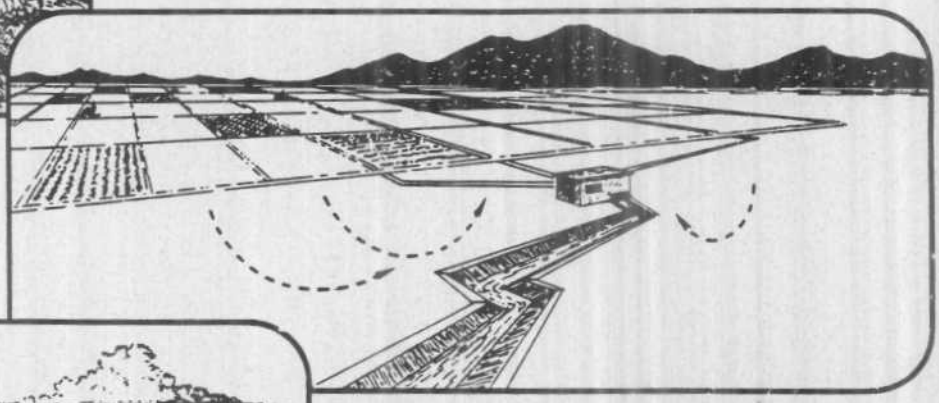
Detailed Study of Water Quality, Bottom Sediment, and Biota Associated with Irrigation Drainage in the Salton Sea Area, California, 1988-90



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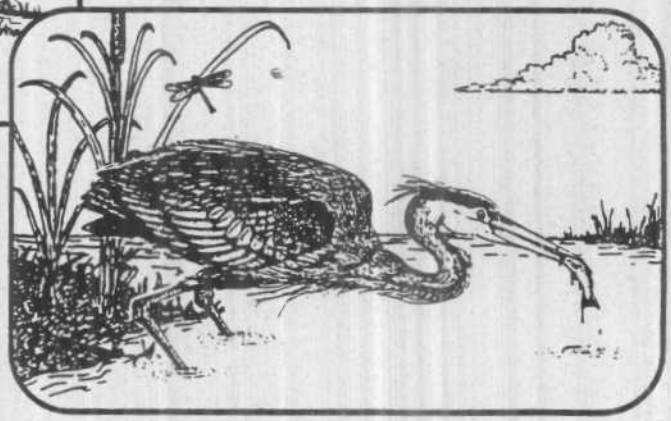

U.S. Geological Survey
Water-Resources Investigations
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DETAILED STUDY OF WATER QUALITY, BOTTOM SEDIMENT, AND BIOTA ASSOCIATED WITH IRRIGATION DRAINAGE IN THE SALTON SEA AREA, CALIFORNIA, 1988-90

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U.S. GEOLOGICAL SURVEY
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Prepared in cooperation with the
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD,
COLORADO RIVER BASIN REGION

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Conversion Factors

Multiply	By	To obtain
acre	0.4047	hectare
acre-foot (acre-ft)	1,233	cubic meter
acre-foot (acre-ft)	0.001233	cubic hectometer
cubic foot per second (ft^3/s)	0.02832	cubic meter per second
foot (ft)	0.3048	meter
foot per year (ft/yr)	0.3048	meter per year
inch (in.)	25.4	millimeter
mile (mi)	1.609	kilometer
ounce, avoirdupois (oz)	28.35	gram
pound, avoirdupois (lb)	0.4536	kilogram
ton, short	0.9072	megagram

Temperature is given in degrees Celsius (°C), which can be converted to degrees Fahrenheit (°F) by the following equation:

$$°F=1.8(°C)+32.$$

Vertical Datum

Sea Level: In this report, "sea level" refers to the National Geodetic Vertical Datum of 1929--a geodetic datum derived from a general adjustment of the first-order level nets of the United States and Canada, formerly called Sea Level Datum of 1929.

Abbreviations

CTSMP	California Toxic Substances Monitoring Program
NCBP	National Contaminant Biomonitoring Program (U.S. Fish and Wildlife Service)
NIWQP	National Irrigation Water-Quality Program (U.S. Department of the Interior)
NWR	National Wildlife Refuge
WA	Wildlife Area
WMA	Wildlife Management Area
PVC	polyvinyl chloride
kg/ha	kilogram per hectare
mg/kg	milligram per kilogram
mg/L	milligram per liter
µg/g	microgram per gram
µg/kg	microgram per kilogram
µg/L	microgram per liter
µm	micrometer
µS	microsiemen
µS/cm	microsiemen per centimeter at 25°C
ppb	part per billion
ppm	part per million
ppt	part per thousand
TU	tritium unit

Definitions of Terms

Bioaccumulation—A process by which chemicals are taken up by an organism directly (from water, for example) or through consumption of food containing the chemicals (modified from Rand and Petrocelli, 1985, p. 652).

Biomagnification—An increase in tissue concentration of a bioaccumulated constituent as the constituent passes upward through two or more trophic levels in a food chain.

Biominification—A decrease in tissue concentration of a bioaccumulated constituent as the constituent passes upward through two or more trophic levels in a food chain.

Depuration—A cleansing or purification process. For example, the elimination of contaminant burdens in clams through flushing.

Detection limit—The minimum concentration of a substance that can be identified, measured, and reported with 99-percent confidence that the analyte concentration is greater than zero (Pritt and Jones, 1989).

Reference site—As used in this report, a site that is not significantly affected by agricultural drainwater.

Reporting limit (reporting level)—The lowest measured concentration of a constituent that can be reliably reported using a given analytical method. Because of unpredictable matrix effects on detection limits, the reporting limit is set somewhat higher than the detection limit (Pritt and Jones, 1989).

Shorebirds—A diverse group of mostly migratory wading or swimming birds of the suborder Charadrii that feed primarily on invertebrates along shorelines. Most have long pointed wings, long legs, and webbed toes. [Examples in this study area are black-necked stilt (*Himantopus mexicanus*) and long-billed dowitcher (*Limnodromus scolopaceus*).]

Water birds—A general term for swimming, diving, or wading birds with lobate toes. [Examples in this study area are American coot (*Fulica americana*), eared grebe (*Podiceps nigricellis*), and white-faced ibis (*Plegadis chihi*).]

Waterfowl—Specialized swimming or diving birds of the order Anseriformes. Characteristics include long necks, narrow and pointed wings, short legs, and webbed toes. They are well insulated with down feathers, and have flattened bills with serrated edges to strain their food. [Examples in this study area are northern shoveler (*Anas clypeata*) and ruddy duck (*Oxyura jamaicensis*).]

Water year—The water year starts October 1 and ends September 30; it is designated (water year 1989, for example) by the calendar year in which it ends.

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