Interview Checklist and Questions
Roy Schroder

We are trying to figure out extent of expertise of known contributors (Setmire, Anderson and Schroeder) in the area of the Physical Geography section. Trying to excavate the possibility that there is a unique story to be told about sediments/nutrients/contaminants/salinity with regard to circulation or suggestions that these things may have about circulation.

- Is there something unique as to the distribution or composition of sediments and nutrients in the Sea and how are they affected by circulation? Can they make conclusions as to the circulation in the present via past studies?

Sediment in lakes covers such a wide range that nothing unusual in compilation occurs in the Salton Sea. Texture ranges sandy near river inputs to fine-grained organic muck away from the surface water inputs. That is the major-feature characterizing sediment texture and it is exactly what one would expect. Large-scale circulation does not move anything but very fine mineral and biological particles.

- Where are the large portion of the sediments and nutrients coming from? Agricultural fields, natural erosion, etc.

Sediment near the mouth of the rivers comes mostly from erosion of Ag fields, while interior parts of the Sea receive increasing proportions of organic matter and calcium carbonate generated within the Sea itself. N comes ultimately from fertilizer. About half of external P loading is "natural" with eroding soils and remainder is form fertilizer and domestic/municipal wastewater.

- Have there been any studies done that looked at salts/sediments/nutrients/contaminants in agricultural drains?

Nutrients and containments in drains were studied in NIWQP recon and detailed studies. Nutrients and selenium in water and sediment in drains were studied in 1994 by US B of R (Jim Setmire). Wildlife-use survey was also done at/about the same time.

- How does sediment inflow from rivers and the other sources affect depth of the Sea? Such as in near shore areas and deltas.

See notes above. Total sediment accumulation in central parts of the Sea since its formation in 1905-07 is about 25 cm, based on cores. Sediment accumulation in delta areas has never been precisely determined (by coring) but is certainly higher and probably more variable—probable on the order of a meter or more.

- What is the affect of lake circulation on sediments in general and with regard to locality? i.e. grain size, type, stratification, etc.
  If so, is there seasonal variance that needs to be addressed?

It is not lake circulation, per se, but rather proximity and size of rivers that determine the texture of sediments in the Salton Sea. Seasonal variations in inputs to lakes are often preserved as visually distinct "layers/patterns" (annual) in the accumulating sediment where there is a strong difference in the winter/summer signal. I doubt such seasonal signals are preserved in the Salton Sea, although there are certainly seasonal changes in the biological and chemical composition of the Sea itself.

- In terms of subsurface (lake bottom) geology, what are the effects of sediments with regard to groundwater infiltration and exfiltration throughout the region and at the Sea?

Just as today, the sediments that accumulated in the deepest part of the Salton trough historically were also the finest sizes. As a result, the soils on the margin of the Salton Sea are highly impermeable and there is little exchange of groundwater and surface water in the Salton Sea. A water budget investigation by the USGS in the early 1960's estimated the groundwater input to the Sea at less than one-half of one percent of the surface water component. Groundwater flow velocities in the Imperial Valley are low, as expected, and tritium analyses indicate that irrigation drainage has not penetrated more than about 50 ft beneath the land surface (less in artesian areas at the north end of the valley).

We know that there has been very few studies done on these topics, but is this an area where you could help? If not, do you know of someone who is a specialist in these topics?