

Inflow Quality Story

Myths, Perceptions and Reality of the Salton Sea Inflows

What do we really know about the inflows to the Sea? We now know that the sustaining factor of Sea elevation relies on continued agricultural runoff, but some fear that the inflows tell another, more fatal story about the quality of the inflow and the affects it has on current water conditions at the Salton Sea. To better understand how the conditions at the Sea have come to be, we take a walk through the various sources of inflow starting with the Colorado River.

Not only does the Colorado River supply a large portion of water used for irrigation in the Coachella Imperial and Mexicali Valleys, it also resides as a primary vehicle of transportation for many other substances via water to the Salton Sea. Throughout the Colorado River region exists the potential for these substances, both natural and unnatural, to become an essential link to the inflow to the Salton Sea. Naturally, things such as minerals and salts (see section #) subside with the makeup of soils, which eventually make their way to a water source. Selenium, a heavy metal of concern, naturally occurs within the soils of the region and once connected to water sources has been found up through the Alamo and New Rivers adding to the relatively small amounts persisting in the Sea itself and in some areas have been recorded in numbers of concern. Selenium, unlike others such as phosphate and nitrogen, already exist in the water prior to its use for irrigation.

Over the past 50 years agricultural practices have turned to a more unnatural process, relying more on human intervention than ever before. Due to the large amount of water used for irrigation, we continually have seen a decrease in the water quality of the major tributaries that support the Salton Sea. With the large use of pesticides and fertilizers, water concentrations with contaminants in certain areas, have risen to levels of concern. Phosphate and nitrogen, nutrients that occur naturally in small amounts bond to sediments, have shown an increase in rivers from fertilizing, pesticide use and from municipal and industrial waste. Traces of these have been found in all the major tributaries supplying the Salton Sea. Although, their levels have risen, should these levels warrant concern as to unhealthy or dangerous conditions?

To understand these questions, we take a walk down the New River, considered by many to be “the dirtiest river in America”. We start at the source of its inflow, 20 miles south of Mexicali, Mexico. Here, the river begins a long and diverse journey to the Salton Sea. During its trip to the border it collects raw sewage, agricultural runoff and urban & industrial waste. After the border, the first 3 miles of the river contain some of the worst water conditions it will generate throughout its 60-mile journey, violating water quality standards by several hundred-fold. Unchecked by law or practical decision-making, 20-25 million gallons per day of municipal and industrial affluent and raw sewage dump directly into the river. According to Mexican authorities, current incentives are being met with the construction of a new treatment plant at Mexicali partially funded by the U.S. EPA. Prior to this point concentrations of containments were at levels that sustain bacteria, viruses and disease-related organisms, which adversely affect health conditions for all things in the river. However, studies show that the high concentrations of these contaminants no longer were detected 3 mile down river. Lastly, only about 30 percent of the New River water even comes from Mexicali, leading to the more prominent water flow from agricultural runoff.

As it continues to flow down through the Mexicali and Imperial Valley one would expect the river to accumulate irrigation runoff with even more containments from pesticides, especially large amounts of phosphate and nitrogen from fertilizers, salts and silts. True, there are large amounts of pesticides and fertilizers at front-end application to crops; therefore large traces of these are detected in the soil. One would continue to conclude that Ag drains and rivers are quite laden with contaminants, but tests show that only a very small amount percolates through the fields. Moreover, leaving most of the contaminants bond to the sediment in the field.

It is of no debate as to how dirty the New River is at the upper most point, but to many peoples surprise the water quality cleanses itself as it nears the Sea, a process that is mostly unseen. By the time the New River reaches the Sea, nature has cleansed much of the River through its mysterious processes, making most of these semi-volatile organics and pesticides to be below detection limits. Moreover, currently tests are underway in Brawley, where wetlands construction for even further water treatment prior to entrance to the Salton Sea. So in reality, are the inflow sources to the Salton Sea really that harmful?

The largest and most apparent concern of inflows is the aiding of nutrient loading at the Salton Sea. Sediment transportation of dissolved phosphates and nitrates from fertilizers compile in the Sea creating a condition referred as eutrophic.

Myths or Reality?

Myth 1: Pollution from Mexico enters the Salton Sea

False, the New river is considered one of the dirtiest rivers in North America and many have heard it directly pollutes the Salton Sea with its 429,000 acre-feet inflow. Although it contains pathogens such as fecal coliforms, fecal streptococci and E. coli, heavy metals; lead (100 ppb), arsenic (19 ppb), cadmium (18 ppb), thallium (6.8 ppb), antimony (129.2 ppb), boron (1,100 ppb), and manganese (740 ppb) and approximately sixty-five volatile and semi-volatile organic compounds have been detected near the International Boundary. Actually, the water carried by the New River doesn't appear to be a major factor for the Sea's difficulties, while most of these pollutants are undetected in the water 3 miles up-river as it makes its way to the Salton Sea.

Myth 2: Tributary inflow sources carry large amounts of pesticides to the Salton Sea each year.

False, the State Water Resources Control Board tests water in the Salton Sea twice a year. Pesticides at any significant level are have not found in the Sea or show only small traces that do not seem to affect the present conditions. The greater problems seem to come from agricultural fertilizers as it lends hand to nutrient loading.

Myth 3: The Salton Sea contains selenium at harmful levels.

It does not. While selenium is a concern (it is a naturally occurring element that is in Colorado River water) it is not found in great amounts in the water of the Sea. There are uncomfortably high levels of selenium in the soil that make up the lake bed of the Sea, and the selenium level in some bird flesh is of concern. A human health advisory exists on consuming too much fish from the Sea due to selenium. Selenium will have to be tracked at this resource, but for now it does not rate number one on the list.

Myth 4: Inflow water at the river mouths and in the Salton Sea is drinkable.

True, according to most EPA standards for drinking water. Cross-comparing EPA standards and detected values show that almost all were found to be within the EPA standards for drinking water. One might want to change the color and get rid of the salt before considering this option. (Holdren, 99)