

Riverbed **Facts of Life**

for Salmon Spawning in the Hanford Reach

- 7 of 10 major salmon spawning grounds —60% of the riverbed— are contaminated with previously unreported radioactive waste from old Hanford U-233 production for mini-nuclear weapons.
- Of the applicable, radioactive quality standards for riverbed water, gross alpha (15pCi/L) is probably most exceeded along the Hanford Reach. Hanford's main contributors to gross alpha radioactivity are likely U-233, Pu-239, Pu-240, and Am-241 (daughter of Pu-241).
- Strontium-90 in riverbed water is probably of concern because strontium mimics calcium and might attract salmon to spawn in relatively contaminated areas. Sr-90 sources in the Hanford Reach include N-Springs and the radioactive waste discharge pipeline at the upstream end of D-Island.
- Hanford Reach sediments include a weakly sorped, *colloidal* fraction, in chemical equilibrium with riverbed water. The colloidal fraction contains Hanford's radioactive wastes that contaminate riverbed water. This reality might also apply to toxic wastes of Hanford and other origins, such as agricultural, municipal, and industrial sources. This consideration might affect preferred treatment of waters input into the river.
- Wastes sorped onto riverbed sediments are likely preferentially released upward into the river when river level is dropping (analogous to water return from riverbank storage). This prospect might become a management consideration for Priest Rapids Dam.



Spawning salmon on the Hanford Reach.