OHIO RIVER WATER SAMPLING RESULTS DUPONT WASHINGTON WORKS FACILITY AND THE LETART LANDFILL

Date: November 2002

Project No.: D6WW7423
18983635.14000
18983632.00021

CORPORATE REMEDIATION GROUP
An Alliance between
DuPont and URS Diamond

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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.

  Currently, four reports have been issued documenting the surveying activities (DuPont 2002a; 2002b; 2002c; and 2002d). These reports provide the results for one-mile radius surveys around the Washington Works Facility/Local Landfill, Letart Landfill, Dry Run Landfill, and in Washington County, Ohio. In addition, results for the two-mile radius survey around the Washington Works Facility/Local Landfill and for public water supplies along the Ohio River are presented. **A** two-mile survey in Washington County Ohio has recently been completed, and a report documenting these activities is in preparation. Quarterly monitoring of C-8 at three public water supplies (Tuppers Plains, Lubeck, and Little Hocking) is ongoing.

- **Task B: Assessment of Existing Groundwater and Surface Water Monitoring Data –** this task comprises 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 conducted monthly for required surface-water sampling points and quarterly for groundwater and for non-required surface-water sampling points. Sampling results are submitted monthly and/or quarterly to the GIST.

- **Task C: Plume Identification/Groundwater Assessment –** this task includes 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. Drilling of new monitoring wells has been completed at the Washington Works Facility and at the Local, Letart, and Dry Run Landfills. *C-8* sampling of the all monitoring wells was recently completed, and *C-8* analysis is underway.

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 and the Ohio River Water Sampling Proposal for the Washington Works facility and the Letart Landfill was submitted in February 2002 to the GIST. This proposal was subsequently approved by the GIST. Shortly after approval, the Ohio Environmental Protection Agency (Ohio EPA) reviewed the proposal and recommended slight modifications. DuPont agseed to change the proposal as recommended by Ohio EPA (DuPont letter to Ohio EPA, dated April 1,2002). Sampling activities were conducted in June, July, and October 2002.

This report presents the results of the Ohio River water sampling and is organized in the following manner:

- Section **2** provides information on *C-8* analyses and analytical reporting.
- Section **3** presents the Ohio River water ***C-8*** results for locations upstream, adjacent to and downstream of the Washington Works Facility.
- Section **4** provides the Ohio River water *C-8* results for locations sampled adjacent to Letart Landfill.
- Section 5 presents the Ohio River parameters.
- Section 6 provides references.

2.0 C-8 ANALYSES AND ANALYTICAL REPORTING

The Quality Assurance Project Plan (QAPP; DuPont, 2002e) discusses the procedures and protocols developed to ensure that project information, data, and decisions derived from or based on data acquired during the C-8 investigation at Washington Works Facility and associated landfills are technically sound, usable, and properly documented. The QAPP was submitted to the GIST in January 2002. Specifically, Sections 5, 6, and 10 present sampling protocols, sample and document custody procedures, and internal quality control checks that were followed during the field sampling activities associated with the groundwater well and water-use survey.

The QAPP also presents information on quality assurance, calibration procedures and frequency, analytical procedures, data reduction, verification, and reporting. Information on the analytical method and the precision criteria used for the C-8 reporting are summarized below.

In October 2001, Exygen Research, Inc. (Exygen), located in State College, Pennsylvania, developed and tested a new analytical method that utilizes Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). DuPont adopted this method (LC/MS/MS) for analyzing C-8 in water in November 2001. Currently, Exygen performs all C-8 water sample analyses for DuPont.

Exygen reports C-8 results for the laboratory replicate of each field sample. These results are evaluated for precision by comparing the field sample result to the corresponding laboratory replicate result:

- If both results are less than the practical quantitation limit (PQL), the replicate sample for that analyte is considered to have passed the precision criteria.
- If one or both results are between one and five times the PQL, the replicate is considered to have met the precision criteria if the two results differ by less than the PQL.
- If one result is less than the PQL and the other is not and if the two results differed by a value less than the PQL, the replicate is said to have met the acceptance criteria.
- If both results are at least five times the PQL, the replicate is considered to have met the criteria if the relative percent difference (RPD) between the two results is less than or equal to 20%. The RPD is the absolute value of the difference of two measurements divided by their average.

When the precision criteria outlined above are met, Exygen reports the average of the field sample and the laboratory replicate results reported. If criteria for precision are exceeded, Exygen reports the higher of the sample and laboratory replicate results. Finally, when one result (from the sample/laboratory replicate pair) is above the PQL and one below, the result that is above the PQL is reported. C-8 results are recorded in the Corporate Environmental Database (CED) and are reported as FC-143 for consistency with historical results.

An aliquot of each field sample is also analyzed as a matrix spike (MS). Results of the MS analysis are used to assess accuracy. The MS recovery value must fall between 70 to 130%, unless the sample concentration is at least four times the amount spiked. The maximum amount used to spike field samples is 500 ug/L.

All data packages generated by Exygen are reviewed in-house for compliance with the laboratory Standard Operating Procedures (SOP) and data usability, using the checklist provided in the QAPP. Results of the in-house review indicate that data reported by Exygen have been generated in compliance with the laboratory SOP, with few exceptions as noted in the individual review summaries. All data reported by Exygen have been judged usable for the purposes of the project.

In addition, 13 river-water samples and two blanks were submitted to Environmental Standards Incorporated of Valley Forge, Pennsylvania, for quality assurance review. Results of the additional quality assurance review also indicated that the quality of the data is acceptable and qualification of the data was not warranted.

3.0 OHIO RIVER WATER C-8 RESULTS NEAR THE WASHINGTON WORKS FACILITY

Near the facility, Ohio River water was sampled to measure the concentrations of C-8 in the Ohio River. The sampling investigation was designed to meet three main objectives:

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

Ohio River water upstream of the facility, along the facility, and downstream of the facility was sampled during this investigation. In total, 49 river-water samples were collected, including two duplicate samples. At selected sampling areas, as many as three river-water samples were collected along a single transect across the river and as many as three depths were sampled (dip, mid-column, and bottom). All river-water samples were analyzed for C-8 in accordance with the Standard Operating Procedure approved by the GIST and the Quality Assurance Project Plan (DuPont, 2002e).

During the same time period that the river-water was sampled, effluent from Outfall 005 was also sampled to evaluate dispersion downstream of the outfall. Historically, Outfall 005 has shown the highest concentrations of C-8 and discharged a larger volume of effluent compared to the other outfalls and outlets at the Washington Works Facility. However, the C-8 concentration at Outfall 005 has been steadily decreasing in 2001 and 2002 following the installation of a carbon adsorption treatment system in the flouropolymers process.

Table 1 summarizes the Ohio River Water Sampling Plan including:

- A description of the sampling transect locations on the river
- The number of sampling points along each transect
- The sample type, dip (surface), mid-column and/or bottom collected at each sampling point

In addition, for each sample collected, the following information is provided:

- The transect number
- The location of the individual sample along the transect (WV-side, center, or OH-side)
- The type of sample (dip, mid-column, or bottom)
- The sample identification
- The C-8 result (in ug/L)
- The date of sampling

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Figures 1A and B present the Ohio River water-sampling results graphically. **At** each transect location, a summary table of C-8 results is shown. Table **2** provides the Global Positioning System (GPS) coordinates of each sampling location and the field parameters monitored during collection of each sample (temperature, pH, and specific conductance). Table 3 provides the C-8 results for Outfall 005.

4.0 OHIO **RIVER WATER C-8 RESULTS NEAR THE LETART LANDFILL**

Adjacent to the Letart Landfill, Ohio River water was also sampled to measure the concentrations of C-8 levels in Ohio River. Two locations were sampled. One sampling location was positioned in the river near the point where the ravine originating at the landfill discharges surface-water into the river. The other sampling point was located approximately 1000 feet downstream of the first location. All samples were collected near the shoreline (approximately 100 feet east of the shoreline). Dip and mid-column samples were collected at both locations. In total, five river-water samples were collected, including one duplicate sample. All river-water samples were analyzed for C-8 in accordance with the Standard Operating Procedure approved by the GIST and the Quality Assurance Project Plan (DuPont, 2002e).

Sampling information and C-8 results for the Ohio River water sampled near the Letart Landfill are summarized in Table 1 and are presented graphically in Figure 2. At each transect location, a summary table of C-8 results is shown in Figure **2.** Table *2* presents the GPS coordinates and field parameters (temperature, pH, and specific conductance) for all samples near the Letart Landfill.

5.0 OHIO RIVER PARAMETERS

Table **4** provides the Ohio River stage data and the daily resultant wind direction and wind speed for the time period that sampling was conducted. River discharge is not monitored at the USGS Gaging Station 03150800, Ohio River near Marietta, Ohio. Therefore, this data is not available for the time period that sampling was conducted. Appendix **A** provides the Ohio River Stage data from USGS Gaging Station 03150800, Ohio River near Marietta, Ohio. Appendix B provides the complete spreadsheets of daily Local Climatological Data for June, July, and October 2002 recorded at the Wood County Airport weather recording station.

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6.0 REFERENCES

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TABLES

Table 1
Ohio River Water Sampling Plan
DuPont Washington Works Facility and Letart Landfill

River Water Investigations		Transect Location Description	Number of Sampling Points	Sample Type(s)	Total Number of Samples	Transect Number	Location on Transect	Sample Type	Sample ID		C-8 ug/L	Date
Washington Works Facility	Upstream	26 Miles Upstream of the Washington Works Facility	1	Dip and Mid-column	2	1	center	mid-column	WWK-R-TS	1-2M	ND (<0.010)	6/25/2002
						1	center	dip	WWK-R-TS	1-2S	ND (<0.010)	6/25/2002
		10 Miles Upstream of the Washington Works Facility	1	Dip and Mid-column	2	2	center	mid-column	WWK-R-TS	2-2M	ND (<0.010)	6/26/2002
						2	center	dip	WWK-R-TS	2-2S	ND (<0.010)	6/26/2002
		Upstream of the Washington Works Facility - eastern end of Blennerhassett Island	1	Dip, Mid-column and Bottom	3	3	center	bottom	WWK-R-TS	3-2B	NQ (<0.050)	10/17/2002
						3	center	mid-column	WWK-R-TS	3-2M	ND (<0.010)	6/26/2002
						3	center	dip	WWK-R-TS	3-2S	ND (<0.010)	6/26/2002
	Near Facility	Along Washington Works Facility - North of Outfall 001	3	Dip, Mid-column and Bottom	9	4	WV-side	bottom	WWK-R-TS	4-1B	ND (<0.010)	6/28/2002
						4	WV-side	mid-column	WWK-R-TS	4-1M	ND (<0.010)	6/28/2002
						4	WV-side	dip	WWK-R-TS	4-1S	ND (<0.010)	6/28/2002
						4	center	bottom	WWK-R-TS	4-2B	ND (<0.010)	6/28/2002
						4	center	mid-column	WWK-R-TS	4-2M	ND (<0.010)	6/28/2002
						4	center	dip	WWK-R-TS	4-2S	ND (<0.010)	6/28/2002
						4	OH-side	bottom	WWK-R-TS	4-3B	ND (<0.010)	6/28/2002
						4	OH-side	mid-column	WWK-R-TS	4-3M	ND (<0.010)	6/28/2002
						4	OH-side	dip	WWK-R-TS	4-3S	ND (<0.010)	6/28/2002
		Along Washington Works Facility - East of Outfall 007	3	Dip, Mid-column and Bottom	9	5	WV-side	bottom	WWK-R-TS	5-1B	ND (<0.010)	6/27/2002
						5	WV-side	mid-column	WWK-R-TS	5-1M	ND (<0.010)	6/27/2002
						5	WV-side	dip	WWK-R-TS	5-1S	NQ (<0.050)	6/27/2002
						5	center	bottom	WWK-R-TS	5-2B	ND (<0.010)	6/27/2002
						5	center	mid-column	WWK-R-TS	5-2M	ND (<0.010)	6/27/2002
						5	center	dip	WWK-R-TS	5-2S	ND (<0.010)	6/27/2002
						5	OH-side	bottom	WWK-R-TS	5-3B	ND (<0.010)	6/27/2002
						5	OH-side	mid-column	WWK-R-TS	5-3M	ND (<0.010)	6/27/2002
						5	OH-side	dip	WWK-R-TS	5-3S	ND (<0.010)	6/27/2002
						5	OH-side	dip	WWK-R-TS	5-3S-2 (DUP)	ND (<0.010)	6/27/2002
		Along Washington Works Facility - Downstream of Outfall 005	3	Dip, Mid-column and Bottom	9	6	WV-side	bottom	WWK-R-TS	6-1B	ND (<0.010)	6/27/2002
						6	WV-side	mid-column	WWK-R-TS	6-1M	ND (<0.010)	6/27/2002
						6	WV-side	dip	WWK-R-TS	6-1S	ND (<0.010)	6/27/2002
						6	center	bottom	WWK-R-TS	6-2B	ND (<0.010)	6/27/2002
						6	center	mid-column	WWK-R-TS	6-2M	ND (<0.010)	6/27/2002
						6	center	dip	WWK-R-TS	6-2S	ND (<0.010)	6/27/2002
						6	OH-side	bottom	WWK-R-TS	6-3B	NQ (<0.050)	6/27/2002
						6	OH-side	mid-column	WWK-R-TS	6-3M	ND (<0.010)	6/27/2002
						6	OH-side	dip	WWK-R-TS	6-3S	ND (<0.010)	6/27/2002
	Downstream	1 5 Miles Downstream of the Washington Works Facility	2	Dip, Mid-column and Bottom	6	7	WV-side	bottom	WWK-R-TS	7-1B	0.113	10/17/2002
						7	WV-side	mid-column	WWK-R-TS	7-1M	0.131	10/17/2002
						7	WV-side	dip	WWK-R-TS	7-1S	0.113	10/17/2002
						7	WV-side	dip	WWK-R-TS	7-1S-2 (DUP)	0.138	10/17/2002
						7	center	bottom	WWK-R-TS	7-2B	0.123	10/17/2002
						7	center	mid-column	WWK-R-TS	7-2M*	0.0949	10/17/2002
						7	center	dip	WWK-R-TS	7-2S*	0.104	10/17/2002
		Miles Downstream of the Washington Works Facility	1	Dip and Mid-column	2	8	center	mid-column	WWK-R-TS	8-2M	0.999	7/10/2002
						8	center	dip	WWK-R-TS	8-2S	1.09	7/10/2002
		Miles Downstream of the Washington Works Facility	1	Dip and Mid-column	2	9	center	mid-column	WWK-R-TS	9-2M	0.292	7/10/2002
						9	center	dip	WWK-R-TS	9-2S	0.298	7/10/2002
		Miles Downstream of the Washington Works Facility	1	Dip and Mid-column	2	10	center	mid-column	WWK-R-TS	10-2M	0.236	7/10/2002
						10	center	dip	WWK-R-TS	10-2S	0.239	7/10/2002
Letart Landfill	Near Landfill	Adjacent to the Letart Landfill	1	Dip and Mid-column	2	11	WV-side	mid-column	WWK-R-TS	11-1M	0.109	7/11/2002
						11	WV-side	dip	WWK-R-TS	11-1S	0.101	7/11/2002
	Downstream	Downstream of the Letart Landfill	1	Dip and Mid-column	2	12	WV-side	mid-column	WWK-R-TS	12-1M	0.0971	7/11/2002
						12	WV-side	dip	WWK-R-TS	12-1S	0.118	7/11/2002
						12	WV-side	dip	WWK-R-TS	12-1S-2 (DUP	0.128	7/11/2002

Table 2.

GPS Coordinates and Field Parameters for **Ohio River Water**
DuPont Washington Works

Sample ID		Date	Weather		Global Position System		Total Depth (ft.)	Sample Depth (ft.)	pH	Temp (C)	Specific Conductance (mS)
			Temp. (F)	Conditions	North	West					
WWK-R-TS	1-2M	6/25/2002	90	Clear	39°21.295	81°22.957		15.1	7.36	28	324
WWK-R-TS	1-2S	6/25/2002	90	Clear	39°21.295	81°22.957		1	7.48	28.1	333
WWK-R-TS	2-2M	6/26/2002	82	Cloudy	39°20.7	81°33.03	18.9	9.5	6.91	26.6	403
WWK-R-TS	2-2S	6/26/2002	82	Cloudy	39°20.7	81°33.03	18.9	1	7.21	27.4	402
WWK-R-TS	3-2B	10/17/2002	48	Cloudy/Rain	39°16.108	81°35.377	27.9	26.9	6.49	17.7	415
WWK-R-TS	3-2M	6/26/2002	82	Cloudy	39°16.108	81°35.377	31.2	15	7.27	27.7	383
WWK-R-TS	3-2S	6/26/2002	82	Cloudy	39°16.163	81°35.442	31.2	1	7.48	27.7	379
WWK-R-TS	4-1B	6/28/2002	81	Cloudy	39°16.432	81°39.696		27	6.88	25.5	402
WWK-R-TS	4-1M	6/28/2002	81	Cloudy	39°16.432	81°39.696		14.5	7.3	25.5	395
WWK-R-TS	4-1S	6/28/2002	80	Cloudy	39°16.432	81°39.696		1	7.38	25.9	392
WWK-R-TS	4-2B	6/28/2002	81	Cloudy	39°16.500	81°39.708		18	7.38	25.7	394
WWK-R-TS	4-2M	6/28/2002	82	Cloudy	39°16.500	81°39.708		10	7.41	26.1	390
WWK-R-TS	4-2S	6/28/2002	82	Cloudy	39°16.500	81°39.708		1	7.42	26.4	391
WWK-R-TS	4-3B	6/28/2002	82	Cloudy	39°16.569	81°39.702	29.1	27	7.35	26.3	383
WWK-R-TS	4-3M	6/28/2002	82	Cloudy	39°16.569	81°39.702	29.1	14.5	7.4	26.2	383
WWK-R-TS	4-3S	6/28/2002	82	Cloudy	39°16.569	81°39.702	29.1	1	7.33	26.4	383
WWK-R-TS	5-1B	6/27/2002	82	Rain/Wind	39°16.382	81°40.363		25	7.49	26.6	380
WWK-R-TS	5-1M	6/27/2002	82	Rain/Wind	39°16.382	81°40.363		13.5	7.5	26.4	382
WWK-R-TS	5-1S	6/27/2002	80	Rain/Wind	39°16.382	81°40.363		1	7.49	26.7	385
WWK-R-TS	5-2B	6/27/2002	80	Rain/Wind	39°16.425	81°40.334		24	7.53	26.6	278
WWK-R-TS	5-2M	6/27/2002	80	Rain/Wind	39°16.425	81°40.334		12	7.47	26.5	383
WWK-R-TS	5-2S	6/27/2002	80	Rain/Wind	39°16.425	81°40.334		1	7.46	26.8	389
WWK-R-TS	5-3B	6/27/2002	80	Rain/Wind	39°16.487	81°40.396		26	7.51	26.5	387
WWK-R-TS	5-3M	6/27/2002	80	Wind/Cloudy	39°16.487	81°40.396		13	7.58	26.9	384
WWK-R-TS	5-3S	6/27/2002	82	Wind/Cloudy	39°16.487	81°40.396		1	7.58	26.8	387
WWK-R-TS	5-3S-2 (DUP)	6/27/2002	82	Wind/Cloudy	39°16.487	81°40.396		1	7.58	26.8	387
WWK-R-TS	6-1B	6/27/2002	82	Cloudy	39°16.272	81°40.7		24.5	6.77	26.4	384
WWK-R-TS	6-1M	6/27/2002	82	Cloudy	39°16.272	81°40.7		13	7.28	26.2	377
WWK-R-TS	6-1S	6/27/2002	82	Cloudy	39°16.272	81°40.7		1	7.43	26.4	382
WWK-R-TS	6-2B	6/27/2002	82	Cloudy	39°16.334	81°40.745		30.4	7.49	26.4	381
WWK-R-TS	6-2M	6/27/2002	82	Cloudy	39°16.334	81°40.745		16	7.52	26.4	380
WWK-R-TS	6-2S	6/27/2002	82	Cloudy	39°16.334	81°40.745		1	7.48	26.6	379
WWK-R-TS	6-3B	6/27/2002	85	Cloudy	39°16.377	81°40.773		27	7.52	26.7	379
WWK-R-TS	6-3M	6/27/2002	85	Cloudy	39°16.377	81°40.773		14.5	7.41	26.6	383
WWK-R-TS	6-3S	6/27/2002	85	Cloudy	39°16.377	81°40.773		1	7.51	26.8	382
WWK-R-TS	7-1B	10/17/2002	48	Cloudy/Rain	39°15.045	81°41.613	20.65	19.65	7.86	18.6	433
WWK-R-TS	7-1M	10/17/2002	48	Cloudy/Rain	39°15.045	81°41.613	20.65	10.3	7.87	17.3	436
WWK-R-TS	7-1S	10/17/2002	48	Cloudy/Rain	39°15.045	81°41.613	20.65	1	7.87	18.8	431
WWK-R-TS	7-1S-2 (DUP)	10/17/2002	48	Cloudy/Rain	39°15.045	81°41.613	20.65	1	7.87	18.8	431

Table 2.
GPS Coordinates and Field Parameters for Ohio River Water
DuPont Washington Works

Sample ID		Date	Weather		Global Position System		Total Depth (ft.)	Sample Depth (ft.)	pH	Temp (C)	Specific Conductance (mS)
			Temp. (F)	Conditions	North	West					
WWK-R-TS	7-2B	10/17/2002	48	Cloudy/Rain	39°15.145	81°41.724	31.8	30.8	7.18	18.3	426
WWK-R-TS	7-2M	7/10/2002	85	Cloudy/Rain	39°15.145	81°41.724	30	15	7.1	27.5	442
WWK-R-TS	7-2S	7/10/2002	85	Cloudy/Rain	39°15.145	81°41.724	30	1	7.24	27.6	441
WWK-R-TS	7-2M	10/17/2002	48	Cloudy/Rain	39°15.145	81°41.724	31.8	15.5	7.7	18.5	427
WWK-R-TS	7-2S	10/17/2002	48	Cloudy/Rain	39°15.145	81°41.724	31.8	1	7.8	18.9	427
WWK-R-TS	8-2M	7/10/2002	85	Cloudy/Rain	39°13.824	81°41.360	33	16.5	7.42	27.4	435
WWK-R-TS	8-2S	7/10/2002	85	Cloudy/Rain	39°13.824	81°41.360	33	1	7.45	27.3	441
WWK-R-TS	9-2M	7/10/2002	84	Cloudy/Rain	39°09.714	81°44.944		18.5	7.41	26.9	424
WWK-R-TS	9-2S	7/10/2002	84	Cloudy/Rain	39°09.714	81°44.944		1	7.5	27.1	421
WWK-R-TS	10-2M	7/10/2002	84	Cloudy	39°04.954	81°48.340	24.7	12.5	7.33	27.3	403
WWK-R-TS	10-2S	7/10/2002	84	Cloudy	39°04.954	81°48.340	24.7	1	7.41	27.6	399
WWK-R-TS	11-1M	7/11/2002	84	Clear	38°54.105	81°55.738	34.6	17.5	7.06	26.2	383
WWK-R-TS	11-1S	7/11/2002	84	Clear	38°54.105	81°55.738	34.6	1	7.31	26.7	382
WWK-R-TS	12-1M	7/11/2002	84	Clear	38°54.255	81°55.587	39.8	20	7.29	26.9	379
WWK-R-TS	12-1S	7/11/2002	84	Clear	38°54.255	81°55.587	39.8	1	7.37	27.1	380
WWK-R-TS	12-1S-2 (DUP)	7/11/2002	84	Clear	38°54.255	81°55.587	39.8	1	7.37	27.1	380

000043

Table 3
Outfall 005 C-8 concentration (ug/L)
DuPont Washington Works

Sample ID		Date	C-8 ug/L
WWK-Z-	OUTFALL 005	6/24/2002	26.7
WWK-Z-	OUTFALL 005	6/25/2002	17.9
WWK-Z-	OUTFALL 005	6/26/2002	47.7
WWK-Z-	OUTFALL 005	6/27/2002	79.3
WWK-Z-	OUTFALL 005	7/1/2002	13.6
WWK-Z-	OUTFALL 005	7/10/2002	37.8
WWK-Z-	OUTFALL 005	7/11/2002	239.0
WWK-Z-	OUTFALL 005	7/12/2002	12.5
WWK-Z-	OUTFALL 005	10/16/2002	141.0
WWK-Z-	OUTFALL 005	10/17/2002	18.0

000044

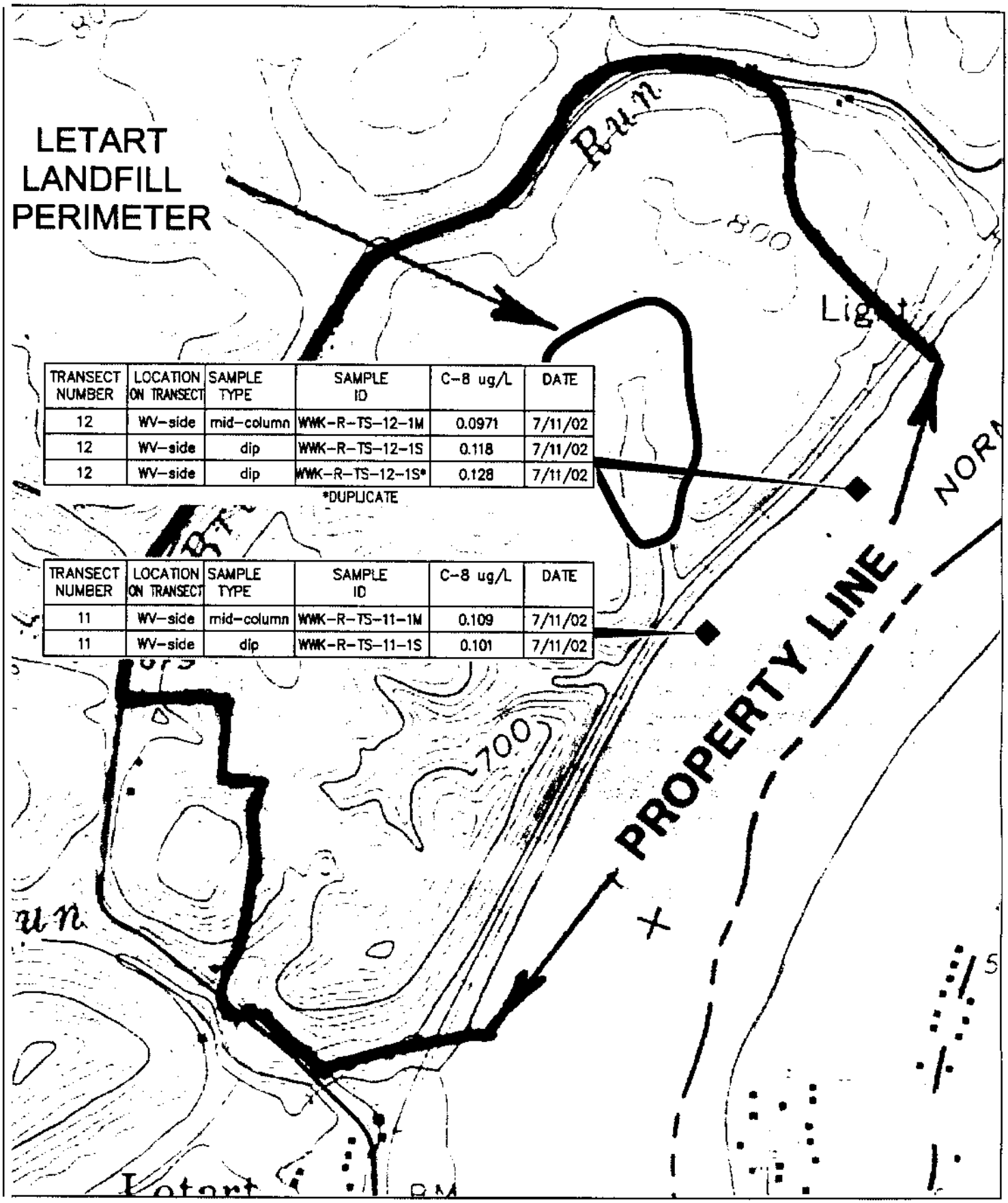
Table 4
Ohio River Parameters
DuPont Washington Works

Date	Ohio River Stage*	Wind	
		Resultant Speed	Resultant Direction
6/26/2002	582.63	5.2 mph	230 degrees
6/77/7002	582.62	7.4 mph	1230 dearees
7/10/2002	582.95	4.5 mph	30 degrees
7/11/2002	580.78	7.3 mph	50 degrees
10/17/2002	583.22	2.6 mph	250 degrees

*Data from USGS Gaging Station 03150800, Ohio River near Marietta, OH

000045

FIGURES



TRANSECT NUMBER	LOCATION ON TRANSECT	SAMPLE TYPE	SAMPLE ID	C-8 ug/L	DATE
12	WV-side	mid-column	WWK-R-TS-12-1M	0.0971	7/11/02
12	WV-side	dip	WWK-R-TS-12-1S	0.118	7/11/02
12	WV-side	dip	WWK-R-TS-12-1S*	0.128	7/11/02

*DUPLICATE

TRANSECT NUMBER	LOCATION ON TRANSECT	SAMPLE TYPE	SAMPLE ID	C-8 ug/L	DATE
11	WV-side	mid-column	WWK-R-TS-11-1M	0.109	7/11/02
11	WV-side	dip	WWK-R-TS-11-1S	0.101	7/11/02

LEGEND:

◆ OHIO RIVER WATER SAMPLING LOCATION, (DIP AND MID-COLUMN SAMPLES)

SCALE

550 0 650'

SOURCE: WV TAKEN FROM THE USGS NEW HAVEN, WV 7.6 SERIES QUADRANGLE

DUPONT

Corporate Remediation Group

An Alliance between DuPont and URS Diamond

Barley Mill Plaza, Building 27
Wilmington, Delaware 19805

OHIO RIVER WATER SAMPLING LOCATIONS

Letart Landfill Site
Letart, West Virginia

SCALE	DESIGNED	DRAWN	CAD FILE NO.
As shown		DEL	742CA015
DATE	CHECKED	APPROVED	FIGURE
1/30/02		TDL	2.0

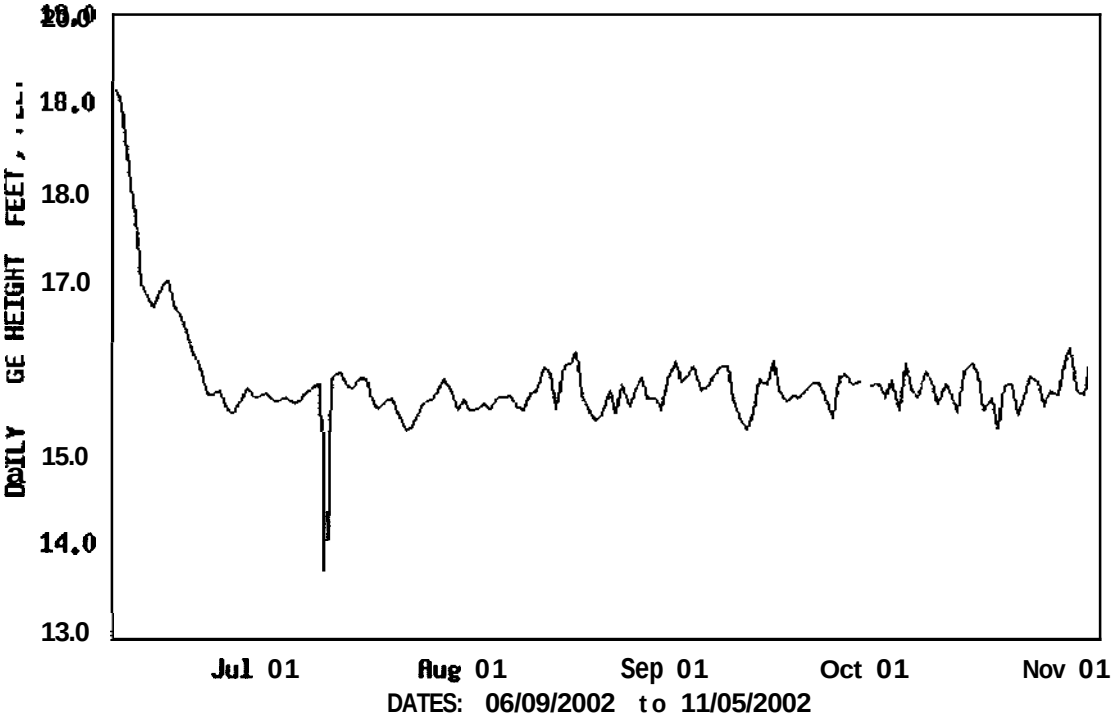
APPENDICES

APPENDIX A

OHIO RIVER STAGE DATA FROM USGS GAGING STATION 03150800, OHIO RIVER NEAR MARIETTA, OHIO

USGS

USGS 03150800 OHIO RIVER NEAR MARIETTA, OH



DATES: 06/09/2002 to 11/05/2002

Provisional Data Subject to Revision

000052

Water Resources

Data Category: Real-time | Geographic Area: United States | GO

USGS 03150800 OHIO RIVER NEAR MARIETTA, OH

PROVISIONAL DATA SUBJECT TO REVISION

Available data for this site: Recent daily | GO

This gaging station is maintained in cooperation with:

- **The U.S. Army Corps of Engineers**

Available Parameters	Output format	Days	
All 1 parameters available at this site 00065 GAGE HEIGHT Mean (DD 02)	Table	150 (1-548)	get data

GAGE HEIGHT, FEET (DD 02), JUNE 09 2002 TO NOVEMBER 05 2002.
DAILY MEAN VALUES

DATE	Jun 02	Jul 02	Aug 02	Sep 02	Oct 02	Nov 02
1		15.7	15.7	15.9	---	16.3
2		15.7	15.5	16.1	15.8	15.8
3		15.6	15.5	15.9	15.9	15.8
4		15.6	15.6	15.9	15.7	16.2

000053

5		15.7	15.6	16.1	15.9	15.9
6		15.6	15.7	15.8	15.6	
7		15.6	15.7	15.8	16.1	
8		15.7	15.7	15.9	15.8	
9	19.2	15.8	15.6	16.1	15.7	
10	19.0	15.8	15.6	16.1	16.0	
11	18.5	13.7	15.7	15.7	15.9	
12	17.8	15.9	15.7	15.4	15.6	
13	16.9	16.0	16.0	15.3	15.9	
14	16.8	15.8	16.0	15.5	15.7	
15	16.7	15.8	15.6	15.9	15.5	
16	16.9	15.9	16.1	15.9	16.0	
17	17.0	15.9	16.1	16.1	16.1	
18	16.7	15.7	16.2	15.8	16.0	
19	16.6	15.5	15.7	15.7	15.6	
20	16.4	15.6	15.5	15.7	15.7	
21	16.1	15.7	15.4	15.7	15.4	
22	16.0	15.5	15.5	15.8	15.9	
23	15.7	15.3	15.8	15.9	15.9	
24	15.7	15.3	15.5	15.9	15.5	
25	15.8	15.5	15.8	15.7	15.7	
26	15.5	15.6	15.6	15.5	16.0	
27	15.5	15.7	15.8	15.9	15.9	
28	15.6	15.7	15.9	16.0	15.6	
29	15.8	15.9	15.7	15.9	15.8	

000054

30	15.7	15.8	15.7	15.9	15.7	
31		15.5	15.6		16.1	
COUNT	22	31	31	30	30	5
MAX	19.2	16.0	16.2	16.1	16.1	16.3
MIN	15.5	13.7	15.4	15.3	15.4	15.8

Questions about data h2oteam@usgs.gov
Feedback on this website gs-w_support_nwisweb@usgs.gov

Return to top of page

Daily Data for USA
http://waterdata.usgs.gov/nwis/dv?

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0.81 0.78

000055

APPENDIX B

LOCAL CLIMATOLOGICAL DATA FROM NOAA FOR JUNE, JULY, AND OCTOBER 2002

UNEDITED LOCAL CLIMATOLOGICAL DATA
(NOAA, National Climatic Data Center) MONTH: 06/2002

Station Location: PARKERSBURG, WV (PKB) lat: 39° 21' lon: -81° 26
Elev(Ground): 863 Feet Time Zone: WBAN: 03804

Day	Temperature (Fahrenheit) Max	Min	Avg.	Dep from Normal	Avg. Dew pt.	Avg Wet Bulb	Deg Days Base 65 Degrees Heating	Cooling	Significant Weather	Snow/Ice on Gnd(I 0600 LST Depth	1800 LST Water Equiv	Precipitation (In) 2400 LST Snow Fall	2400 LST Water Equiv	Pressure (inches of Hg) Avg. Station	Avg. Sea level	Wind Speed=mph Resultan peed	Dir tens of deg Rer Dir	Avg. Spee	max 5-sec peed	Dir	max 2-min Speed	Dir	Day
01	86	64	75	8	66	69	0	10	FG HZ	M	-	M	0.01	28.86	29.80	4.6	25	4.9	23	26	18	26	01
02	79	60	70	2	53	61	0	5	FG	M	-	M	0.01	28.92	29.86	2.3	33	6.3	18	6	17	2	02
03	80	52	66	-2	54	60	0	1	-	M	-	M	0.00	29.04	30.00	1.6	9	3.4	16	6	13	6	03
04	91	60	76	8	66	68	0	11	TS TSRA GR RA FG HZ VCTS	M	-	M	0.93	29.04	29.98	2.1	22	5.4	39	30	25	30	04
05	87	64	76	7	67	70	0	11	TS TSRA RA FG	M	-	M	0.65	29.01	29.96	6.0	22	7.4	35	30	25	30	05
06	68	60	64	-5	63	63	1	0	TS RA FG	M	-	M	0.35	29.01	29.96	0.0	0	1.4	14	13	12	12	06
07	76	57	67	-2	59	61	0	2	FG	M	-	M	0.00	29.18	30.13	1.4	6	2.6	14	7	10	6	07
08	83	53	68	-1	61	64	0	3	FG	M	-	M	0.00	29.22	30.18	1.8	19	2.5	13	17	10	20	08
09	87	60	74	4	66	68	0	9	TS TSRA FG+ FG VCTS	M	-	M	0.02	29.17	30.14	0.4	21	1.6	21	28	16	28	09
10	86	65	76	6	69	71	0	11	FG+ FG HZ		-	-	0.01	29.13	30.08	0.0	0	.8	9	1	7	26	10
11	87	65	76	6	61	70	0	11	TS FG+ FG HZ	M	-	M	0.00	29.06	29.98	5.7	23	6.3	20	28	18	25	11
12	85	70	78	8	69	71	0	13	TS VCTS		-	-	T	28.93	29.87	6.2	25	7.4	20	26	18	27	12
13	78	68	73	2	70	70	0	8	TS RA FG+ FG VCTS		-	-	0.53	28.86	29.79	2.2	22	3.9	14	22	12	22	13
14	75	61	68	-3	63	65	0	3	RA FG+ FG HZ		-	-	0.05	28.75	29.70	7.3	26	8.4	22	29	17	30	14
15	71	55	63*	-8	55	58	2	0	-		-	-	0.02	28.81	29.76	1.4	25	8.7	23	27	18	28	15
16	76	57	67	-4	54	59	0	2	-		-	-	0.00	28.89	29.84	7.8	27	8.4	25	31	21	29	16
17	78	52	65	-6	54	59	0	0	FG		-	-	T	29.01	29.97	2.8	25	4.2	20	27	15	27	17
18	82	54	68	-4	51	62	0	3	FG		-	-	T	29.18	30.12	0.8	3	2.7	12	2	9	3	18
19	86	55	71	-1	61	65	0	6	FG	M	-	M	0.00	29.31	30.27	1.3	7	2.4	12	7	10	6	19
20	88	59	14	2	64	67	0	9	FG HZ	M	-	M	0.00	29.42	30.38	0.2	12	1.2	12	17	9	14	20
21	87	60	74	2	64	67	0	9	FG+ FG BCFG BR HZ	M	-	M	0.00	29.43	30.38	0.4	11	2.5	13	10	9	14	21
22	87	61	74	2	63	67	0	9	FG+ FG HZ	M	-	M	0.01	29.36	30.31	0.4	7	2.5	13	8	9	11	22
23	89	61	75	3	64	68	0	10		M	-	M	0.00	29.26	M.21	1.0	18	1.8	13	20	10	20	23
24	91	61	76	3	66	70	0	11	G HZ	M	-	M	0.00	29.20	30.15	0.3	32	1.0	8	1	7	33	24
25	91*	64	78	5	68	71	0	13	G+ FG HZ	M	-	M	0.00	29.16	30.11	0.2	19	1.7	10	10	8	12	25
26	88	70	79*	6	71	73	0	14	RA FG HZ	M	-	M	T	29.06	30.00	5.2	23	6.5	17	25	15	20	26
27	86	65	76	3	69	71	0	11	TS TSRA RA FG VCTS		-	-	0.99	28.96	29.89	7.4	23	8.9	33	34	22	34	27
28	83	65	14	1	67	69	0	9	FG		-	-	0.00	29.04	29.99	2.5	29	4.2	15	30	10	29	28
29	85	63	74	1	65	68	0	9	FG+ FG		-	-	0.01	29.20	30.16	0.2	12	1.3	12	6	9	11	29
30	88	63	76	3	68	70	0	11	FG+ FG HZ		-	-	0.01	29.23	30.19	0.3	23	1.5	10	26	8	29	30
	83.5	60.8	72.2	------	63.4	66.5	.1	7.5	<Monthly Averages	Totals>			1.01	29.09	30.04	2.0	14.3	4.1					
	2.0	1.1	1.4	------	<----------Departure From Normal---------->								-3.20										

Degree Days

	Monthly Total	Monthly Departure	Season to Date Total	Season to Date Departure
Heating:	3	-12	4461	-505
Cooling:	224	35	317	36

Greatest 24-hr Precipitation: 0.99 date: 27
Greatest 24-hr Snowfall: date:
Greatest Snow Depth: 0 date:

Sea Level Pressure Date Time
Maximum: 30.45 21 0900
Minimum: 29.66 14 0359

Max temp >= 90: 3
Min t >= 32: 0
Precipitation >= .01 inch: 3
Pre
Thunderstorms: 8
Heavy Fog: 10
Snowfiill >= 1.0 inch: 0

000058

UNEDITED LOCAL CLIMATOLOGICAL DATA
(NOAA, National Climatic Data Center] MONTH: 0712002

Station Location: PARKERSBURG. WV (PKB)lat: 39" 21'. lon: -81"26'
Elev(Ground): 863 Feet Time Zone: WBAN: 03804

da	Temperature (Fahrenheit) Max	Min	Avg.	Dep From Normal	Avg. Dew pt.	Avg. Wet Bulb	Deg Days Base 65 Degrees Heating	Cooling	Significant Weather	Snowfall on Gnd(In) 0600 LST Depth	1200 LST Water Equiv	Precipitation (In) 2400 LST Snow Fall	2400 LST Water Equiv	Pressure (incher of Hg) Avg. Station	Avg. Sea level	Wind Speed=mph Dir=tens of degrees Resultant Speed	Res Dir	Avg. Speed	max 5-sec Speed	max 5-sec Dir	max 2-min Speed	max 2-min Dir	da
01	88	67	78	5	73	74	0	13	TS TSRA FG HZ VCTS				0.71	29.20	30.15	1.1	21	2.9	25	28	18	27	01
02	91	71	81	7	74	76	0	16	FG+ FG HZ				0.00	29.15	30.09	0.7	23	3.2	18	20	14	20	02
03	90	69	80	6	71	73	0	15	FGHZ				0.00	29.10	30.05	0.3	35	3.1	15	2	12	1	03
34	92	68	80	6	73	75	0	15	TS TSRA RA FG				0.06	29.10	30.03	1.3	23	3.4	18	27	14	27	04
05	85	65	75	I	64	68	0	10	FG+ FG				0.01	29.17	30.10	4.5	1	5.9	17	1	13	1	05
06	83	54	69	-5	57	62	0	4	FG				0.00	29.23	30.19	2.7	4	4.6	17	35	14	2	06
07	85	56	71	-3	61	65	0	6	FG+ FG				0.00	29.26	30.22	0.0	0	1.8	14	13	12	9	07
08	89	60	75	I	66	69	0	10	FG HZ				0.00	29.21	30.16	1.1	25	2.9	15	29	14	29	08
09	87	68	78	4	71	72	0	13	TS TSRA RA FG HZ VCTS				0.30	29.10	30.05	3.7	24	5.8	32	31	22	32	09
10	83	66	75	I	68	70	0	10	RAFGHZ	M	-	M	0.05	29.09	30.03	4.5	3	4.9	20	3	14	3	10
11	79	55	67	-7	52	59	0	2	-				0.00	29.16	30.12	7.3	5	8.6	20	2	16	2	11
12	83	52	68	-7	59	63	0	3	-				0.00	29.07	30.04	3.0	11	4.2	16	9	14	9	12
13	70	64	67*	-8	66	66	0	2	RA FG				0.40	29.03	29.99	0.5	13	1.5	9	17	8	16	13
14	81	65	73	-2	68	69	0	8	FG				T	29.05	30.00	0.9	I	2.7	10	6	9	7	14
15	88	64	76	I	66	69	0	11	FG+ FG HZ				0.01	29.10	30.06	1.0	28	1.8	15	27	12	27	15
16	90	63	77	2	68	71	0	12	FG+ FG HZ				0.00	29.14	30.09	2.3	30	3.3	16	31	13	31	16
17	90	61	79	4	70	72	0	14	FG HZ				0.00	29.14	30.08	2.6	25	3.7	15	23	12	26	17
18	89	70	80	5	71	73	0	15	TS TSRA RA FG HZ VCTS				0.12	29.05	29.99	3.1	25	4.5	23	33	17	32	18
19	85	69	71	2	72	73	0	12	TS TSRA FG HZ VCTS	M	-	M	0.52	29.00	29.93	3.7	23	4.5	28	33	21	36	19
20	85	68	77	2	71	72	0	12	FG+ FG HZ				0.00	29.08	30.04	0.4	21	2.1	12	27	9	26	20
21	90	66	78	3	71	73	0	13	FG+ FG HZ	M	-	M	0.01	29.13	30.08	0.9	18	2.1	12	24	8	17	21
22	92	70	81	6	73	75	0	16	FG HZ	M	-	M	0.00	29.10	30.04	2.9	21	4.7	17	19	14	20	22
23	90	71	81	6	73	74	0	16	FG HZ VCTS	M	-	M	0.11	29.11	30.05	3.1	22	5.1	22	2	15	36	23
24	83	67	75	0	67	69	0	14	FG HZ	M	-	M	0.00	29.19	30.13	4.2	4	4.8	14	2	12	5	24
25	88	64	76	I	68	70	0	13	TS RA FG VCTS	-	-		0.00	29.11	30.07	0.5	1	2.8	10	24	8	23	25
26	87	70	79	4	72	74	0	18	FG	-	-		0.00	29.07	30.00	3.4	22	5.0	15	25	13	27	26
27	83	72	78	3	73	74	0		TS FG VCTS	-	-		0.02	29.06	30.00	5.6	23	7.1	22	30	17	29	27
28	92*	74	83	8	74	76	0		TS FG	-	-		0.00	29.03	29.98	8.9	23	9.4	24	24	18	24	28
29	92	74	83*	8	12	75	0	18	FG+FG VCTS	-	-		0.01	29.03	29.96	9.0	24	9.4	25	29	20	21	29
30	90	71	81	6	70	73	0	16		-	-		0.00	29.09	30.01	3.4	25	4.9	16	25	12	21	30
31	92	66	79	4	69	72	0	14	FG+ FG	-	-		0.00	29.08	30.03	0.4	22	1.9	16	24	10	24	31
	86.8	66.0	76.4	------	68.5	70.8	.0	11.7	<Monthly Averages	Totals>			2.33	29.11	30.06	1.0	24.7	4.3	<Monthly Average				
	2.6	1.4	1.8	___---	<----------Departure From Normal---------->								-1.87										

Degree Days

	Monthly Total	Departure	Season to Date Total	Departure
Heating:	0	0	0	0
Cooling:	362	64	679	100

Greatest 24-hr Precipitation: 0.71 date: 01
Greatest 24-hr Snowfall: date:
Greatest Snow Depth: 0 date: -

Sea Level Pressure Date Time
Maximum: .00 0 m
Minimum: 29.87 19 1453

Number of Days with ----->
Max temp >= 90: 12
Max temp <= 32: 0
Thunderstorms : 9
Min temp <= 32: 0
Min temp <= 0 : 0
Heavy Fog : 8
Precipitation >= .01 inch: 13
Precipitation >= .10 inch : 6
Snowfall >= 1.0 inch : 0

000059

UNEDITED LOCAL CLIMATOLOGICAL DATA
(NOAA, National Climatic Data Center) MONTH: 10/2002

Station Location: PARKERSBURG, WV (PKB)lat: 39° 21', lon: -81° 26'
Elev(Ground): 863 Feet Time Zone: WBAN: 03804

date	Temperature (Fahrenheit) Max	Min	Avg.	Dep From Normal	Avg. Dew pt.	Avg Wet Bulb	Deg Days Base 65 Degrees Heating	Cooling	Significant Weather	Snow/Ice on Gnd(In) 0600 LST Depth	1200 LST Water Equiv	Precipitation (In) 2400 LST Snow Fall	2400 LST Water Equiv	Pressure (inches of Hg) Avg. Station	Avg. Sea level	Wind Speed=mph Dir=tens of degrees Resultant Speed	Res Dir	Avg. Speed	max 5-sec Speed	Dir	max 2-min Speed	Dir	date
01	84	63	74	13	62	65	0	9	TS FG HZ		-	-	0.00	29.20	30.14	4.2	22	5.1	17	28	13	25	01
02	84	61	73	12	65	67	0	8	TS FG HZ		-	-	0.00	29.15	30.10	2.2	25	3.5	15	22	13	24	02
03	84	64	74	14	68	69	0	9	TS RA FG VCTS		-	-	0.01	29.10	30.05	2.3	25	3.4	28	21	22	21	03
04	86	64	75*	15	66	68	0	10	RA FG		-	-	0.31	28.93	29.88	7.4	19	8.9	33	18	24	16	04
05	70	48	59	0	53	56	6	0	TS FG+ FG		-	-	0.06	29.16	30.12	3.1	30	5.4	24	26	16	30	05
06	77	47	62	3	53	57	3	0	FG+ FG		-	-	0.01	29.12	30.09	3.2	22	7.1	26	27	20	26	06
07	67	43	55	-4	43	51	10	0			-	-	0.00	29.19	30.14	4.9	30	7.0	21	27	17	27	07
08	61	36	49	-9	38	44	16	0			-	-	0.00	29.26	30.24	2.3	5	3.9	22	9	17	8	08
09	67	46	57	-1	51	53	8	0	FG		-	-	T	29.21	30.20	0.2	12	.8	7	30	6	20	09
10	63	55	59	2	58	59	6	0	RA FG		-	-	0.40	29.22	30.19	2.4	5	2.7	13	7	9	6	10
11	64	60	62	5	61	61	3	0	RA FG		-	-	0.75	29.11	30.10	4.9	4	5.4	13	6	10	5	11
12	70	58	64	7	59	61	1	0	DZ FG		-	-	0.01	29.14	30.12	1.1	2	2.2	9	24	7	10	12
13	65	46	56	0	50	54	9	0	RA FG+ FG		-	-	0.21	29.26	30.22	3.6	32	6.0	21	29	16	30	13
14	58	34	46	-10	35	41	19	0			-	-	0.00	29.33	30.32	3.0	7	4.0	16	2	14	7	14
15	61	38	50	-6	44	47	15	0	RA FG		-	-	0.43	29.00	29.97	1.3	17	2.5	14	19	10	19	15
16	53	45	49	-6	48	49	16	0	RA FG		-	-	1.05	28.86	29.82	3.8	32	4.8	20	31	14	31	16
17	49	38	44	-11	40	42	21	0	RA FG	M	-	M	T	29.06	30.03	1.3	28	2.2	14	32	10	31	17
18	M	M	0*	0			0	0	HZ		-	-	0.00	29.14		5.8	21	6.1	24	24	18	24	18
19	58	50	54	0	47	51	11	0	RA FG		-	-	0.09	29.02	29.99	6.7	23	8.0	24	23	17	24	19
20	56	40	48	a	40	44	17	0			-	-	0.00	29.11	30.08	2.1	34	3.6	14	31	10	30	20
21	60	35	48	-5	38	42	17	0	FG		-	-	0.00	29.15	30.14	1.5	8	2.5	14	2	10	3	2
22	65	34	50	-3	40	43	15	0	TS FG+ FG		-	-	0.00	29.21	30.20	0.3	21	1.9	14	27	12	26	22
23	59	35	47	-6	40	43	18	0	TS FG+ FG HZ		-	-	0.00	29.35	30.32	2.7	3	3.9	17	10	10	4	23
24	54	41	48	-4	39	43	17	0	TS		-	-	0.00	29.31	30.30	7.5	4	8.1	15	2	12	5	24
25	63	47	55	3			10	0	FG		-	-	0.27					7.4	28	16	20	17	25
26	59	50	55	3			10	0	TS FG		-	-	0.02					5.2	16	23	13	28	26
	-------								<Monthly Averages	Totals>													
	-------								<----------Departure From Normal---------->														

Degree Days Monthly Season to Dare
Total Departure Total Departure
Heating:
Cooling:

Greatest 24-hr Precipitation:date:
Greatest 24-hr Snowfall: date:
Greatest Snow Depth: date:

Sea Level Pressure Date Time
Maximum:
Minimum :

Number of Days with ----->
Max temp >= 90:
Max temp <= 32: 4
Thunderstorms : 8
Min temp <= 32:
Min temp <= 0 :
Heavy Fog : 5
Precipitation >= .01 inch:
Precipitation >= .10 inch :
Snowfall >= 1.0 inch :0

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