

2008 Flood Plain Sampling

Calvin Jordan, Virginia Department of Environmental Quality
Todd Morrison, URS

In the spring of 2008, VADEQ, with cooperation from URS and DuPont, conducted an extensive sampling of the South River flood plain. Sampling design included 90 sample stations randomly selected within each of six reaches of the South River divided by bridge crossings. Of those 90 samples, 10 samples were located in each of the 3 inundation areas (0-2 year, 2-5 year, and 5-62 year) and from each of the three primary land uses identified in each reach-floodplain combo. A total of 618 stations were sampled. Two intervals were analyzed; 0-6 inches and 6-30 inches and individual 6 inch intervals archived at each location. Sixty stations were located in wetlands and sampled in April for MeHg along with THg.

Results indicate highest concentrations in the first reach between Main Street and Hopeman Parkway. Statistical trends in composite soils were similar to trends identified in the surficial soils data set. THg tends to decrease as distance from the river increases and as elevation above the river increases. Floodplain soil increasing silt % and, less importantly, decreasing clay % are associated with increased THg. Ignoring land use, THg levels were higher in the 2 year floodplain than the 5 or 62 year floodplains; except in Reach 1 where the highest THg levels were in the 5 year floodplain. Also, in Reach 5 in forested area, THg levels were higher in the 5 year floodplain than in the 2 year floodplain. Lowest THg always observed in the 62 year floodplain. Including land use, highest THg levels tend to be in the forested areas (4/6 Reaches), with pasture (Reach 2) and open space (Reach 1) having highest THg levels in the other reaches. April MeHg results for wetlands ranged from 0.01-31.8 ng/g. In river baseline monitoring stations generally range 1X-2X higher during winter months than maximum value for wetland.

Only one sample was above the industrial screening level. That sample was a composite sample that measured 535 ppm and was located on the Allied Concrete property in Waynesboro. There was also a surface sample that measured 307 ppm on the same property on the motocross track. Only 7% of the samples were > 23 ppm (residential screening level), but 80% were > background levels (Background Hg levels in the state of Virginia range from 0.06 – 0.15 ppm).