Adelaida	Upper Las Tablas Creek
3309.810504	8	Paso Robles	1	Atascadero	309.81	Lower Nacimiento River	Mile 7 to 11 Nacimiento River
3309.810504	8	Paso Robles	1	Atascadero	309.81	Lower Nacimiento River	Nacimiento Ranch
3309.820000	n/a	Paso Robles	n/a	Nacimiento Reservoir	309.82	Undefined	Undefined

Source: Excerpt from California Interagency Watershed Map of 1999, Calwater 2.2.1 (CA Resource Agency, 2004 Update)

Major Changes in the Watershed

- In 1956, Nacimiento Dam was constructed, designed to provide irrigation water, flood control, and recreation opportunities by the Monterey County Water Authority. They use the lake to recharge their groundwater basins.
- Prior to dam construction Nacimiento River and Las Tablas Creek were among the most important Salinas River tributaries for steelhead populations.
- The concern of low water elevation in Lake Nacimiento is almost an annual occurrence during the fall season. Lake Nacimiento is totally dependent on annual rain fall run off into the main body of the lake. The lake is the most active watershed in the State and can reach capacity during one wet season. Conversely, low rain fall years severely impact the amount of water collected each winter. Historically, the lake has gone through multiple years of high water elevations and corresponding multiple years with low water elevations.
- Heritage Ranch did not really become established and begin to grow before early 70s
- For much of the Ranch's history the community was mainly used as a summer recreation area and as part-time residences with very little development growth. However in the last few years, stimulated by high property values in the County, we have experienced rapid growth with larger traditional single family homes with full-time residents living on large lots with extensive

landscaping. A new school has been built, and plans are moving forward with a commercial retail center.

- The Water Conservation Plan and a Staged Water Use Reduction Plan
- Jill McWilliams Water Treatment Plant constructed in 1994 to comply with Surface Water Treatment Rules.
- The effluent is then collected and piped to the adjacent ephemeral drainage way which courses northeasterly to and across Camp Roberts Military Reservation. The point of discharge, and the entire service area of the District, overlays the "Paso Robles" geological formation whose characteristics include low permeability. The discharge flows largely intact for about 1.5 miles whereupon it percolates almost immediately upon meeting the "Monterey" formation, characteristically a high permeable formation. The discharge is down gradient of Lake Nacimiento, but can occasionally flow all the way to the Nacimiento River during significant storm runoff. The discharge does not impact the water quality of Lake Nacimiento.
- The wastewater system serving Oak Shores adjacent to Lake Nacimiento was originally constructed as part of the community's development in 1974 and is operated by the county as part of County Service Area No. 7. There are 606 total water connections at Oak Shores, and it's the county's understanding that there are 275 permanent residents. North Shore Boat and Ski Club has a total of 40 service connections with 15 permanent residents; and Lake Nacimiento Resort has 300 connections total for their campgrounds with 10-year-round residents – for a grand total of 946 total service connections.
- Oak Shores WWTP constructed in 1975
- 2007 – EPA installed several monitoring probes in streams to measure effects of acid mine drainage on pH levels
- 2008 – Assessment to identify endangered, threatened or sensitive plants or animals that may be affected by site contamination.

Watershed Health – Summary by Major Tributary

Tributary Name	**Ephemeral / Perennial**	**303d Listed/ TMDLs**	**Pollution Sources** NP (non-point) MP (Major Point)	**Environmental Flows**
Asbury Creek	Undetermined	Not assessed	Undetermined	Not assessed
Dip Creek	Undetermined	Not assessed	Undetermined	Not assessed
Franklin Creek	Undetermined	Not assessed	Undetermined	Not assessed
Gould Creek	Undetermined	Not assessed	Undetermined	Not assessed
Gulch House Creek	Undetermined	Not assessed	Undetermined	Not assessed
Kavanaugh Creek	Undetermined	Not assessed	Undetermined	Not assessed
Little Burnett Creek	Undetermined	Not assessed	Undetermined	Not assessed
Las Tablas Creek	Undetermined	Yes; Metals	Surface Mining	Not assessed
Mile 7 to 11 Nacimiento River	Undetermined	Not assessed	Undetermined	Not assessed
Nacimiento Ranch	Undetermined	Not assessed	Undetermined	Not assessed

Nacimiento Reservior	Perennial	Yes; Mercury, Metals	Surface mining, Natural Sources	Not assessed
Pebblestone Creek	Undetermined	Not assessed	Undetermined	Not assessed
Snake Creek	Undetermined	Not assessed	Undetermined	Not assessed
Tobacco Creek	Undetermined	Not assessed	Undetermined	Not assessed
Town Creek	Undetermined	Not assessed	Undetermined	Not assessed
Turtle Creek	Undetermined	Not assessed	Undetermined	Not assessed
*Bee Rock Canyon (subset)	Undetermined	Not assessed	Undetermined	Not assessed
*Oro Fino Canyon (subset)	Undetermined	Not assessed	Undetermined	Not assessed

Watershed Health – Summary by Major Groundwater Basin

Groundwater Basin	Estimated Safe Yield	Water Availability Constraints	Drinking Water Standard Exceedance	Water Quality Objective Exceedance
Paso Robles	97,700 AF (SLO County, 2012)	Physical limitations, water rights and water quality issues (Carollo, 2012).	Yes; see description below.	None (CCRWQCB, 2011)

Groundwater Quality Description: The predominant cations in the watershed are calcium and sodium and the predominant anion is bicarbonate (DWR 1981; Fugro West 2001b). Analysis of 48 public supply wells in the subbasin show an average Total Dissolved Solid (TDS) content of 614 ppm and a range of 346 to 1,670 ppm.

In one study (Fugro West 2001b), 23 of 74 samples collected exceeded one or more of the drinking water standards. The Maximum Contaminant Level (MCL) for TDS was exceeded in 14 samples (Fugro West 2001b). The MCL for nitrate was exceeded in 4 samples. The Bradley portion of the subbasin had the highest percentage of samples with constituents higher than the drinking water standards (Fugro West, 2001b) Trends show an increasing concentration of nitrate between the Salinas and Huer Huero rivers south of San Miguel (Fugro West, 2001b; Carollo, 2012)

Generally high concentrations of TDS, chlorides, sulfates, and boron were identified for the Cholame Valley Basin (Chipping, et al., 1993). Increasing chlorides in the deep, historically artesian aquifer northeast of Creston (Carollo, 2012)

Primary Issues

Nacimiento River Watershed

Issue	*Potential Causes*	*Referenced from*
Significant water level declines	Range of groundwater uses in close proximity, including agricultural irrigation, municipal supply wells, golf course irrigation, and a relatively dense aggregation of rural "ranchette") users	Carollo, 2012
Groundwater Quality	High concentrations of TDS, chlorides, sulfates, and boron	Carollo, 2012
Las Tablas Creek 303(d) listed for metals	Surface mining	Carollo, 2012
Nacimiento Reservoir 303(d) listed for mercury, metals	Surface mining, natural sources	Carollo, 2012
Steelhead passage	Nacimiento River in this watershed includes designated critical habitat which must be considered in planning.	50 CFR *226* - National Marine Fisheries Service - NOAA

According to multiple studies of this basin, annual basin pumping is now at or near the basin's perennial yield (Paso Robles Groundwater Management Plan, 2011). From 1997–2009, water levels declined on average of 2–6 feet per year, depending on the location. A Todd Engineering monitoring report (2007) indicated that the Basin was not approaching the safe yield level and some areas were experiencing significant declines in groundwater elevations. A later study completed in 2009 suggested groundwater pumping was approaching the safe yield level of the Basin. The 2010 Resource Capacity Study prepared by the San Luis Obispo County Planning Department stated that the Basin is now near or at perennial yield levels. The County Board of Supervisors certified a Level of Severity III for the Paso Robles Basin in October, 2012, due to declining water levels. In August 2013, the County Board of Supervisors adopted an urgency ordinance to limit new draws from the Paso Robles Groundwater basin.

The Paso Robles Groundwater Basin encompasses an area of approximately 790 square miles and is the primary, and in many places the only, source of water available to property owners throughout Northern San Luis Obispo County. The basin extends from the Garden Farms area south of Atascadero to San Ardo in Monterey County, and from the Highway 101 corridor east to Shandon. The basin supplies water for 29% of SLO County's population and an estimated 40% of the agricultural production of the County (Paso Robles Groundwater Basin Blue Ribbon Committee, 2013).

Paso Robles, Atascadero, and Templeton draw their water from the groundwater basin (primarily the Atascadero sub-basin), the underflow of the Salinas River and from the Nacimiento Pipeline Project. The remaining communities (Shandon, San Miguel, Creston, Bradley, Camp Roberts, Whitley Gardens, and Garden Farms) are entirely dependent on the groundwater basin for their water supply.

An established bi-annual well monitoring program overseen by the SLO County Flood Control and Water Conservation District reported these water declines in groundwater dependent communities (Through April, 2013):

a. Shandon: Water levels have dropped approximately 17 feet from 2011 to 2013.
b. Creston: Water levels have dropped approximately 25 feet from 2011 to 2013.
c. Estrella: Water levels have dropped approximately 25 feet from 2011 to 2013.
d. San Juan: Water levels have dropped approximately 5 feet from 2012 to 2013.

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