

# 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



Photo: Althouse and Meade

### **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

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	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	<p>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.</p> <p>Grassy sub-watershed is moderate steep moderately infiltrative early to mid-Tertiary headwaters and flat highly infiltrative Quaternary inland.</p> <p>Wilson Canyon and the Middle and West Branches of Huer Huero Creek are moderately infiltrative early to mid-Tertiary headwaters with flat Quaternary highly infiltrative valleys (Bell, pers. comm., 2013).</p> <p>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. 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 (DWR 1979). This formation reaches a thickness of 2,000 feet and groundwater within it is generally confined (DWR 1958).</p>
	Hydrology	
	Stream Gage	Yes; USGS 11147600 (Huer Huero Creek at Geneseo Road)

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		(USGS, data last recorded in 1972, 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	13,800 cfs (USGS, 1959-72, viewed August 2013) <i>Data last recorded in 1972</i>
	Base Flow	5.86 cfs (USGS, 1959-72, viewed August 2013) <i>Data last recorded in 1972</i>
	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 <ul style="list-style-type: none"> <li>• All areas along Huer Huero Creek</li> <li>• The area south of the airport from Dry Creek</li> <li>• The area along Linne Road</li> </ul> (City of Paso Robles, 2005)
	<b>Biological Setting</b>	
	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) <i>Data limited by age of shapefile</i>  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). <i>Data limited to observations, not complete inventory</i>
	Invasive Species	Silverleaf horsenettle ( <i>Solanum elaeagnifolium</i> ) is known from a small patch on the side of Highway 58 near Huerhuero Road. Tree of heaven ( <i>Ailanthus altissima</i> ) is widespread. Medusahead ( <i>Elymus [=Taeniatherum] caput-medusae</i> ) is known from rangelands in Paso Robles. Other invasive species may be present (Althouse and Meade, 2013). <i>Data limited to observations, not complete inventory</i>
	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 (CNDDDB, viewed August, 2013)

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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
<b>Animals</b>										
<i>American badger</i>	SSC	x						x		x
<i>golden eagle</i>	FP				x					
<i>prairie falcon</i>	SA		x	x			x	x		
<i>San Joaquin kit fox</i>	FE; ST				x			x	x	
<i>silvery legless lizard</i>	SSC									x
<i>Swainson's hawk</i>	ST		x	x			x	x		
<i>vernal pool fairy shrimp</i>	FT		x	x	x					
<i>western pond turtle</i>	SSC							x		x
<i>western spadefoot</i>	SSC		x			x		x		x
<b>Plants</b>										
<i>chaparral ragwort</i>	CRPR 2B.2							x		x
<i>dwarf calycadenia</i>	CRPR 1B.1	x	x							
<i>Hardham's evening-primrose</i>	CRPR 1B.2					x				x
<i>hooked popcornflower</i>	CRPR 1B.2									x
<i>La Panza mariposa-lily</i>	CRPR 1B.3					x		x		x
<i>pale-yellow layia</i>	CRPR 1B.1									x
<i>San Luis Obispo owl's-clover</i>	CRPR 1B.2				x					
<i>shining navarretia</i>	CRPR 1B.2		x		x	x		x		

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Special Status Species	Status	CAMATTA RANCH	CRESTON	ESTRELLA	PASO ROBLES	SANTA MARGARITA	SHANDON	SHEDD CANYON	TEMPLETON	WILSON CORNER
<i>spreading navarretia</i>	FT		x					x		
<i>straight-awned spineflower</i>	CRPR 1B.3					x				
<i>yellow-flowered eriastrum</i>	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 <i>O. mykiss</i> 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  <i>HCP for North County not Watershed specific</i>									
Other Environmental Resources	Paso Robles Groundwater Basin									
<b>Land Use</b>										
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									

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	Commercial Uses	Creston Sand and Gravel Pit owned by Union Asphalt; Agriculture, retail, service providers
	<b>Demographics</b>	
	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)
	<b>Water Supply</b>	
	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 Sub-basin Water Banking Feasibility Study, 2008).
	Water budget	Yes; Todd Engineers, 2013 for Paso Robles Groundwater Sub-basin Update
	<b>Water Uses</b>	
	Beneficial Uses	<i>Huer Huero Creek</i> - Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water

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		Recreation (REC-2), Wildlife Habitat (WILD), Warm Freshwater habitat (WARM), Threatened, or Endangered Species (RARE), and Commercial and Sport Fishing (COMM). (CCRWQCB, 2011)
	<b>Other Unique Characteristics</b>	
	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)
	<b>Climate Change Considerations</b>	
		See IRWMP, 2014 Section H, Climate Change  <i>Data is general for County, not Watershed specific.</i>

## 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

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						Creek	
<b>3309.811603</b>	8	Paso Robles	1	Atascadero	309.81	Lower Huerhuerto Creek	Dry Canyon
<b>3309.811604</b>	8	Paso Robles	1	Atascadero	309.81	Lower Huerhuerto Creek	Union School
<b>3309.811605</b>	8	Paso Robles	1	Atascadero	309.81	Lower Huerhuerto Creek	El Pomar
<b>3309.811606</b>	8	Paso Robles	1	Atascadero	309.81	Lower Huerhuerto Creek	Huerto Creek
<b>3309.811607</b>	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 grant 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*

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*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.

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## *Watershed Health by Major Tributary*

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

<b>Groundwater Basin</b>	<b>Estimated Safe Yield</b>	<b>Water Availability Constraints</b>	<b>Drinking Water Standard Exceedance</b>	<b>Water Quality Objective Exceedance</b>
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 cations 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

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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**

<b>Issue</b>	<b>Potential Causes</b>	<b>Referenced from</b>
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.

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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