Although hypoxic blackwater events may occur naturally, extensive river management has exacerbated their frequency and impact (Whitworth et al. 2012). For example, retention of peak winter flows for later irrigation water delivery reduces the frequency of floodplain inundation (Poff et al. 1997), which allows increased litter accumulation between flood events and leads to high pulses of DOC to surface water following rainfall events (Baldwin 2014). Other sources of hypoxia may include hypolimnetic discharge from weirs, sulfidic sediments, disturbance of stratified waterholes with anoxic bottom waters, and the sediment oxygen demand of lowland rivers.