

## Addendum to Onondaga Lake Baseline Monitoring - Book 3, Tributary Monitoring Work Plan for 2009

This addendum to the draft Onondaga Lake Baseline Monitoring - Book 3, Tributary Monitoring Work Plan for 2009 (Parsons and Exponent, July 2009) describes snowmelt sampling of Ninemile Creek and Onondaga Creek to be conducted during the late winter-early spring of 2010. Water from Ninemile Creek and Onondaga Creek was sampled during storm events in late May, mid-June, and late October of 2009 with the exception that water from Ninemile Creek was not sampled during the late May storm event due to insufficient creek flows. In addition, bi-weekly base flow water quality monitoring was conducted from May to November 2009. Runoff associated with snowmelt (e.g., rain on snow) can result in some of the highest flow rates of the year and have been found to contribute a significant fraction of the total annual mercury load in various watersheds (Shanley *et al.*, 2002).

Water samples will be collected manually as grab samples from Onondaga Creek at Spencer Street (adjacent to USGS gauging station 04240010), from Ninemile Creek at Amboy Dam, and from Ninemile Creek at State Fair Boulevard (adjacent to USGS gaging station 04240300). The goal is to monitor one snowmelt event during the late winter to early spring (March-April) interval of 2010 when daily peak flows are at least twice the seasonal median daily flow. From 1971 to 2009, median daily flows during February-April were 230 cubic feet per second (cfs) and 234 cfs in Ninemile Creek and Onondaga Creek, respectively. Accordingly, the plan for early 2010 is to target one snowmelt event when peak daily flows are at least 500 cfs. The intent is to collect up to 10 snowmelt samples at a rate of two samples per day from each of the three sampling locations. Every reasonable attempt will be made to collect at least two samples on the rising limb of the hydrograph, one sample near the peak, and at least two samples on the falling limb. Weather forecasts, real-time flow data from USGS, direct observations of snowpack and stream flow conditions, and professional judgment gained from prior storm event monitoring conducted on these streams will be used to help identify potential snowmelt events.

Each snowmelt water sample will be analyzed for unfiltered total mercury, unfiltered methylmercury, and total suspended solids (TSS). Three samples from each sampling location will also be analyzed for dissolved total mercury. Field turbidity measurements will not be collected as part of snowmelt sampling, because the sampling will be completed over a few days and because of practical challenges associated with deploying and recovering a sonde during the winter. Results will provide information on mercury loading dynamics during a potentially important seasonal period and allow for extension of the empirical relationships and loading estimates developed from the 2009 data. Field and laboratory methods (including low-level detection limits for mercury) and quality assurance procedures will be utilized consistent with those described in the draft 2009 Book 3 work plan.

Both sampling locations along Ninemile Creek can be accessed safely during the winter and sampled with the Teflon dipper used during 2009. The Onondaga Creek at Spencer Street sampling location may be treacherous to access during the winter due to ice and snow accumulation. If the Onondaga Creek sampling site cannot be accessed safely from the stream

bank, snowmelt water samples will be collected from a nearby bridge with either a dipper or a stainless steel sampling bucket.

## References

Parsons and Exponent, 2009. Onondaga Lake Baseline Monitoring Book 3 Tributary Monitoring Work Plan for 2009. Prepared for Honeywell. Draft version submitted July 16, 2009 in redline format.

Shanley, J.B., P.F. Schuster, M.M. Reddy, D.A. Roth, H.E. Taylor, and G.R. Aiken. 2002. Mercury on the move during snowmelt in Vermont. USGS Report. [http://wwwbrr.cr.usgs.gov/projects/SW\\_corrosion/sleepers/index.html](http://wwwbrr.cr.usgs.gov/projects/SW_corrosion/sleepers/index.html)