

Imperial Valley, California 1973, 1992

These images show the Imperial Valley, on the border of California and Mexico.

This valley, also known as the Salton Sink, the Salton Basin, and the Salton Trough, is actually an extension of the Gulf of California, cut off from the Gulf by the Colorado River's delta fan. The valley was renamed Imperial by turn-of-the-century land investors.¹ The area south of the border is known as the Mexicali Valley.

Several cities are visible within the area of irrigated agriculture in the valley, which is surrounded by the natural desert. At the bottom of the sink lies the Salton Sea, the largest lake in California. It lacks an outlet to the ocean-- or rather the ocean lacks an outlet to it, since the valley lies below sea level.

The river and the sink

For thousands of years, the Colorado River flowed by the valley, above and to the east, on its way to the nearby Gulf of California. The river was higher than the valley, but it was hemmed in by its own natural "levees", land barriers on either bank built up over the years from the silt left behind by floods. With each flood these "levees" grew a bit higher and harder to break through. But once in a while the Colorado would break out and pour down into the Salton Sink, partly filling it. Then the break would fill with silt, the river would revert to its normal channel, and the basin would dry up again.

European American settlers saw that the Imperial Valley had good soils for agriculture, except for being extremely dry. In 1901 a company began diverting some Colorado River water down into the valley for irrigation, imitating what the Colorado had done naturally thousands of times. In 1905 the company lost control; during a flood the Colorado broke through the half-finished headgate of an irrigation ditch. The river kept widening the ditch, until almost the entire river was flowing into the sink rather than toward the Gulf of California. It took engineers and work crews until 1907 to return the river to its proper course, by which time a considerable lake had formed.²

Ironically, what happened as an uncontrolled accident in 1905 was later accomplished deliberately. Data from 1961-1963 indicate that where the All-American Canal (visible just north of the border) tapped into the Colorado, it carried 90% of the river's water away to the valley (5 million acre-feet annually), leaving only a tenth as much to flow toward the Gulf of California.³

Changes 1973-1992

The zoom-in images show the growth of El Centro, California, and the urban area of Mexicali/Calexico on the border (see the map). From 1970 to 1990, these cities' populations grew by the following amounts:

- El Centro: 19,272 to 31,384 (63%)
- Calexico: 10,625 to 18,633 (76%)
- Mexicali: 459,900 to 712,400 (55%)⁴

The level of the Salton Sea is now sustained by an inflow of municipal and industrial drainage, as well as agricultural irrigation drainage, all of which flows through some of the old river beds that carried

Colorado River overspill. The evaporative concentration of selenium and other salts in this runoff now threatens birds and other wildlife which rely on the Sea. To address this problem, evaporation basins might be built to extract some of the salt. Saltwater pumping to the Gulf of California might also be attempted.

Footnotes

1. Gordon B. Oakeshott, 1971, *California's changing landscapes; a guide to the geology of the state*: New York, McGraw-Hill (388 p.), p. 20, 343.
2. Donald Worster, 1985, *Rivers of empire; water, aridity, and the growth of the American West*: New York, Pantheon (402 p.), p. 196.
3. Charles C. McDonald and Omar J. Loeltz, 1976, *Water resources of the lower Colorado River - Salton Sea area as of 1971*: U.S. Geological Survey Professional Paper 486-A (34 p.), p. A9.
4. El Centro and Calexico data are U.S. Census figures for "Calexico city" and "El Centro city". Mexicali data is for "Mexicali Conurb.", from the Consortium for International Earth Science Information Network, 1994?, *Population data collection for Mexico*: Saginaw, Mich., CIESIN.

Other references

Daniel T. MacDougal, 1914, *The Salton Sea; a study of the geography, the geology, the floristics, and the ecology of a desert basin*: Washington, D. C., Carnegie Institution, 182 p.

C.E. Grunsky, 1907, *The lower Colorado River and the Salton Basin*: Transactions of the American Society of Civil Engineers, vol. 33, no. 2, February 1907, p. 102-152.

Allen Day, 1906, *The inundation of the Salton Basin by the Colorado River and how it was caused*: Scientific American, vol. 94, 14 April 1906, p. 310-312.

George Wharton James, 1906, *The overflow of the Colorado River and the Salton Sea*: Scientific American, vol. 94, 21 April 1906, p. 328-329.

Satellite images

Note: The two 1973 scenes are mosaicked together.

LM1041037007316090 and LM1042037007314390 (mosaicked Landsat 1 MSS, 9 June / 23 May 1973)

LM4039037009218290 (Landsat 4 MSS, 30 June 1992)

Map




U.S. Geological Survey, 1947 [compiled 1947, engraved and printed 1952], Los Angeles: International Map of the World I-11, scale 1:1,000,000.

Photographs

Salton City: Courtesy of the Imperial Irrigation District.

Dogwood Canal: gate 72A, about 1 mile east of the Imperial city limits. Courtesy of the Imperial Irrigation District.

Irrigated fields: unidentified location in the Imperial Valley. Courtesy of the Imperial Irrigation District.

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