Figure SI-1. The $^{210}$Pb activity profiles (left) with counting error and linear regression of $\ln^{210}$Pb$_{as}$ (right) for Main Basin (PS-1 and PS-4; Brandenberger et al. 2008a) and Hood Canal (HC-3 and HC-5) sediment cores are plotted against mass accumulation (left axis, g/cm$^2$) and core depth (right axis, cm). Dashed lines represent the 95% confidence level of the solid linear regression line.
Figure SI-2. Total lead (Pb) concentrations in Main Basin (PS-1 and PS-4) and Hood Canal (HC-3 and HC-5) sediment cores plotted against estimated age of deposition determined from $^{210}$Pb radiochronology.

Figure SI-3. The percent of total pollen occurring as alder and total conifer for Main Basin (PS-1) and Hood Canal (HC-3 and HC-5) sediment cores plotted against estimated age. The mass production of the two-person gas chainsaw in 1929 (dashed line) and single-person chainsaw in 1945 (dotted line) shifted the dominant pollen from total conifers to alder.
Figure SI-4. Total organic carbon concentrations and diagenetic profiles modeled using a first-order diagenetic model with degradation rate constants ranging 0.01-0.02 y\(^{-1}\).
Figure SI-5. Plots of $\ln(G_m/G_{m0})$ versus time used to identify periods of constant degradation rates ($k =$ slope; Zimmerman and Canuel 2000). $G_m$ corresponds to the “metabolizable OM” and is represented by the difference between measured OC at any depth and the asymptotic OC concentration at depth. $G_{m0}$ corresponds to the “metabolizable OM” at the sediment surface.
Figure SI-6. Relationships between carbon-normalized lignin yields ($\lambda$ in mg/100 mg OC) and stable isotopic signatures of organic carbon ($\delta^{13}C$) in central Puget Sound (PS-1 and PS-4) and Hood Canal (HC-3 and HC-5) sediment cores.