Appendix D: NPDES Noncompliances

Table D.1. Summary of Y-12 Complex National Pollutant Discharge Elimination System (NPDES) excursions, 2001

Excursion	Date	Location	Incident
2001-0001	12-Mar-01	Outfall 200	Permit limit exceedance; oil and grease 19 m/L
2001-0002	21-Mar-01	Monitoring Point 201	Permit limit exceedance; chlorine 0.313 mg/L
2001-0003	4-Apr-01	Outfall 200	Holding time exceeded; oil and grease 12 days
2001-0004	12-Jun-01	Outfall 51	Permit limit exceedance; pH 5.7
2001-0005	8-Aug-01	CMTF, Outfall 551	Permit limit exceedance; daily Hg 0.0118 mg/L
2001-0006	31-Aug-01	CMTF, Outfall 551	Permit limit exceedance; monthly Hg 0.00318 mg/L
2001-0007	5-Sep-01	CMTF, Outfall 551	Permit limit exceedance; daily Hg 0.00662 mg/L
2001-0008	30-Sep-01	CMTF, Outfall 551	Permit limit exceedance; monthly Hg 0.00259 mg/L
2001-0009	12-Sep-01	Monitoring Point 201	Permit limit exceedance; chlorine 0.08 mg/L

Description/cause	Corrective action
Excursion 2001-0001	
On March 12, 2001, a sample of water collected from Outfall 200 showed an oil and grease concentration of 19 mg/L, which exceeded the NPDES limit of 15 mg/L. Subsequent sampling and analysis on March 13, 2001, determined that the concentration of oil and grease had returned to compliance with the NPDES permit	None
The possibility exists that the original sample taken on March 12 had a contaminant introduced into it from dirty glassware. This theory is supported by the fact that a backup/secondary sample taken less than 1 min after the original sample produced an oil and grease level at the detection limit, thus much lower than the permit limit. Also, sampling technicians responsible for monitoring at Outfall 200 did not observe any oil or oily film at the time the sample was taken	
Excursion 2001-0002	
On March 21, 2001, at 12:24 p.m., the chlorine at in-stream monitoring Point 201, located downstream of the North/South pipe, after the addition of water from the Clinch River, was detected at 0.313 mg/L, which is greater than the discharge limit of 0.019 mg/L. Subsequent sampling and analysis on the same day indicated the chlorine concentration at this location had returned to compliance with the NPDES permit	At the time of the elevated chlorine reading, Operations personnel made immediate adjustments to the dechlorination chemical pump feed rate to correct chlorine levels. Y-12 personnel have reinforced requests to city of Oak Ridge personnel of the need for timely notification of raw water pump outages
It is suspected that the cause of this event was due to the off/on cycling of flow management (water from the Clinch River), which impeded the ability of the dechlorination system at Outfall 200 to maintain the proper level of sodium bisulfite discharge into the creek. The on/off cycling of the Clinch River water was due to intermittent power interruptions at the city of Oak Ridge's water booster station that serves the Y-12 Complex	

Table D.1 (continued)

Description/cause	Corrective action
Excursion 2001-0003	
An oil and grease sample taken from Outfall 200 on April 4, 2001, exceeded the required holding time of 28 days by 12 days. The sample was delivered to the internal laboratory under proper chain-of-custody procedures. The sample was not properly logged into the laboratory computer system that tracks the status of each sample; therefore, laboratory personnel neglected to analyze the sample within the required holding time. Once the sample was analyzed, the sample result was below the detection limit, which is well within the normal concentration range for this outfall	A full management review of this incident was conducted, and modifications to sample management protocol were immediately implemented
Excursion 2001-0004	
On June 12, 2001, a sample of water taken from Outfall 51 had a pH of 5.7, which is outside the compliance range of 6.0 to 9.0. This sample was taken as part of a study being done by a contractor who was performing sampling for the Water Resources Restoration Plan being managed by the Bechtel Jacobs Company LLC. After field verification of the meter calibration, the reading was rechecked and found to be the same as the original	None
No cause has been identified for this noncompliance. A review of piping diagrams and a field inspection revealed that Outfall 51 receives no process-related discharges. Outfall 51 collects and discharges water from a spring beneath Building 9201-2. Results of a BWXT-Y-12, LLC, sampling performed June 12, 2001, determined that the water in Outfall 51 had a normal pH of 7.0. The next compliance sample was taken by BWXT-Y-12, LLC, on June 18, 2001, and the pH was within range at 7.1. In addition, this outfall has an extensive history of compliance with discharge limitations	

Table D.1 (continued)

Description/cause	Corrective action
Excursions 2001-0005 and 2001-0006	
On August 8, 2001, a water sample taken at the Central Mercury Treatment Facility (CMTF) Outfall 551 discharge revealed an elevated mercury reading of 0.0118 mg/L, which exceeded the permitted daily maximum of 0.004 mg/L (Excursion 2001-0005). Additional data analysis for the month of August revealed the monthly average reading for mercury was 0.00318 mg/L, which exceeded the permitted monthly maximum of 0.002 mg/L (Excursion 2001-0006) The CMTF uses two carbon skids with three columns each. Only one skid is used under normal incoming flow. In the event that the incoming streams exceed the flow capacity of the operating skid, the stream is split and both skids come on line. Just prior to the compliance sampling on August 8, a significant rain event increased the incoming groundwater stream, requiring both skids to become operational for treatment. Once the peak flow was contained, the second skid was taken off line leaving only one skid on line. This skid, consisting of three separate carbon columns, had recently undergone a change-out with new carbon	An investigation was initiated to determine the source of the increased mercury levels. The following areas were investigated: • The carbon columns were inspected and verified to be valved correctly and all systems were verified as being fully functional • The carbon manufacturer verified that there was not a production problem with the carbon • The carbon was changed out completely on all columns on the on-line skid • The treatment system was flushed and soaked to eliminate any potential for holdup and channeling • The inlet sample collection points were inspected, with no abnormally high reading of mercury
Excursions 2001-0007 and 2001-0008	
On September 5, 2001, a water sample taken at the CMTF Outfall 551 discharge revealed an elevated mercury reading of 0.00662 mg/L, which exceeded the permitted daily maximum of 0.004 mg/L (Excursion 2001-0007). Additional data analysis for the month of September revealed the monthly average reading for mercury was 0.00259 mg/L, which exceeded the permitted monthly maximum of 0.002 mg/L (Excursion 2001-0008)	The incoming groundwater streams were investigated to see if any new unknown sources were being collected from remediation efforts under way at the Y-12 facility. Building sumps, drain lines, and other components of the CMTF influent system were investigated. Also, additional operational daily sampling was performed to help indicate increases in mercury levels. Investigative results were inconclusive
Excursion 2001-0009	
On September 12, 2001, a water sample taken at in-stream Monitoring Location 201 revealed an elevated chlorine reading of 0.08 mg/L, which exceeded the permitted daily maximum of 0.019 mg/L. The monthly limit of 0.011 mg/L was not exceeded This measurement occurred during a period of fluctuating raw water flow from the city of Oak Ridge. However, an evaluation of flow and chlorine identified no correlation between the chlorine reading and flow data during this period It is suspected that the elevated chlorine originated from the once-through cooling water that entered the creek through Outfall 200. The sodium bisulfite feed rate of the dechlorination system was insufficient to adequately reduce the chlorine concentration during a period of chlorine fluctuation in the potable water	The controls of the dechlorination system at Outfall 200 are routinely adjusted to accommodate chlorine-level fluctuations in the discharge

Table D.2. Summary of East Tennessee Technology Park (ETTP) National Pollutant Discharge Elimination System (NPDES) excursions, 2001

Date	Location	Excursion	Explanation	Corrective action
1/02/01	Storm Water Outfall 170	Total residual chlorine (TRC)	TRC measurement of 0.231 mg/L exceeded the ETTP NPDES permit limit of 0.019 mg/L	Sodium sulfite tablets were placed in the storm water inlet nearest the water line break to dechlorinate the sanitary water. The water line break was isolated and repaired
1/02/01	Storm Water Outfall 180	TRC	TRC measurement of 0.233 mg/L exceeded the ETTP NPDES permit limit of 0.019 mg/L	Sodium sulfite tablets were placed in the storm water inlet nearest the water line break to dechlorinate the sanitary water. The water line break was isolated and repaired
9/28/01	Outfall 014 (Central Neutralization Facility)	Unpermitted discharge	Failure of a valve allowed a batch of treated wastewater to bypass the filtration, air stripping, and carbon adsorption units	The faulty equipment that caused the incident was replaced
9/30/01	Outfall 014 (Central Neutralization Facility)	Required samples not collected	Quarterly samples that were to be analyzed for acetone, acetonitrile, and methyl ethyl ketone were not collected	Sampling schedules were revised and management review of sampling protocol was increased to prevent recurrence of the incident

Table D.3. Summary of Oak Ridge National Laboratory National Pollutant Discharge Elimination System (NPDES) excursions, 2001

Date	Location	Excursion	Explanation	Corrective action
04/10/01	Outfall X01	Total suspended solids (TSS)	TSS level of 47.6 mg/L exceeded the NPDES permit limit of 45 mg/L	These four TSS exceedances were attributed to high winds during the week of 4/10 to 4/17/01. To prevent recurrence, covers for the final Sewage Treatment Plant discharge chambers have been purchased and installed
04/12/01	Outfall X01	TSS	TSS level of 49.6 mg/L exceeded the NPDES permit limit of 45 mg/L	
04/17/01	Outfall X01	TSS	TSS calculated loading rate of 39.7 kg/day exceeded the NPDES permit limit of 39.2 kg/day	
04/17/01	Outfall X01	TSS	TSS level of 71 mg/L exceeded the NPDES limit of 45 mg/L	
12/11/01	Unpermitted discharge	Oil	A few drops of chainsaw oil were released to upper First Creek during tree-cutting near the small ponded area just north of Bethel Valley Road. The release caused a sheen estimated to cover about one-third of the ponded area	Spill response personnel used booms and pads to control and remove the sheen to the maximum extent practicable
12/20/01	Holding time exceedance	TSS	The holding time for the 12/20/01 TSS sample for Outfall X01 was exceeded, which constitutes a technical nonconformance with the NPDES permit requirements	The analytical laboratory evaluated the holding-time issue, and a corrective action plan was implemented to guard against recurrence