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OHIO RIVER WATER SAMPLING PROPOSAL FOR THE WASHINGTON WORKS FACILITY AND THE LETART LANDFILL

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1.0 INTRODUCTION

A multi-media Consent Order (Order No. GWR-2001-019) was entered into between the West Virginia Department of Environmental Protection (WVDEP), the West Virginia Department of Health and Human Resources – Bureau for Public Health (WVDHHR-BPH) and DuPont on November 15, 2001. The Consent Order identified a series of requirements and tasks to be performed by the parties (WVDEP, WVDHHR-BPH, and DuPont) in order to determine whether there has been an impact on human health and the environment as a result of releases of ammonium perfluorooctanoate (C-8), CAS Number 3825-26-1, to the environment from DuPont operations at the Washington Works facility (facility) and the associated landfills (Local, Letart and Dry Run). The Consent Order established the C-8 Groundwater Investigation Steering team (GIST) to oversee investigations and activities that will be conducted to assess the presence and extent of C-8 in drinking water, groundwater, and surface water at and around the facility and the Local, Letart and Dry Run Landfills.

Pursuant to Attachment A of the Consent Order, three primary tasks will be performed by DuPont and evaluated by the GIST. These tasks (Tasks A, B, and C) are described briefly below:

- **Task A: Conduct Groundwater Use and Well Survey/Groundwater Monitoring** – this task involves evaluating C-8 in groundwater initially within a one-mile radius from the facility and the landfills and public water supplies upstream and 10 miles downstream of the facility along the Ohio River. Areas of investigation may be expanded on the basis of results obtained. Task A activities are underway and are anticipated to be completed in February 2002.
- **Task B: Assessment of Existing Groundwater and Surface Water Monitoring Data** – this task is comprised of three subtasks:
 - Compile historical C-8 data
 - Sample monitoring wells and outfalls at the facility and associated landfills
 - Develop a Groundwater Monitoring Plan for the facility

The first and third subtasks were completed and submitted to the GIST for review. Subtask 2 is an ongoing task. Sampling results are submitted monthly to the GIST.

- **Task C: Plume Identification/Groundwater Assessment** – this task will commence following the completion of Tasks A and B. This task will include evaluating the vertical and horizontal extent of C-8 impacted groundwater and specifically includes an assessment of C-8 impacted groundwater at the Letart Landfill and its impact on the Ohio River and public water supplies along the river.

In addition to the tasks described above, the GIST also recommended that DuPont conduct a river investigation to assess if C-8 impacted groundwater at the facility is impacting the Ohio River. DuPont agreed with this request. This work plan proposes an investigation that will evaluate river water quality near the facility and the Letart Landfill.

The sampling plan proposed along the facility is presented first. It is followed by the sampling approach proposed for the Letart Landfill.

2.0 RIVER WATER SAMPLING APPROACH NEAR THE WASHINGTON WORKS FACILITY

Near the facility, river water will be sampled to determine the levels of C-8 in the Ohio River. This investigation will sample river water upstream of the facility, along the facility, and downstream of the facility. In total, 45 river water samples will be collected. At selected sampling areas, as many as three river water samples will be collected and as many as three depths will be sampled (dip, mid-column, and bottom). Table 1 and Figures 1A and B summarize the proposed river water sampling program. All river water samples will be analyzed for C-8 in accordance with the Standard Operating Procedure approved by the GIST and the Quality Assurance Project Plan (submitted February 2002).

The sampling investigation is designed to meet three main objectives:

1. Characterize background C-8 concentrations in river water upstream of the facility.
2. Assess C-8 concentrations in river water along the facility reach.
3. Evaluate C-8 concentrations in river water downstream of the facility.

These investigations are described below:

Upstream Investigation – Sampling will be performed upstream of the facility to help characterize background C-8 concentrations in river water. The three sampling areas proposed are located upstream of the facility and all facility outfalls that discharge to the river (Figure 1A and Table 1). At each location, dip and mid-column samples will be collected near center channel (Table 1). The predominant wind near the facility is northerly. The furthest upstream area is located approximately 26 miles upstream of the facility above the Willow Island Dam, near river-mile marked 161.5. A second upstream area is located approximately 10 miles upstream, near river-mile marker 179. These two locations should not be impacted by outfalls or air emissions from the facility. The third location is approximately three miles upstream, positioned slightly east of the eastern end of Blennerhassett Island, near river-mile marker 185.5. This location was selected because it should not be influenced by outfalls but may be influenced by air emissions.

Along Washington Works Facility – River water will be sampled at three areas along facility reach: north of Outfall 001 (south of the Little Hocking public water supply), east of Outfall 007, and downstream of Outfall 005.

River water will be sampled north of Outfall 001 (near river-mile marker 190) to evaluate C-8 concentrations in river water near the Little Hocking well field. The sampling area is shown in Figure 1A and summarized in Table 1. The three sampling locations are evenly spaced across the river. The northern-most location will be positioned approximately 400-feet from the Ohio shoreline near the edge of the modeled 1-year well protection area of the Little Hocking public water supply (Burgess and Niple, 1996). At each location, a dip, a mid-column and a bottom sample will be collected.

Mid-way along facility (near river-mile marker 190.5) river water will also be sampled to assess C-8 concentrations in river water in the vicinity of the production areas, upstream of Outfall 007 and downstream of Outfalls 001, 002, and 003. River water will be sampled at three locations evenly spaced across the river (Figure 1A). At each location, a dip, a mid-column and a bottom sample will be collected.

Moving further downstream (but still within the facility reach), additional samples will be collected downstream of Outfall 005 (Figure 1B), near river-mile marker 191. Wastewater containing C-8 residuals is discharged to the Ohio River at Outfall 005 (WV NPDES Permit No. WV0001279). To evaluate dispersion within the river, three locations will be sampled. These sampling locations will be positioned approximately 1000-feet downstream and will be evenly spaced across the river. At each location, a dip, a mid-column and a bottom sample will be collected.

Downstream of the Washington Works Facility - Sampling will be performed to help characterize C-8 concentrations in river water downstream of the facility. Four locations will be sampled. Samples will be located near river-mile markers 192.5, 194, 201, and 209 approximately one and a half, three, 10 and 18 miles down stream of the facility, respectively (Figure 1B and Table 1). The samples will be positioned in center channel. Dip and mid-column samples will be collected at these three locations.

3.0 RIVER WATER SAMPLING NEAR THE LETART LANDFILL

Adjacent to the Letart Landfill, river water will be sampled to evaluate whether C-8 has impacted the Ohio River. Two locations will be sampled (Figure 2). One location will be positioned in the river near the point where the ravine originating at the landfill discharges surface water into the river. The other location will be positioned approximately 1000-feet downstream of the first location. Both samples will be collected near the shoreline (approximately 100-feet east of the shoreline). Dip and mid-column samples will be collected at both locations.

All river water samples will be analyzed for C-8 in accordance with the Standard Operating Procedure approved by the GIST and the Quality Assurance Project Plan (submitted February 2002).