

Appendix F: NPDES Noncompliances

Table F.1. Summary of Y-12 Plant NPDES Excursions, 1998

Date	Location	Excursion	Explanation	Corrective Action
2/2/98	Outfall 067	Permit limit exceedence	An elevated level of chlorine that exceeded the daily maximum permit limit of 0.5 mg/L was recorded at Outfall 67. An investigation identified the source as a water heater in the Building 9723-33 changehouse. Potable water was added to steam condensate from the water heater through a solenoid controlled valve. This valve failed in the open position allowing potable water to discharge to Outfall 67, thereby, elevating the chlorine level.	The solenoid valve and cooling water source were removed. The outfall was resampled for chlorine on February 3 and found to be less than permit limits.
3/24/98	Outfall 201	Permit limit exceedence	A chlorine level of 0.07 mg/L, which exceeds the daily maximum permit limit of 0.019 mg/L, was recorded at Outfall 201. Investigative measurements made upstream of this location indicated an elevated level of total residual chlorine (TRC) at Outfall 135 (no permit limit). However, no sources or causes were identified for the higher chlorine levels at this location.	None. Measurements taken at this instream monitoring location the following day indicated acceptable TRC levels.
10/12/98	Outfall 201	Permit limit exceedence	Daily maximum (0.019 mg/L) and monthly average (0.011 mg/L) chlorine limits at Outfall 201 were exceeded. The daily maximum chlorine limit (0.188 mg/L) at Outfall 021 was also exceeded. This was due to a rise, and fluctuating changes, in the chlorine levels present in the raw water supplied to the Y-12 Plant. A change in Clinch River water chemistry over a period of several weeks resulted in increased organic loading (algae, etc.) in the water.	Corrective actions included the following: (1) Temporarily suspended raw water addition to East Fork Poplar Creek (EFPC) until actions at dechlorination systems could be completed. (2) Verified and adjusted feed rates at the dechlorination systems to enhance operability. (3) Additional sodium bisulfite feed points were added to strategic locations on the raw water feed lines to increase contact and reaction times and assure dechlorination. (4) Concrete blocks were added in EFPC to facilitate increased mixing of raw water with the stream.

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Table F.1 (continued)

Date	Location	Excursion	Explanation	Corrective Action
			<p>This necessitated a change in the feed of disinfectants by East Tennessee Mechanical Contractors at the river pumping station in order to maintain clean and taste free drinking water for the city of Oak Ridge. The change in water chemistry is believed to be caused by the hot, dry weather that has been experienced in East Tennessee in recent months, resulting in algae blooms and other increases in natural organic activity in the river. Changes in the disinfectant feed practices at the river pump station have resulted in (1) higher than expected residual chlorine in the water received by Y-12, (2) rapidly fluctuating quantities of residual chlorine in the raw water received by Y-12, and (3) potassium permanganate being added at the river pumps, which is believed to be causing interference in both the total residual chlorine compliance readings and readings used in the dechlorination process. As currently configured, the Y-12 Plant dechlorination systems could not handle the increased chlorine level nor respond adequately to the chlorine fluctuations.</p>	<p>(5) Discharges from most Y-12 Plant wastewater treatment facilities were temporarily suspended until EFPC flow was returned to normal. (6) Y-12 Plant personnel worked closely with the operator of the Clinch River Pumping Station during periods when the addition of disinfectant to the raw water was increased.</p>
10/19/98	Outfall 201	Permit limit exceedence	See above (10/12/98) explanation.	See above (10/12/98) corrective action.
10/20/98	Outfall 201	Permit limit exceedence	See above (10/12/98) explanation.	See above (10/12/98) corrective action.
10/21/98	Outfall 201	Permit limit exceedence	See above (10/12/98) explanation.	See above (10/12/98) corrective action.

Table F.1 (continued)

Date	Location	Excursion	Explanation	Corrective action
10/31/98	Outfall 021	Permit limit exceedence	See above (10/12/98) explanation.	See above (10/12/98) corrective action.
10/31/98	Station 17	Permit limit exceedence.	The reduction in flow of raw water to the Y-12 Plant, as described above, resulted in a low flow situation within EFPC. The daily average measured at Station 17 was less than 7.0 MGD.	Supplemental flow to EFPC was restored on November 11, 1998, based upon the corrective actions stated above, and the confidence that these actions would be capable of handling elevated chlorine levels.
12/7/98	Outfall 201	Permit limit exceedence	An elevated level of chlorine was recorded at Outfall 201 that exceeded the daily maximum permit limit of 0.019 mg/L. The source of the exceedence is believed to result from the combination of chlorine and potassium permanganate (KMnO ₄) added to the raw water supplied to the Y-12 Plant by East Tennessee Mechanical Contractor.	The flow of raw water was temporarily discontinued. The location at which KMnO ₄ is added to the raw water received by the Y-12 Plant was moved from the Clinch River to the booster station. This move allowed the removal of KMnO ₄ from the south water line feeding the Y-12 Plant while maintaining the capability of adding KMnO ₄ to the line supplying water to the city of Oak Ridge. The raw water was placed back into service and is being monitored for any further necessary adjustments.

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Table F.2. Summary of ORNL NPDES excursions, 1998

Outfall	Date	Parameter	Explanation	Corrective action
302	1/13/98	pH	The pH of 9.6 was measured at Outfall 302 during an investigation of a newly discovered source of water near the lower reach of the storm drain network which feeds Outfall 302. This new source of water was first discovered in November 1997, and the investigation was ongoing thereafter.	ORNL personnel repaired several water leaks that contributed to the dry weather flow in Outfall 302 during December 1997 and January 1998. The dry weather flow in Outfall 302 dropped from an average of 25-30 gallons per minute (gal/min) to around 5 gal/min in response to these repairs. The remaining dry weather flow had elevated pH and was entering the drain network via one pipe which enters a catch basin in a paved area south of Building 3544. A video camera was used to verify that the pipe had been plugged and abandoned years ago. The video tape showed that the pipe had been plugged several feet back from where it enters the catch basin and that a small flow of water was leaking into the open section of the pipe. An inflatable plug was placed in the end of the abandoned pipe to prevent the water from entering the catch basin while the source is being isolated and corrected. Plans to isolate the source of elevated pH water are being developed and may include testing of groundwater in the immediate area.
	4/28/98	Reporting	ORNL had one NPDES reporting nonconformance for 1998. ORNL is required by the NPDES Permit to provide a semiannual report of wastewater control and surveillance activities. The semiannual reporting periods end on the last days of March and September, and the report must be submitted by the 28th of the month following the end of the reporting period. ORNL did not submit the latest report by April 28, 1998. Immediately upon discovering the omission, the report was submitted on 5/7/98.	ORNL staff are continually reviewing requirements and submittal deadlines and track them to completeness. Another thorough review and update of the requirements was completed to assure all future requirements and deadlines are completed on time.

Table F.2 (continued)

Date	Location	Excursion	Explanation	Corrective action
081	5/18/98	Total Residual Oxidant	Outfall 081 discharges once-through cooling water from Buildings 7920 and 7930. Typically, this cooling water is discharged into the 7902 recirculating cooling system, but since that system was not operating, the cooling water from Buildings 7920 and 7930 was redirected through the tablet feeder dechlorination system for Outfall 081. Building 7920/7930 personnel had performed visual checks to verify adequate treatment when the water was diverted using colorimetric method vials but no instrumentation. However, the qualitative technique used was not reliable to visually detect TRO concentrations near the permit limit.	The third of 3 tubes on the tablet feeder dechlorinator was filled with tablets to improve treatment. Facility personnel are procuring equipment to improve the accuracy of operational checks. In the interim, facility personnel will have access to equipment at an adjacent facility for operational checks.
081	5/31/98	Total Residual Oxidant	The May 31, 1998, excursion is the calculated average of the two TRO measurements taken at Outfall 081 during May 1998. The other measurement in May 1998 was below the detection limit of 0.05 mg/L.	
341	11/12/98	Oil Sheen	On November 12, 1998, at approximately 3:30 p.m., a faint oil sheen was noted by ORNL personnel at Outfall 341 on First Creek (FC), which flows on the west end of the ORNL Bethel Valley complex. Outfall 341 receives stormwater runoff from the west-central portion of the ORNL main plant area. Upon	ORNL environmental protection and spill response personnel were notified, and at approximately 3:45 p.m., the sheen was tracked to a storm-drain catch basin associated with Outfall 341 that had a slight amount of oil on some leaf debris accumulated in the basin. The oil was blotted from the basin using oil-absorbent pads (the estimated

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Table F.2 (continued)

Date	Location	Excursion	Explanation	Corrective action
			investigation, the faint sheen was noted to persist for a distance of approximately 200 feet downstream from the outfall and was approximately one foot wide in FC where it was visible.	quantity totaled less than one pint of oil) and the leaves were removed for disposal. Additional oil-absorbent pads were placed at the Outfall 341 discharge pipe to capture any oil residue being conveyed to First Creek. These pads were left in place overnight. A survey of the creek downstream from Outfall 341 revealed no impacted fish or other aquatic species. Because the sheen was faintly visible and short-lived, ORNL personnel determined that the sheen did not impair the designated uses of FC. The Tennessee Emergency Management Agency and the National Response Center were notified of the oil sheen by telephone. The drainage area that is associated with Outfall 341 was investigated further that same day, and no catch basins or paved areas appeared to be possible oil spill locations; therefore, it is believed that the oil came from accumulated oil residues on street and parking lot areas. Tennessee Department of Environment and Conservation DOE Oversight personnel conducted a follow-up inspection on November 19, 1998. No concerns were communicated to ORNL personnel as a result of that inspection.

Table F.3. Summary of ETPP NPDES excursions, 1998

Date	Location	Excursion	Explanation	Corrective action
4/19/98	Outfall 005 (K-1203- STP)	Settleable solids	Settleable solids measurement of 0.6 ml/L exceeded permit limit of 0.5 ml/L due to rain induced diversion.	N/A
2/17/98	Outfall 009 (K-1515-F)	Total residual chlorine	TRC measurement of 1.4 mg/L exceeded permit of limit of 1.0 mg/L.	Dechlorination tablets were placed in the discharge area. Discharge valves were closed and procedures modified to prevent a recurrence.
2/4/98	Outfall 014 (CNF)	PCB	PCB measurements of 3.1 mg/L exceeded permit limits of 0.45 mg/L.	None, cause could not be determined.
4/20/98	Storm Drain Outfall SD 650	pH	pH measurement of 10.7 exceeded permit limit of 9.0.	Pipe flow cooling tower basin was plugged.
4/6/98	Storm Drain Outfall SD- 190	TRC	TRC measurement of 0.58 mg/L exceeded permit limits of 0.019 mg/L.	Dechlorination tablets were placed in the outfall. A broken sanitary water line was repaired.
9/30/98	Storm Drain Outfall SD- 190	Unpermitted discharge	Discharge of mop water to storm drain system.	Leasees reminded that no materials are to be discharged through storm drains.
4/20/98	Storm Drain Outfall 670	pH	pH measurement of 11.2 exceeded permit limit of 9.0.	Pipe was permanently plugged.