

PCB TMDLS, POLLUTION MINIMIZATION PLANS AND SOURCE TRACKDOWN IN CAMDEN CITY

Thomas Belton^a, John Botts^b, Lee Lippincott^a, and Edward Stevenson^a

^aNew Jersey Department of Environmental Protection, Division of Science Research and Technology, 401 East State Street, PO Box 409, Trenton NJ 08625

^bAquatic Sciences Consulting, 15751 Bushy Park Rd., Woodbine MD 21797

A PCB Pilot Source trackdown study was performed in the sewer collection system of the Camden County Municipal Utility Authority (CCMUA) as part of a PCB TMDL. The goals were to evaluate the most appropriate sampling and analytical techniques for tracking down PCB contamination to the MUA collection system and to identify potential upland sources. Innovative field and analytical methods were evaluated including the use of PCB analytical Method 1668a to attain high sensitivity and low detection limits; the quantitation of over 124 separate PCB congeners as a mean to identify unique source signatures through pattern recognition; the use of passive in-situ continuous extraction sampler (PISCES) for sample integration over protracted time periods (14 days); and the use of electronic data collection systems interfaced with a geographic information system (GIS). PCBs were found at all sewer locations (i.e., both urban and suburban) and in all sampling media potentially from varied sources (i.e., as indicated by differences in PCB congener profiles between waste streams). PCBs were quantifiable in both 24-hour composites with a mean of 189 ng/l (Range: 33 ng/l to 784 ng/l) and grab samples with a mean of 41 ng/l (Range: 20 ng/l to 82 ng/l). Geographic analysis of sewer results indicated a concentration of potential PCB sources in the industrialized south-central area of Camden. We further evaluated desktop trackdown methods and innovative field methods using field methods (i.e., immunoassays e.g., SDI/ELISA) known to be quick, inexpensive and accurate; and approved by NJDEP's Site Remediation Program for site screening. The project was also designed to assist MUAs with CSOs in performing, TMDL required, PCB Pollution Minimization Plans (PMPs) through documentation of PCBs on city streets with a capacity to erode into storm drains, thereby localizing proximity of sources in sewersheds and at specific city blocks and for certain industry types. An addition goal was to explore how regulatory programs could inform the PMP process, since many PCB sources leading to storm drains could, potentially, not be directly regulated by a MUAs (e.g., Hazmat sites, NPS permitted facilities, orphan contaminated sites). Street soil results show PCBs on streets in front of most facilities with a mean of 0.6 ug/g - ppm (Range: 0.05 to 5.16 ug/g). Confirmatory analysis on select soil samples using HRGC/HRMS analysis (Method 1668A), confirmed relative accuracy of using ELISA for source screening. Decreasing mean PCB concentration in street soils near source categories (using ELISA) were: 1. HazMat (known contaminated sites); 2. metal reclamation (junkyards, shredders, smelters); 3. gas pipelines; 4. transportation; 5. drum cleaning; 6. manufacturing; 7. paper-pulping; 8. waste management; 9. electrical transmission; 10. aggregate processing (concrete); and 11. landfills. Overlapping management/policy issues with PMPs include analytical methods, stormwater management; CSOs permits; residuals (sludge); soil remediation standards; Brownfield Assessments; and Environmental Justice.