Appendix D. National Pollutant Discharge Elimination System Noncompliance Summaries for 2013

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D.1 Y-12 National Security Complex

A. National Pollutant Discharge Elimination System Permit

There was one National Pollutant Discharge Elimination System (NPDES) permit limit excursion for cadmium (monthly average permit limit of 0.001 mg/L). Analysis of a composite sample taken on October 3, 2013, at the outfall 200 location revealed a value of 0.0174 mg/L, which is below the daily maximum value but above the monthly average value of 0.001 mg/L. The exact cause of the elevated cadmium value at outfall 200 is not known. A grab sample taken upstream in the storm drain system indicated the presence of cadmium, which also has been detected in a nearby groundwater well. Composite sampling in the storm drain system is planned for the area of the storm drain where groundwater data indicate the presence of cadmium.

On the afternoon of November 20, 2013, a reading of pH 9.1 ±0.24 was taken from the effluent flow at the West End Treatment Facility (WETF) outfall 502. This value is outside the permitted pH range of 6.0 to 9.0 standard units established for this facility. On discovery of the sample result, WETF Operations personnel immediately stopped the discharge. Before discovery of the elevated pH reading, approximately 12,153 gal of treated wastewater were discharged from a 476,000-gal batch. The discharge did not result in negative impacts to the water environment or cause any safety consequences. Corrective actions have been implemented to prevent a recurrence.

A potable waterline break occurred on June 8, 2013. Chlorinated water from the point of the break entered the storm drain system and resulted in a fish kill. Fisheries biologists from Oak Ridge National Laboratory (ORNL), working for the Y-12 Biological Monitoring and Abatement Program (BMAP), performed a fish survey in upper East Fork Poplar Creek (EFPC) on June 8, 2013. Biologists walked the stream during a 5-hour period and collected 8,318 dead fish. The affected stream reach was from outfall 21 to Bear Creek Road, a distance of approximately 1,300 m. The fish kill was consistent with a high volume release of chlorinated water from the line break in the old ORNL biology complex.

The event killed five species of fish, the greatest percentage being small minnows (stonerollers, striped shiners, and black nose dace). Other fish species present in the stream reach, such as sunfish, were unaffected.

Follow-up monitoring of the fish community by BMAP personnel in September 2013 showed approximately a 34% reduction in the fish population when compared with EFPC fish data from recent years. BMAP personnel will continue spring and fall monitoring to measure the recovery of the stream and aquatic life. It is estimated that about two years of spawning seasons under normal conditions will likely restore the fish community to pre-event conditions

B. Industrial and Commercial User Wastewater Discharge Permit

Monitoring results during 2013 indicate three exceedances of the permit. These were for daily flows in excess of the permit limit (1.4 Mgd) that occurred on January 15 (1.66 Mgd), January 16 (1.5 Mgd), and July 7 (1.646 Mgd).

Progress continued through 2013 in identifying and correcting sources of stormwater inflow. In-line flow meters have been installed and additional smoke testing conducted at various locations within the sanitary sewer system. Needed repairs were executed based on these tests. Smoke testing is completed, and discussions are taking place to establish funding for future actions. Recommendations include procuring the services of an experienced third-party contractor to perform inspections, lining, and possible isolations.

D.2 East Tennessee Technology Park

In 2013, compliance with East Tennessee Technology Park (ETTP) NPDES stormwater permit TN0002950 was determined by 143 laboratory analyses and 125 field measurements and flow estimates. The NPDES permit compliance rate for all discharge points for 2013 was 100%.

In 2013, compliance with the ETTP NPDES permit for industrial wastewater from the Central Neutralization Facility (CNF) was determined by 224 laboratory analyses and 694 field measurements. The CNF NPDES permit compliance rate for 2013 was 100% with no noncompliances. CNF ceased all discharges in 2013, and the permit was allowed to expire on December 31, 2013.

D.3 Oak Ridge National Laboratory

Three incidents resulting in aquatic mortality in White Oak Creek watershed streams occurred in 2013. The first incident occurred in July 2013, when it was discovered that inadequately dechlorinated discharges were coming from two outfalls, both of which were equipped with dechlorinator units. An investigation resulted in the finding that both dechlorinator units had a similar malfunction consisting of a blocked tablet feeder tube. Twenty dead fish and two dead crayfish were observed downstream of these two outfalls. Repairs were quickly made so that the dechlorinator units resumed proper operation later that same day. Checks of all other operating dechlorinator units were made by ORNL staff to evaluate them for similar vulnerabilities, and preventive maintenance was performed where needed.

The second incident occurred in early October 2013, when a dechlorinator system that was temporarily being used to supply once-through cooling water to a cooling tower/heat exchanger system malfunctioned and resulted in a chlorinated water discharge through an outfall to Melton Branch. Forty-six dead fish and 28 dead salamanders were discovered downstream of the outfall pipe. The cooling water supply was shut off, and dechlorinator tablets were placed at the outfall to amend the discharge. Corrective actions included a revision of operating procedures, including additional safeguards to ensure that environmental aspects of temporary cooling water discharges are adequately addressed before temporary discharges are initiated.

The third incident also occurred in October 2013, when a dechlorinator pump in an ORNL building failed. Upon discovery of the failure, dechlorination tablets were placed in the outfall pipe that drained into White Oak Creek, and pump repairs were initiated and completed. Five dead minnows were found downstream of this outfall pipe. Corrective actions included replacement of the pump power and emergency power supply and the completion of regular maintenance of these components. In addition, manual checks were implemented during every 12-hour shift.