Tennessee Department of Environment and Conservation
TVA Kingston Response and Monitoring Plan - Water Sampling

Water Sampling Plan

The water portion of TDEC's sampling plan consists of 4 parts: public water supply monitoring, well monitoring, surface water monitoring and fish tissue sampling.

This sampling plan is subject to modification based on developments and findings, but a current plan is expected to be maintained on TDEC's web page at www.tn.gov/environment/kingston

I. Public Water Supplies at Kingston and Rockwood

Untreated and treated water samples will be collected every day, including weekends, at the Kingston and Rockwood drinking water treatment plants and transported to a the state lab for analysis according to standard procedures. Some parameters are being analyzed each day and others will be analyzed once per week. Results are being provided directly from the state lab to those two facilities on the day following sample collection, with copies to the Roane County Mayor, Kingston City Manager, EPA, and TVA. Results will be posted on TDEC's web page. Daily sampling will continue until it is determined through review of lab results and in consultation with the two utilities that less frequent monitoring is warranted.

NOTE: As of January 22, 2009, TDEC has consulted with Kingston and Rockwood, and daily sampling by TDEC has been replaced by weekly sampling, which will begin on Monday, January 26, 2009. Results will continue to be distributed by email directly to those on the mailing list already in use.

Sample containers with proper preservatives will be used and labels including chain of custody will be maintained by the sampler, sample transporter and laboratory. Each untreated and finished water sample shall be analyzed for the contaminants listed in the table below:

Aluminum, Total - w	Copper, Total – w	Silver, Total – w
Ammonia as N – w	Fluoride, Total – w	Sodium, Total – w
Antimony, Total – w	Iron, Total – w	Strontium, Total – w
Arsenic, Total – d	Lead, Total – d	Sulfate, Total – w
Barium, Total – d	Magnesium, Total – w	Thallium, Total – d
Beryllium, Total – d	Manganese, Total – d	Uranium, Total – w
Cadmium, Total – d	Mercury, Total – d	Vanadium, Total – d
Calcium, Total – w	Molybdenum, Total - w	Zinc, Total - w
Chloride, Total – w	Nickel, Total – w	
Chromium, Total – d	Potassium, Total – w	Alkalinity – d
Cobalt, Total - d	Selenium, Total – d	Hardness - d

"d" indicates daily analysis, **"w"** indicates weekly analysis

This list will be subject to modification if ash analysis demonstrates additional parameters to be of interest or some of these parameters not to be present.

II. Ground Water Sampling Plan for Wells and Springs

TDEC will sample on request any well or spring within a 4-mile radius of the incident site. Samples shall be collected at an exterior tap before any water treatment device, and not be filtered during collection. Special arrangements will be made for wells that do not have functional pumps. Special arrangements will also be made for any wells or springs that have been inundated with ash. Those should be sampled before and after purging to determine if any contamination came from inflow over the top of the casing or came from contamination of the underground aquifer. Sample containers with proper preservatives will be used and labels including chain of custody will be maintained by the sampler, sample transporter and laboratory.

Persons wishing to have their wells sampled may make that request by calling TDEC's Knoxville Environmental Field Office at 865-594-6035 or toll free at 888-891-8332. Those names will be added to our sampling list and those sites will be visited the next day or as soon as we can schedule. All persons whose wells are sampled will be informed that under Tennessee's open records laws test results are subject to public review.

Analyses of initial samples were performed by private lab certified for drinking water analysis, but as of January 6, all samples will go to the state lab, also certified for drinking water. Results will be available within 2 to 3 days after the day of sampling and will be communicated to the property owner by TDEC staff. TDEC staff will place a telephone call to the property owner to discuss results and also either mail or email the results to the property owner. If an exceedance of any maximum contaminant level for drinking water is reported, TDEC will schedule a retest as soon as possible.

Well sampling will continue until the well of every property owner within the designated radius who has made a request has been sampled. TDEC will also identify some number of wells in the area which can be monitored at regular intervals to look for changes in ground water over time.

III. Surface Water Monitoring

TDEC will monitor the Emory River embayment of Watts Bar Reservoir on a regular twice per week basis. Monitoring will be more frequent when significant rainfall causes increased flows in the Emory River and/or ash dredging begins.

Samples will be analyzed for all of the parameters identified for daily sampling in the table above as well as the following: hardness, pH, conductivity, suspended solids and settleable solids, as well as the following metals: Aluminum, Antimony, Copper, Iron, Nickel, Silver and Zinc. (Metals added as of January 14, 2009.)

TDEC will take samples at these locations: Emory River Mile 4.0 (above the impact area), Emory River Mile 2.1 (immediate vicinity of impact), Emory River Mile 1.75 (just downstream of impact area), Emory River Mile 0.1 (just above confluence with Clinch), and the Highway 70 bridge over the Clinch River. These samples will be analyzed by the state lab in Nashville. Results are expected to be returned 2 to 3 days after sampling and will be posted on TDEC's web site.

Sample collection and handling will be according to the Department's *Quality System Standard Operation Procedure for Chemical and Bacteriological Sampling of Surface Water* (TDEC, 2008).

NOTE: As of January 28, 2009, the upstream control sampling station for the Emory River was moved from Emory River Mile 4.0 to the bridge at Emory River Mile 12.1. This was done to be sure we're sampling above the upstream extent of ash. Also, as of that date, we added a Clinch River Mile 4.5 sampling station. This gives us an upstream site on the Clinch above its confluence with the Emory and any possible effects of the ash. Both of these points are now shown on the TDEC Water Monitoring and Sampling Map.

IV. Fish Tissue Sampling

The Tennessee Wildlife Resources Agency advises that until further notice fishing should be avoided in the lower section of the Emory River, and that existing advisories for Watts Bar should be followed. In the Clinch River arm of Watts Bar, which would include the lower Emory, TDEC has issued a fish consumption advisory against eating striped bass and a precautionary advisory for catfish and sauger. A precautionary advisory means that children, pregnant women, and nursing mothers should not consume the fish species named. All other persons should limit consumption of the named species to one meal per month.

See http://tn.gov/environment/wpc/publications/advisories.pdf

TWRA began week of January 5 collecting bass and catfish and will compare fish tissue results to existing data for those species. TWRA expects to resample on a semiannual basis, probably January and October, and will evaluate findings with the other resource agencies. TDEC will issue advisories if fish tissue contaminant levels exceed protection criteria.