

LA Aqueduct Centennial 1913-2013

Facts about the LA Aqueduct Provided by the Mono Lake Committee

One hundred years ago, the Los Angeles Department of Water & Power (LADWP) completed the Los Angeles Aqueduct. The LA Aqueduct diverts water from the Owens River to Los Angeles, and was built to meet the anticipated growth of a region with limited local water resources. The LA Aqueduct was designed and built during a time when the attitude towards water was “to use water resources of public lands for the ultimate greatest good of the greatest number,” thus the development of large scale infrastructure to divert water for domestic water supply and development.

The LA Aqueduct was an engineering marvel of its time, constructed to deliver water via gravity through a network of pipes, channels, tunnels and reservoirs. In 1940 the Mono Extension was completed and diversions began in 1941, extending the reach of the aqueduct 105-miles north to the Mono Basin. The Mono Extension diverts water from four of the five major tributary streams that feed Mono Lake. Excessive water diversions dried up the streams and caused Mono Lake to drop to 6,372 feet above sea level, 45 vertical feet below the lake’s pre-diversion level of 6,417 feet above sea level.

In 1970 a “second barrel” was added to the LA Aqueduct, known as the Second LA Aqueduct. The Second LA Aqueduct was constructed across the Mojave Desert to increase the capacity for diverting water to LA. Diversions increased, and the impacts of water diversions intensified. The Mono Lake Committee formed in 1978 to save Mono Lake and to protect the Mono Basin from the impacts of excessive water diversions. Over the years the Mono Lake Committee, with the support of the National Audubon Society and CalTrout, pursued litigation to protect Mono Lake through the enforcement of two legal principles: the Public Trust Doctrine and California Fish and Game codes. The Public Trust Doctrine is a legal doctrine that protects navigable bodies of water for the use and benefit of all people, and California Fish and Game codes are considered a legislative expression of the Public Trust that protects fisheries, such as in the tributary streams of Mono Lake. A landmark 1994 decision by the State Water Resources Control Board known as D-1631 amended LADWP’s water licenses in the Mono Basin to protect the fisheries of Mono Lake’s tributary streams and other public trust values. D-1631 also mandated Mono Lake to rise to 6,392 feet above sea level. Excessive diversions to LA ended in the early 1990s, and MLC continues to work to protect and restore the Mono Basin and educate the public.

Three Aqueducts in One			
	First LAA	Mono Extension	Second LAA
Year Completed	1913	1940	1970
Cost (\$)	< 23 million	> 38 million	89 million
Length (mi.)	233	105*	137

*Mono Basin water travels most of this distance in the Owens River.

Mono Extension Timeline

- 1912 – Land and water rights purchases began in the Mono Basin.
- 1920 – DWP and the US Reclamation Service prepared plans, surveys, and cost estimates for the Mono Extension.
- 1923 – DWP applied to the State Water Commission to appropriate the entire flow of the Mono Basin streams.
- 1930 – LA voters passed a \$38.8 million bond issue to fund the Mono Extension.
- 1934 – Work began on the Mono Extension and ended 6 years later.

The Mono Extension

- An 11-mile tunnel was drilled through the Mono Craters to divert water from Lee Vining, Parker, Walker, and Rush creeks to the Upper Owens River.
- Crowley and Grant Lake Reservoirs are the first and second largest surface reservoirs in the aqueduct system, respectively, with a combined capacity of 231,000 acre-feet.
- The average flow in the aqueduct increased from 220 to nearly 300 million gallons per day. In 1940 domestic use in LA was 175 million gallons per day for the 1.5 million inhabitants, or 116 gallons per person per day.
- DWP took as much Mono Basin water as possible between 1947 and 1982. This caused Mono Lake—one of the oldest lakes in North America—to drop 45 vertical feet, lose half of its volume, and double in salinity. Mono Lake holds approximately 2.5 million acre feet of water today and is about 2 ½ times as salty as the ocean.

- DWP exported 3.5 million acre-feet from the Mono Basin between 1941 and 2012—enough to cover the city of Los Angeles in water 11 feet deep.

	First LAA	Mono Extension	Second LAA
Construction Duration (yrs.)	5	6	5
Aqueduct Capacity (cfs)	485	400	290
Unlined Channel (mi.)	24	n/a	n/a
Lined Channel (mi.)	37	n/a	n/a
Concrete Conduit (mi.)	98	9.3	64
Steel & Concrete Pipeline (mi.)	12	1.1	69
Tunnels (mi.)	52	12.2	n/a
Other Facilities (mi.)	n/a	<1	4

The Second LAA

- In order to avoid losing water rights to still-unused Mono Basin water, in 1970 LADWP built the “second barrel” of the Los Angeles Aqueduct from the Owens Valley to LA.
- This increased the aqueduct’s capacity to 430 million gallons per day. In 1970, LA’s 2.8 million residents used 500 million gallons per day, or about 170 gallons per person per day.
- The increased capacity allowed 90% of the streamflows in the Mono and Owens Basins (in an average water year) to be diverted to Los Angeles. In order to fill the second barrel, most irrigation was turned off, groundwater pumping in the Owens Valley increased, Mono Basin diversions increased, and Mono Lake’s level dropped faster.

The Fourth and Fifth Aqueducts: The Colorado River Aqueduct and the California Aqueduct

While the Mono Basin extension was being built in the 1930s, the Metropolitan Water District (members include LA and other Southern California cities) built the Colorado River Aqueduct. While the Second LA Aqueduct was being built in the 1960s, the State of California built the California Aqueduct as part of the State Water Project. Both of these aqueducts deliver water to LA, supplementing local and LA Aqueduct supplies as needed. Unfortunately, these two aqueducts have had devastating impacts on the Colorado River and the Sacramento-San Joaquin River deltas.

The Sixth (And Final?) Aqueduct: Water Conservation and recycling in Los Angeles

- Water conservation has resulted in Los Angeles using less water today than 40 years ago, despite a population increase of over one million people.
- In 2011, LA’s per capita water use averaged 123 gallons per day, and residential use from 2005–2010 averaged under 100 gallons per day—a rate among the lowest of large western US cities, but not as low as Denver (85) or Albuquerque (70).
- As a direct result of the Mono Lake Committee’s efforts, state and federal government funding helped build water reclamation plants in Southern California. The water conserved is credited toward Mono Lake’s protection.
- LA has been developing programs to use reclaimed water for irrigation, landscaping, and industrial uses. The LA Glendale and Donald C. Tillman Water Reclamation Plants reclaim 20 and 40 million gallons per day, respectively.
- The Mono Lake Committee works with California Urban Water Conservation Council members, like Mothers of East LA Santa Isabel, who implemented an ultra-low-flush toilet distribution program, saving 38 million gallons per day, or about half the historic Mono Basin exports.
- Water generated from conservation and recycling does not have the types of ongoing negative impacts associated with the imported water from the LA Aqueducts, Colorado River Aqueduct, and State Water Project.
- You can make a difference too, wherever you live! Saving water at home protects the places your water comes from. Support the efforts of the Mono Lake Committee and other organizations working to protect and restore our shared resources. Visit us at www.monolake.org!

Sources

- ▶ LADWP.com
- ▶ MonoLake.org
- ▶ MonoBasinResearch.org
- ▶ http://en.wikipedia.org/wiki/Los_Angeles
- ▶ <http://bit.ly/16WCHuh> (Storm Over Mono)