

Summary: Smith-Bybee Lakes Management Area – 1994-95 Screening Level Risk Assessment

The Columbia Slough Sediment Project conducted in 1994-95 by the City of Portland Bureau of Environmental Services assessed risks at some 300 sediment sampling sites throughout the Columbia Slough system. Metro's screening level risk assessment for Smith-Bybee Lakes Management Area (SBMA) was included in that project, and included 8 study areas -- 4 of the 300 sites in the Columbia Slough and an additional 4 sites, two in the North Slough arm of the Columbia Slough and one in each of the two lakes. Data from the 300 sites were collected over the past 6 years; some collected in previous studies (during or after 1989); and some collected in 1994 as part of the Sediment Project. The 1994 data were collected from targeted sites (in proximity to known contamination sources) as well as random sampling points. In all, there were 104 historical, 116 random, and 80 targeted sites.

Risks for all exposure pathways assessed (human health, aquatic life, wildlife) were combined into an overall hazard ranking score for each of the 300 sites. The ranking is being used by the City as a management tool for prioritizing sites for additional focused investigation, accelerated action, or possible deferred action. The scores were divided into four classifications: An "A" classification indicates sites which pose the highest relative risks, while "D" indicates the least. Following is a count of sites by classification, including the subset of sites within SBMA. Note that the number of SBMA "D" sites (51) is an estimate due to difficulty in determining from site plot maps whether certain D sites near the SBMA boundary were within or outside SBMA.

<u>Priority</u>	<u>C. Slough sites</u>	<u>SBMA sites</u>	<u>Recommended Action</u>
A	10	1	Accelerated corrective action; RI
B	24	2	RI/FS; possible future action
C	81	12	Monitor; limited RI; delayed action
D	<u>185</u>	<u>51</u>	Delayed action
Total:	300	66	

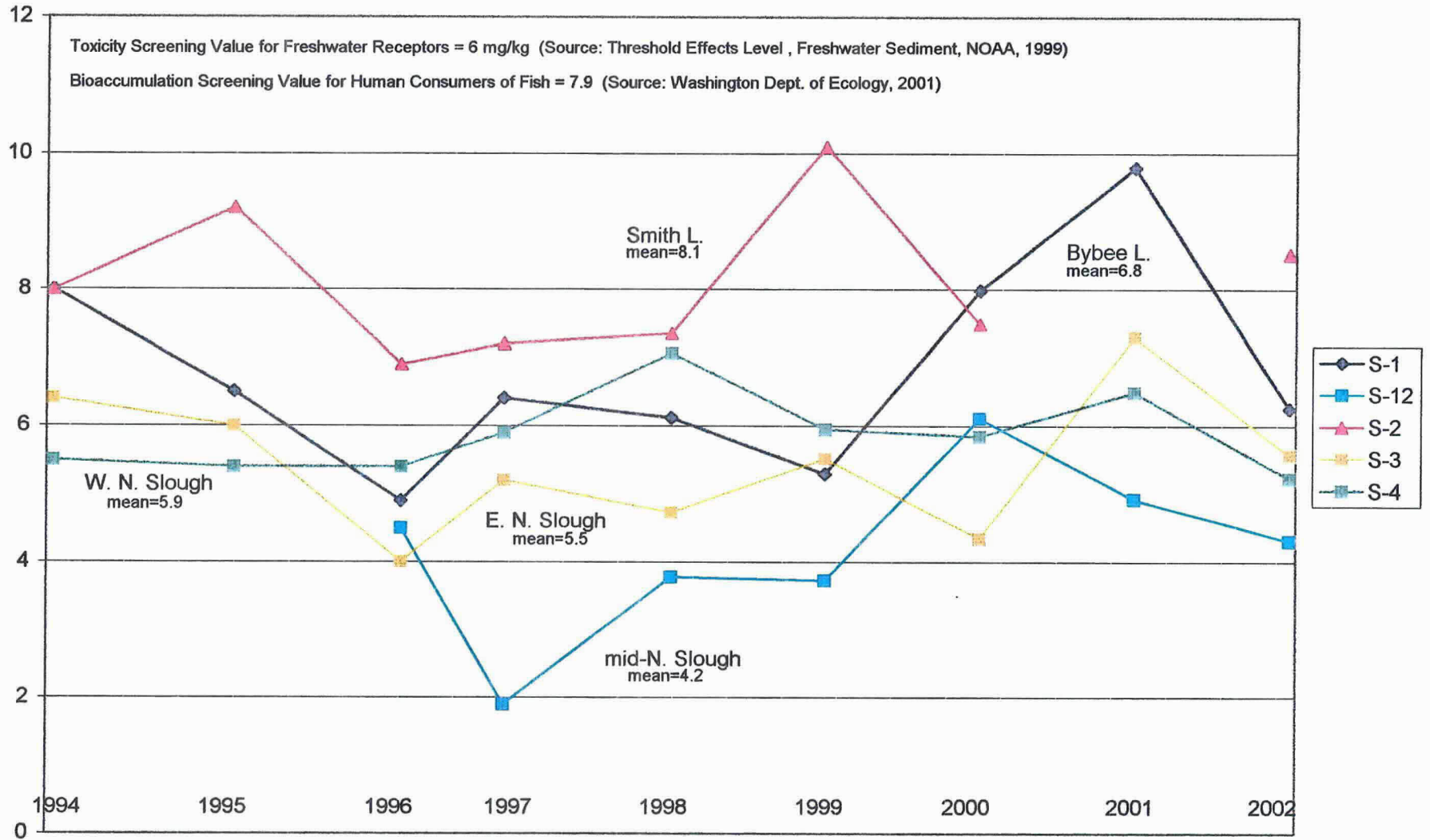
The single "A" site within SBMA is located at about mile 2.6 upstream from the confluence of the Columbia Slough and the Willamette River, just west of the Landfill Bridge and near CSO outfall no. 54. The basis for the "A" ranking of this site and an adjacent (essentially co-located) "B" site was data collected by Ecology and Environment in 1989 during remedial investigation activities at the former Union Carbide facility, located approximately 1000 feet southeast from these two sites. The other "B" site within SBMA was at about mile 4.0 of the Lower Slough, near the southwest corner of Smith Lake. This was a targeted site, located in the vicinity of the Columbia Steel/Joslyn Sludge Pond state superfund site, and also near CSO outfall no. 56. The basis for the ranking at this site was data collected in 1994 as part of the Sediment Project. Of 12 "C" sites within SBMA, only one was located in the North Slough -- at the east end. The remaining North Slough sites were all "D" sites.

In assessing risks at the 300 sites, the City estimated contaminant concentrations in interstitial water, surface water column and fish, based on concentrations in sediment. The 8 areas studied in the SBMA were assessed using the same methodology (estimated concentrations) and were also assessed using actual measured data for surface water concentrations (VOCs and metals only) and fish tissue. Using the City's method, the 8 areas were ranked as "C" and "D" sites among other sites in the Columbia Slough system. Using the method involving measured concentrations, results were not directly comparable to other Slough sites.

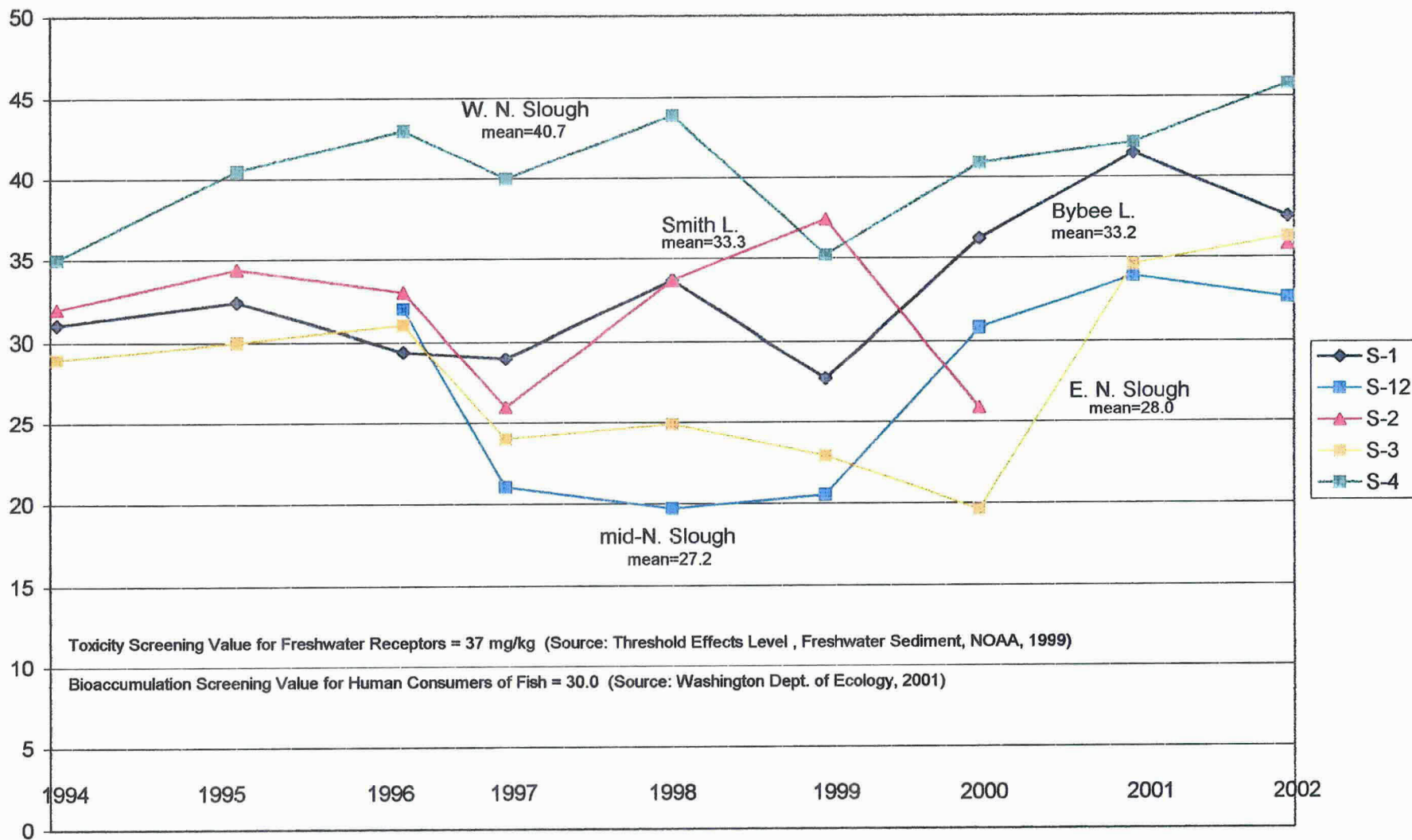
Potential risks to otters and benthic organisms were predicted to pose the greatest relative risk for 6 of the 10 Priority "A" sites in the Columbia Slough system, including the SBMA "A" site. Human health risks (from fish consumption) posed the greatest relative risks at the other 4 sites. Overall, the greatest risk for most of the remaining sites was the risk to benthic organisms. Risks found within SBMA were comparable to other areas of the Columbia Slough system. That is, there are risks to humans and wildlife from ingesting fish, and risks to benthic organisms from uptake of sediments. Other risks to human and aquatic life were estimated to be low or non-existent. Critical receptors and chemicals of concern differed by study area.

Within SBMA, heavy metals generally had the highest hazard quotients for ecosystem risks, including chromium, lead, and cobalt for benthic organisms, chromium, selenium, aluminum and mercury for the great blue heron, and lead, selenium, aluminum, and PCBs for river otters. Human health risks (from fish consumption) contributed more than 50% of the overall risk (human plus ecosystem) for Smith and Bybee lakes, due primarily to the risk posed by Aroclor 1260 and 4,4'-DDE in whole body carp; and more than 60% of the overall risk for the North Slough, due to Aroclor 1248 in whole body carp and Centrarchidae, and to Aroclor 1260 and arsenic in filet of Centrarchidae. Other contaminants of concern for fish consumption in SBMA generally were arsenic, assorted pesticides and pentachlorophenol.

Arsenic in Sediments (mg/kg) (1994-2002)



Chromium in Sediments (mg/kg) (1994-2002)



Lead in Sediments (mg/kg) (1994-2002)

