

**CONSENT ORDER ISSUED PURSUANT TO
ARTICLES 5 and 12, CHAPTER 22 AND ARTICLE 1, CHAPTER 16
OF THE WEST VIRGINIA CODE.**

T O E. I. DU PONT DE NEMOURS AND COMPANY

DATE: November 14, 2001

**West Virginia Department of Environmental Protection
West Virginia Department of Health and Human Resources**

Order No. GWR-2001-019

This **CONSENT ORDER** is issued by the **Director** of the **Division** of Water Resources and **Director** of the **Division** of Air Quality, ~~West~~ Virginia Department of Environmental Protection, and the **Commissioner** of the Bureau for Public Health, ~~West~~ Virginia Department of Health and Human Resources, pursuant to the authority set forth in more detail below.

I. INTRODUCTION OF PARTIES.

This Consent Order is entered into by and 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 E. I. du Pont de Nemours and Company [DuPont][collectively referred to as the "**Parties**"].

II. PURPOSE OF CONSENT ORDER

This Consent Order sets forth a series of tasks to be performed by the Parties in order to determine whether there has been any impact on human health and the environment as a result of releases of ammonium perfluorooctanoate [C8], CAS Number 3825-26-1, to the environment from DuPont operations. C8 is a material used by DuPont in its fluoroproducts manufacturing process at its ~~Washington~~ Works facility located at Washington, Wood County, West Virginia. C8 is not identified as a hazardous substance, hazardous waste or otherwise specifically regulated under ~~West~~ Virginia or federal statute or regulation.

This Consent Order has been negotiated in good faith and the actions undertaken by DuPont pursuant to this Consent Order do not constitute an admission of any liability on its part. DuPont retains the right to controvert in any other proceedings, other than proceedings to implement or enforce this Consent Order, the validity of the findings of fact and conclusions of law set forth herein. DuPont agrees to comply with and be bound by the terms of this Consent Order and further agrees in any proceeding to implement or enforce this Consent Order that it

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will not contest the validity of this Consent **Order** or the jurisdiction of WYDEP and WVDHHR-BPH to **issue** it.

III. DEFINITIONS.

Whenever the terms identified below **are used** in the Consent Order or in **any** exhibit or attachment hereto, the following definitions shall apply:

1. "The Agencies" shall **mean** the Department of Health and Human Resources, **Bureau** for Public Health and the Department of Environmental **Protection**, including the Divisions of Air Quality and Water Resources.

2. "C8" shall **mean** the chemical **compound ammonium perfluorooctanoate**.

3. "Detection Limit" means the lowest analytical level that **can** be reliably achieved within specified limits of precision and accuracy **under** routine laboratory conditions for a **specified** matrix. It is based on **quantitation**, precision and accuracy **under** normal operation of a **laboratory** and the practical **need** in a compliance-monitoring program **to** have a sufficient **number** of laboratories available **to** conduct **the** analyses.

4. "Effective Date" shall **mean** the date set forth in Section XVII **of this Consent Order**.

5. "EPA" shall **mean** the United States Environmental Protection **Agency**.

6. "Force Majeure" shall mean conditions or circumstances beyond the reasonable control of **DuPont** which could **not** have **been** overcome by due diligence and shall include, without limitation, acts of God, action or inaction of **governmental** agencies, or administrative or judicial tribunals or **other** third parties, or **strikes** or labor disputes (provided, however, DuPont shall not be **required** to concede to **any** labor **demands**), which prevent or delay DuPont from complying **with** the **work** plan.

7. "Groundwater Monitoring Well" shall **mean any cased** excavation or **opening** into **the** ground made by digging, **boring**, drilling, **driving**, jetting, or **other** methods for the purpose of **determining the** physical, chemical, biological, or radiological properties of **groundwater**. The term "**monitoring well**" includes piezometers and observation wells, **which are** installed for **purposes other than** those **listed** above, but does not include wells whose primary purpose is to provide a supply of potable water.

8. "Groundwater Well" or "Well" shall **mean any drilled** or excavated groundwater collection system that supplies water for public, private, industrial, or agricultural **use** and shall include **drinking** water wells. **As used** in **this** Consent Order, **this** term applies only **to** wells

located in ~~West~~ Virginia.

9. "Reimbursable **Costs**" shall mean costs attributable (on an hourly basis) to the work of ~~Dee Ann~~ Staats, Ph.D. in the negotiation and implementation of this Consent Order, the costs attributable to any other participants on the C8 Assessment of Toxicity Team, as described in Attachment C to this Consent Order, who are serving in that position as contractors to WVDEP, costs incurred by WVDEP in connection with the public meetings described in Attachment C, and costs attributable to any contractor retained at the direction of the Groundwater Investigation Steering Team (**GIST**).

10. "Washington **Works**" shall mean the manufacturing facility owned by DuPont and located in ~~Washington~~, Wood County, ~~West~~ Virginia, as depicted on Exhibit 1 to this Consent Order.

11. "The **Facilities**" shall mean the ~~Washington~~ Works and the Local Landfill, depicted on Exhibit 1, the ~~Letart~~ Landfill, depicted on Exhibit 2, and the Dry Run ~~Landfill~~, depicted on Exhibit 3.

12. "Reference **Dose**" or "RfD" shall mean an estimate (with uncertainty spanning perhaps an order of magnitude or greater) of a daily exposure level for the human population, including sensitive subpopulations, that is likely to be without an appreciable risk of deleterious effects during a lifetime. Chronic RfDs are specifically developed to be protective for long-term exposure to a compound.

13. "Screening Level" shall mean the concentration in a specific media such as air, water, or soil, that is likely to be without an appreciable risk of deleterious effects during a lifetime in the human population.

IV. WAIVER OF RIGHTS.

DuPont waives any and all rights it may have to appeal or challenge the validity or requirements of this Consent Order, and shall not challenge the jurisdiction of the Agencies to issue this Consent Order.

This Consent Order applies to and is binding upon the Parties, and their successors and assigns.

V. FINDINGS OF FACT.

1. C8 is a chemical substance which has no established state or federal effluent or emission standards.

2. C8 is a perfluorinated surfactant manufactured by the 3M Company and others.

Since the early 1950's C8 has been used by W o n t in its fluoropolymer-related manufacturing processes at its Washington ~~Works~~ facility, located in Wood ~~County~~, West ~~Virginia~~

3. Residues containing C8 from fluoropolymer manufacturing processes at Washington ~~Works~~ are or have been released to *the air*, discharged to the ~~Ohio River~~, disposed of at the Facilities, and otherwise shipped off-site for destruction and/or disposal. DuPont also captures for recycle a significant ~~portion~~ of used C8.

4. No permits issued to DuPont authorizing releases of pollutants to the environment contain specific limitations on the amount of C8 that may be released to the environment. However, C8 releases are addressed more generally in WVDEP Division of Air Quality permits as particulate matter, PM₁₀ (particulate matter with an aerodynamic diameter less than or equal to 10 microns), or as a volatile organic compound.

5. Since as early as 1990, DuPont has performed regular, voluntary water sampling to detect the presence and level of C8 in and around certain of its Facilities in West Virginia and has reported the results of this sampling to various government agencies. Currently, DuPont also samples and reports C8 concentrations in water as required by permits issued by WVDEP and EPA.

6. As a result of DuPont's sampling, C8 has been detected in varying concentrations in and around certain of its Facilities in West Virginia, including private drinking water wells and public water supplies.

7. Analyses of water samples have reported levels of C8 in the Lubeck Public Service District ("LPSD") drinking water supply.

8. DuPont, by and through its use of C8 in the fluoropolymer manufacturing process, is the likely source of C8 presence in and around certain of its Facilities in West Virginia.

9. Along with environmental sampling for C8, DuPont has performed and participated in multiple studies examining the potential effects of C8 exposure on human health and the environment.

10. Studies performed by DuPont and 3M have determined that C8 in sufficient doses, i.e., considering both amount and duration of exposure, is toxic to animals through ingestion, inhalation and dermal contact. Studies have also found that C8 is persistent in humans and the environment.

11. Although DuPont has collected a large amount of data on the presence of C8 in the environment, the Agencies believe that additional information will assist them in delineating the extent and concentrations of C8 in the environment at or near the Facilities. Available data collected by DuPont indicates that C8 is present in the surface and groundwater at the Letart and

Dry Run Landfills and at or near the Washington Works facility.

12. WVDEP and WVDHHR-BPH have determined that it is desirable to ascertain the source of drinking water for persons potentially exposed to C8 in groundwater or surface waters in the area of the Facilities.

13. EPA, WVDEP, and WVDHHR-BPH, in consultation and cooperation with one another, have requested, and DuPont has submitted, information and documents relating to the detection and presence of C8 in and around the Facilities and documents with respect to the human health studies being performed related to C8 exposure.

14. Based upon information submitted by DuPont and reviewed to date by EPA, WVDEP, and WVDHHR-BPH, the Agencies believe that additional data would assist in their evaluation of whether the ground and surface waters now containing C8 have a complete exposure pathway to humans and whether persons in and around the Facilities are at risk of adverse health effects from C8 exposure.

15. There have been no independent governmental or non-industrial studies performed on the human health effects of C8 exposure for the purpose of establishing an exposure standard for C8 applicable to the general public.

16. The Agencies have concluded that full site and health assessments are necessary to ascertain the extent and level of C8 concentrations in the environment and to assist them in determining whether C8 presents any possible danger to the public. DuPont has agreed to participate and assist in this effort.

17. The fluoropolymers industry has committed to EPA to reduce total actual C8 emissions for either the year 1999 or the year 2000 by 50 percent within three to five years of each company's commitment date. DuPont committed to this goal in 2000.

18. DuPont installed, in March 2001, a filter and carbon treatment system at its Washington Works facility that is demonstrating removal efficiency of 90-95% of the C8 in its major C8-containing wastewater stream.

VI. AUTHORITY TO ISSUE CONSENT ORDER

1. The WVDEP is the state agency vested with the authority to protect the environment in West Virginia.

2. Article 12, Chapter 22 of the West Virginia Code, the Groundwater Protection Act, grants to the WVDEP the authority to protect the State's groundwater from any contaminant

and, where contaminated groundwater is found, to institute a civil action or issue an order requiring that groundwater be remediated.

3. Article 5, Chapter 22 of the West Virginia Code, the Air Pollution Control Act, grants to the WVDEP the authority to protect the State's air from pollutants and to institute a civil action or issue orders to enforce the statute.

4. The WVDHHR-BPH is the state agency vested with the authority to regulate and protect drinking water supplies in West Virginia.

5. Article 1, Chapter 16 of the West Virginia Code, grants to the WVDHHR-BPH the authority to protect the public drinking water supply of the state and to perform all investigation necessary to assure its purity and safety, and further grants to the WVDHHR-BPH the authority to institute actions and issue orders to restore the purity of said water supply.

VII. REQUIREMENTS OF CONSENT ORDER

The Agencies have concluded that it is of great importance to have sufficient data upon which to determine the scope and potential risk of the presence of C8 in the environment in and around the Facilities. Therefore, the Agencies require the following:

A. Establishment of Groundwater Investigation Steering Team.

1. A "Groundwater Investigation Steering Team" (GIST) shall be established with members of the team consisting of WVDEP, WVDHHR-BPH, EPA Region III, and DuPont. The WVDEP representative will be the team leader. The objectives and specific tasks of the team are set forth in full in Attachment A of this Consent Order. However, the primary purpose of the GIST will be to oversee an expeditious, phased approach to fulfilling the majority of the requirements set forth in Sections A through C. The work performed with oversight from the GIST shall be W e d by DuPont in accordance with Section VIII of this Consent Order.

2. Upon conclusion of key milestones in the tasks set forth in Attachment A, the GIST shall issue interim or final reports setting forth findings of fact and conclusions regarding background data, groundwater monitoring, and plume identification as described in Attachment A. Any groundwater monitoring plan developed pursuant to Attachment A shall survive the termination of this Consent Order and shall be incorporated as a minor permit modification for the Facilities. DuPont reserves the right to request modification of the plans upon renewal of the Facilities' permits.

B. National Pollutant Discharge Elimination System Requirements.

1. Except ~~as~~ occasioned by ~~no-flow~~ conditions, DuPont shall perform monthly sampling for **C8** at the Local Landfill at certain outfalls identified in West Virginia/National Pollutant Discharge Elimination System ("WV NPDES") Permit No. **0076538** as **Outfalls 101, 004 and 005.**

2. ~~Except as~~ occasioned by ~~no-flow conditions~~, DuPont shall perform monthly sampling for **C8** at the Washington Works facility at certain outfalls identified in WV NPDES Permit No. **WV0001279** as **Outfalls 001, 002, 003, 005, 007, and 105.**

3. Except ~~as~~ occasioned by ~~no-flow~~ conditions, DuPont shall perform monthly sampling for **C8** at Dry Run Landfill at all outfalls identified in its WV NPDES Permit No. **WV0076244.**

4. Except ~~as~~ occasioned by ~~no-flow~~ conditions, DuPont shall perform monthly sampling for **C8** at Letart Landfill ~~at~~ all outfalls identified in its WV NPDES Permit No. **WV0076066.**

5. ~~With~~ respect to the requirements of paragraphs VILB.1 through W.B.4, all sampling shall be performed pursuant to ~~established~~ EPA guidelines, ~~where~~ applicable, and results shall be delivered to the WVDEP within ~~thirty~~ days of receiving such ~~results~~. DuPont shall record and ~~report~~ all attempts to sample ~~under no-flow~~ conditions.

6. ~~Within~~ 90 days of the Effective Date of this Consent Order, DuPont agrees to obtain a sample from each surface ~~or~~ alluvial water intake for public water supplies along the Ohio River in the area extending ten ~~river~~ miles downstream of the Washington Works facility and one river mile upstream of the Washington Works facility. If concentrations of **C8** above the Detection Limit are found in any sampled public water supply within the upstream or downstream segments initially sampled, the segments within which intakes are to be sampled shall be extended to twenty river miles downstream or two river miles upstream, as appropriate. If concentrations above the Detection Limit are found in any segment so extended, additional sampling will be performed on water intakes within thirty river miles downstream or three river miles upstream, as appropriate.

7. The additional monitoring requirements contained in this subsection shall be incorporated into the Facilities' West Virginia/National Pollutant Discharge Elimination System permits by minor modification. DuPont reserves the right to request a modification of these requirements upon renewal of the permits.

C. Toxicological and Human Health Assessment.

1. DuPont agrees to fund the various tasks set forth below as a part of this Consent Order by establishing an escrow account at a bank agreed to by the Parties, or by some other

means agreed to by the Parties. Disbursements from said escrow shall be authorized by the C8 Toxicity Team Leader and DuPont representative jointly as described below.

2. A C8 Assessment of Toxicity Team ("CAT Team") shall be established with members of the team consisting of representatives of:

WVDEP
WVDHHR-BPH
EPA Region III
NICS
ATSDR
DuPont

3. The WVDEP representative shall be the Team Leader.

4. The individual team members, the tasks of the team, and the team objectives are set forth in full in Attachment C of this Consent Order.

5. Upon conclusion of all the tasks set forth in Attachment C, the CAT Team shall issue a final report setting forth findings of fact and conclusions as to what extent there may be health risks associated with C8 at the Facilities.

D. Emission Modeling Assessment

1. The following information shall be submitted to the Division of Air Quality ("DAQ") within 30 days of the Effective Date except where a different deadline is provided in this subsection:

a. A complete and accurate List of building dimension parameters for all structures located within the Washington Works facility that have a significant impact on the dispersion of C8 emissions. Significant impact for each structure on the site shall be determined based on the "area of building wake effects" as defined in the EPA User's Guide to the Building Profile Input Program (EPA-454/R-93-038 Revised Feb. 8, 1995).

b. A complete and accurate list of DuPont's current permitted allowable emission rates and confirmed actual C8 emission rates in pounds per year for the year 2000 for all sources located within the Washington Works facility. Each emission point shall be listed according to its stack LD, and corresponding permit number. For each stack identified above as emitting C8 DuPont shall list all relevant stack parameters to be used in air dispersion modeling.

c. For each emission point (stack) emitting C8, the following information shall be supplied:

- i. **Phase of C8** (solid, vapor or aqueous solution) at stack conditions.
- ii. The particle characterization **to be used** for modeling including the particle **size** distribution (microns), the **mass** fraction of C8 in each particle size category, and the particle density (g/cm³).
- iii. **For** particulate emissions, scavenging coefficients (**hr/s-mm**) for both liquid **and frozen** precipitation to be **used** for wet deposition modeling based upon the particle size distribution and the EPA's Industrial Source Complex, **Version 3 Model** Guidance (**EPA-454/B-95-003b** Sept. 1995) ("**ISC Guidance**"). DuPont may **submit**, within 30 days of the Effective Date, information to support the use of the **normalized** scavenging coefficient in the ISC Guidance (Figure 11 of **ISC Guidance**) for C8's scavenging coefficients. **DAQ** shall approve or disapprove with justification in writing, DuPont's submission. **Should DAQ** disapprove, DuPont shall have **the right**, within seven days, to request a meeting **with** DAQ and USEPA to address the deficiencies **set forth in DAQ's** letter and to request reconsideration of **DAQ's** decision. Following a **meeting** of the parties, DAQ shall issue a decision letter **regarding** C8's scavenging coefficients within seven days of the meeting. **DAQ** reserves the right to require measurement of **C8's scavenging** coefficients in its decision and DuPont **reserves the right** to assert a claim of confidentiality in the event such a measurement is made.
- iv. For **gaseous** emissions, scavenging coefficients (**hr/s-mm**) for both liquid and frozen precipitation to be **used** for wet deposition modeling **will be provided as** a function of droplet size using formulae in the open literature **based on** the physical properties of C8 and consistent **with** Section I.4 of the **ISC** Guidance. DuPont **may submit**, within 30 days of the Effective Date, information to support the proposed scavenging coefficient for **gaseous** emissions including information **on** the percentage of C8 emissions **that** would be in gaseous form. DAQ shall approve **or** disapprove **with** justification in writing, DuPont's submission. **Should DAQ** disapprove, DuPont shall have **the right**, Within seven days, to request a meeting with DAQ and USEPA **to address** the deficiencies **set forth in** DAQ's letter **and to request** reconsideration of **DAQ's** decision. Following a **meeting** of the parties, DAQ shall **issue a decision** letter regarding C8's scavenging coefficients within **seven days** of the meeting. DAQ reserves the **right** to require measurement of C8's scavenging coefficients in its decision **and** DuPont reserves the **right to** assert a claim of **confidentiality** in the event such a measurement is made.
- d. **To** the extent **that** the phases exist, a solid, liquid and vapor phase (T-P) diagram **for C8** with respect to pressure and temperature. The temperature **and** pressure **ranges** shall be representative of exhaust gas conditions before and after control equipment. **Estimates** of C8's critical properties shall be provided along with **measured** ranges of **phase** transition temperatures.

e. In lieu of a binary phase (T-x-y) diagram representing the vapor-liquid equilibrium between water and C8, the solubility and Kraft Point of C8 in aqueous solutions, measured pK value for C8 dissociation in aqueous solutions, and measurements of C8 concentrations or related acids observed when tested in a head space GC at various concentrations, temperatures, and pHs representative of the ranges observed during actual operating conditions. Furthermore a discussion regarding the volatility of C8 in aqueous solutions as a function of pH will be provided. The information in this paragraph shall be submitted to the DAQ within 60 days of the Effective Date.

f. Henry's law coefficient for C8 and a discussion of its dependence on pH. The coefficient shall be defined at various temperatures covering the range observed during actual operations.

g. Any carbon adsorption data in the form of isotherms for C8 adsorption.

DAQ will provide DuPont an opportunity to comment on modeling methodology and assumptions prior to finalizing the modeling results.

2. Any expenses incurred as a result of accurately supplying the information requested above shall be covered by DuPont.

3. Upon submission of the information required by this Subsection VII.D, DAQ reserves the right to disapprove any data if the analytical methodology or quality control procedures are deemed inappropriate.

VIII. REIMBURSEMENT OF COSTS.

1. DuPont agrees to establish an escrow account to fund Reimbursable Costs under this Consent Order. Expenditures from this account shall be made upon joint approval by a duly designated representative of the WVDEP and of DuPont ("designated representatives"). Written notice of such designation shall be sent to the persons identified pursuant to Section XVI of this Consent Order. Prior to the execution of this Consent Order, WVDEP has provided DuPont with an estimate of Reimbursable Costs that WVDEP expects to incur under this Consent Order.

2. Within 10 business days of the Effective Date, DuPont shall deposit in the escrow account funds in the amount of fifty thousand dollars (\$50,000). Each expenditure from the escrow account must be supported by an itemized accounting, including invoices and receipts. Said escrow account shall be replenished with additional funds whenever the balance is less than ten thousand dollars (\$10,000), or as agreed to by the designated representatives. Any unexpended amount remaining in the escrow account at the conclusion of the work to be performed under this Consent Order shall be returned to DuPont.

3. DuPont's obligation to pay Reimbursable Costs under this Consent Order shall

not exceed two hundred and fifty thousand dollars (\$250,000). Except as to Reimbursable **Costs** which are addressed separately in this section, all other costs incurred by DuPont in carrying out its obligations under Consent Order shall be the sole responsibility and obligation of DuPont.

IX. QUALITY ASSURANCE/QUALITY CONTROL.

All sampling and analyses performed pursuant to this Consent Order shall conform to EPA guidance regarding quality assurance/quality control, data validation, and chain of custody procedures. The laboratory performing the analyses shall be approved by the Parties prior to sampling.

X. C8 REDUCTION PROGRAM.

1. Notwithstanding current permitted emission levels, DuPont agrees to limit overall C8 emissions to the air to no more than actual calendar year 2000 levels on a calendar year basis and shall further provide to the WYDEP monthly emissions reports regarding C8. The reporting requirement contained herein shall be modified to quarterly reports upon the issuance of a Screening Level derived following the procedures set out in Attachment C.

2. DuPont agrees to reduce emissions to the air and discharges to the water of C8 collectively by 50% from actual 1999 levels by December 31, 2003.

3. DuPont shall operate and maintain the filter and carbon bed treatment system at its Washington Works facility with the goal of achieving 90-95% C8 removal efficiency in its major C8-containing wastewater stream.

4. DuPont shall conduct the following construction projects and abide by the specified dates:

a. DuPont shall install an improved scrubber filter to replace recovery device T61ZC on permit R13-815D. Construction shall begin no later than February 28, 2002. Initial operation shall begin no later than the date of start up after the April shutdown, or June 28, 2002, whichever is earlier.

b. DuPont shall modify the stack for emission point T61ZCE so that the emission point elevation is 170 feet above grade. The stack diameter, velocity, and flow rate shall be sized to provide effective dispersion of particulate emissions according to 45 Code of State Rules, Series 20 (Good Engineering Practice as Applicable to Stack Heights). Construction shall begin no later than February 28, 2002. Initial operation shall begin no later than the date of start up after the April shutdown, or June 28, 2002, whichever is earlier. At times when device T61ZC is not operating, permitted emissions from scrubber T61FC shall be emitted to emission point

T6LZCE.

5. W o n t shall conduct a scrubber optimization and recovery improvement program that shall consist of a study of scrubber operation for device C2DWC2 on permit R13-614A. The study shall be complete by the end of March 2002. Provided the results are encouraging, the company shall implement identified improvements for this device and similar improvements for units C2DTC2 on permit R13-614A, C2EHC2 on permit R13-1953, and C1FSC2 on proposed permit for R13-2365A. Implementation of the improvements for the latter &vices will be complete no later than the end of November 2002.

XI. COMPLIANCE WITH SCREENING LEVELS.

1. The following requirements shall apply only if the procedures set out in Attachment C have been followed:

a. No later than 60 days after receipt of notification from the Agencies that data or information developed pursuant to this Consent Order or other information that is recent and valid demonstrates that DuPont's operations have resulted in C8 exposures above the Screening Levels derived following the procedures set out in Attachment C, DuPont shall submit a plan for review and approval by the Agencies that is designed to reduce such exposures to levels below the Screening Levels within a reasonable time (the "Remedial Plan" or "the Plan").

b. Within 30 days of receipt of the Remedial Plan submitted by DuPont, the WVDEP shall, upon consultation with the WVDHHR-BPH and based upon accuracy, quality, and completeness, either approve or disapprove the Plan. If the WVDEP disapproves the Remedial Plan, the WVDEP shall notify DuPont in writing that the Remedial Plan has been disapproved and shall specify the reasons for such disapproval. DuPont shall resubmit the Remedial Plan as revised to address the deficiencies identified in the notice. W o n t ' s failure to submit an approvable Remedial Plan shall be deemed a violation of this Consent Order.

2. In the event EPA or the WVDEP develops and finalizes a reference dose/screening level for C8 in accordance with applicable statutory and regulatory requirements ("the Regulatory EPA Standard") that would be applicable to Dupont's activities or the Facilities independent of this Consent Order, DuPont's obligations under this Section shall be determined with reference to the Regulatory EPA Standard. DuPont reserves all rights it may have to comment upon, object to, or appeal the Regulatory EPA Standard in proceedings separate and apart from this Consent Order.

XII. COMPLETION OF CONSENT ORDER

1. Except as to DuPont's obligations under Section XI, this Consent Order and DuPont's obligations hereunder shall terminate upon issuance of a completion letter(s) from the Secretary of the WVDEP or his designee and from the Commissioner of the WVDHHR-BPH to

DuPont. In a timely manner following receipt of a Written request ~~from~~ DuPont the respective Agencies shall issue the completion ~~letter(s) to~~ DuPont or shall issue a letter to DuPont detailing the obligations and ~~work~~ that have not been completed in accordance with this Consent Order. The Parties agree that the Agencies' obligation to issue this letter shall be ~~deemed~~ a nondiscretionary duty.

2. DuPont's obligation ~~to~~ achieve and maintain compliance with the Screening Levels as provided in Section XI of this Consent Order shall survive the termination of this Consent Order. Such obligation shall terminate only as provided in Section XI or upon agreement of the Parties.

XIII. ADDITIONAL ACTIONS.

The Agencies, individually or collectively, pursuant to their ~~statutory~~ duty and authority, may determine that ~~additional action, beyond the tasks set forth in this Consent Order, is necessary to protect human health and/or the environment. Nothing in this Consent Order shall be construed as restraining or preventing the Agencies from taking such actions. Nothing in this Consent Order constitutes a satisfaction of or release from any claim or cause of action against DuPont for any liability it may have pursuant to the federal Clean Water Act, the federal Clean Air Act, the federal Safe Drinking Water Act, the West Virginia Groundwater Protection Act, the West Virginia Air Pollution Control Act, other statutes applicable to this matter, or West Virginia common law. Nothing in this Consent Order in any way constitutes a modification or waiver of statutory requirements of DuPont and nothing in this Consent Order shall obligate DuPont to undertake any actions not specified herein.~~

XIV. ENFORCEMENT.

Enforcement of this Consent Order ~~may be had by the filing of a civil action by any of the Agencies in the Circuit Court of Wood County, West Virginia. Violation of the terms and conditions of this Consent Order by DuPont is a violation of the West Virginia Code and may result in enforcement action being taken, including a request for civil penalties as set forth by law. DuPont shall not be liable for violations of this Consent Order due to any "Force Majeure" condition.~~

XV. CONTENTS OF CONSENT ORDER/MODIFICATION.

The entirety of this Consent Order ~~consists of the terms and conditions set forth herein and in any attachments or exhibits referenced herein. Modification of the terms and conditions of this Consent Order including any modification of timeframes or deadlines established in this Consent Order shall be made only by agreement of the Parties in writing, except that modifications to any~~

requirement set out in the attachments to this Consent Order may be made upon consensus of the members of the GLST or the CAT Team, as appropriate.

XVI. ADDRESSES FOR ALL CORRESPONDENCE

All documents, including reports, approvals, notifications, disapprovals, and other correspondence, to be submitted under this Consent Order shall be sent by certified mail, return receipt requested, hand delivery, overnight mail or by courier service to the following addresses or to such addresses DuPont or WVDEP may designate in writing.

Documents to be submitted to WVDEP should be sent to:

WV Department of Environmental Protection
1356 Hansford Street
Charleston, West Virginia 25301

Attention: Armando Benincasa, Esq.
Attention: Dee Ann Staats, Ph.D.
Phone No.: (304) 558-2508

Documents to be submitted to WVDHHR-BPH should be sent to:

WV Department of Health and Human Resources
Bureau for Public Health
815 Quarrier Street, Suite 418
Charleston, West Virginia 25301

Attention: William Toomey, Manager of Source Water Assessment Program
Phone No.: (304) 558-2981

Documents to be submitted to DuPont should be sent to:

E. I. du Pont de Nemours and Company
Washington Works
P.O. Box 1217
Parkersburg, West Virginia 26102

Attention: Paul Bossert
Phone No.: (304) 863-4305

and

E. I. du Pont de Nemours and Company
Legal Department, Suite D-71
1007 Market Street
Wilmington, Delaware 19898

Attention: Bernard J. Reilly, Esq.
Phone No.: (302) 774-5445

XVII. AUTHORIZED SIGNATORIES/NON-ADMISSION.

The undersigned representatives state that they have had full and fair opportunity to review this Consent Order and have had opportunity to allow for their counsel to do the same, and therefore enter this Consent Order freely and with full knowledge of its terms and conditions.

The undersigned do hereby confirm that they have the authority to enter into this Consent Order and have the authority to bind their respective party.

Neither the terms of this Consent Order, nor execution thereof shall constitute an admission by DuPont of any fact or of any legal liability. DuPont expressly reserves all rights and defenses that may be available in any proceeding involving third parties or involving WVDEP and WVDHHR-BPH in any other matter.

This Consent Order may be signed in counterparts and shall be effective upon signature of all the Parties below ("Effective Date").

Entered this 14th day of November 2001, by:

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY



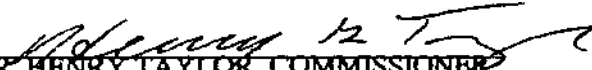
WILLIAM E. ADAMS, DEPUTY SECRETARY

West Virginia Department of Environmental Protection
1356 Hansford Street
Charleston, West Virginia 25301

Entered this 15th day of November, 2001, by:

WEST VIRGINIA DEPARTMENT OF HEALTH AND HUMAN RESOURCES - BUREAU FOR
PUBLIC HEALTH

BY:


~~DR. HENRY TAYLOR, COMMISSIONER~~
Bureau for Public Health
West Virginia Department of Health and Human Resources
Diamond Building, Room 702
350 Capitol Street
Charleston, West Virginia 25301

Entered this 15th day of Nov, 2001, by:

E. I. DU PONT DE NEMOURS AND COMPANY

BY:


PAUL BOSPERT, PLANT MANAGER

Attachment A

C8 GROUNDWATER INVESTIGATION STEERING TEAM

A team of scientists shall be assembled to assess the presence and extent of C8 in drinking water, groundwater and *surface* water at and around the DuPont Washington Works facility, and the Local, Letart, and Dry Run Landfills. The Groundwater Investigation Steering Team (GIST) shall include scientists from WVDEP, WVDHHR-BPH, EPA Region III, and DuPont. DuPont shall fund the GIST via an escrow account as provided in Section VIII of the attached Consent Order ("the Consent order"). Disbursements from this account shall be authorized jointly by the WVDEP GIST leader, and the DuPont representative, Andrew S. Hartten.

A schedule summarizing key GIST tasks, *submittals, start and end dates* is provided at the end of this document.

GIST Member Organizations/Representatives/General Functions

WVDEP

David Watkins --Groundwater Protection- GIST team leader, escrow funds disbursement oversight; project management and coordination

George Dasher-advisor and technical review

Dee Ann Staats, Ph.D.-advisor

EPA Region III

Garth Connor-science advisor

Jack C. Hwang – Hydrogeologist

Roger feinhart-Environmental Engineer

DuPont

Andrew Hartten-Principal Project Leader/Hydrogeologist-technical review, project management and coordination of field investigation activities; escrow funds disbursement oversight.

WVDHHR-BPH

William Toomey-Manager, Source Water Assessment Program- Bureau for Public Health advisor

GIST Team Objectives and Efforts

The primary objective of the **GIST** is to efficiently review and direct groundwater and surface water monitoring and investigation activities as prescribed in the Consent Order and in this Attachment. The **GIST** will utilize a phased approach and employ rapid team decision making toward meeting the requirements in an efficient and timely manner. Unless otherwise directed by the **GIST**, the tasks outlined below shall be performed by DuPont or its representatives.

The **GIST** will issue a final report(s) with findings and conclusions regarding groundwater quality in and around the Facilities, and the extent of groundwater contamination in and around the Facilities. The **GIST** final report shall further make recommendations regarding the need for any further work or actions that need to be taken to assure protection of groundwater quality and human health into the future.

The tasks set forth below and in the Consent Order are the minimum tasks to be performed by DuPont and the **GIST** pursuant to the Consent Order. Additional tasks may be necessary to assure the goals [full groundwater assessment and C8 impact, plume identification, and receptor identification] of the **GIST** and the Consent Order are met. Those tasks shall be agreed upon by the **GIST**.

Key Tasks of GIST

Task A: Groundwater Use and Well Survey/Groundwater Monitoring

- **Objectives:** Conduct a distance-phased groundwater well and water use survey within a 1-mile (and possibly 2 and 3-mile) radial distance or directionally focused distance of the Washington Works and Local, Letart, and Dy Run Landfills.¹
- **Summary:** The phased approach to the water and groundwater well use survey will allow the **GIST** to focus efforts along established C8 impact transport pathways and cease activities in directions where impacts are not present or where there are minimal concentrations. Data results tables will be generated in a timely manner to allow the **GIST** to meet, evaluate the data, and determine the next course of action. The **GIST** will determine when the final groundwater well use survey shall be released.

DuPont agrees to perform, under the supervision of the **GIST** and through an agreed-to third party, a groundwater use and well survey identifying and sampling all groundwater wells within a 1-mile radius of the three landfills set forth above and the Washington Works facility. The phased approach may be amended by the **GIST** should field conditions require, e.g., lack of sampling wells in the 1-mile radius, lack of quality sampling points within the 1-mile radius.

Sampling shall be performed with the specific purpose of finding and measuring the C8 concentration in water. Should concentrations of C8 found in groundwater wells exceed 1 µg/l within the 1-mile radius, the **GIST** will determine

¹ The water use survey should be in substantially the same format as Attachment B.

whether to **expand** the well **survey to** a 2-mile radius, a 3-mile radius, or in a specific direction **only**. **Drinking** water wells **that** measure above 1 µg/l shall be re-sampled at a frequency to be determined by the **GIST**.

Note: **The** level of 1 ug/l is utilized in this Consent Order for **monitoring** purposes only and not **as** a benchmark for determining **risk** and this level may be adjusted **as** determined the **GIST** in furtherance of the **tasks and** objectives set forth in this **Attachment**

- **Timing:** The initial well survey **within a** 1-mile radius of the Facilities will be conducted within 60 days of the Consent **Order's** Effective Date. Additional well survey activities will be conducted on a schedule **to be determined by** the **GIST**.

Task B: Assessment of Existing Groundwater and Surface Water Monitoring Data

- **Objectives:** Develop and implement a **monitoring** plan that determines the presence and extent of **C8** in drinking water, **groundwater, and surface** water **in and** around the Washington Works facility and Local, Letart, and **Dry Run** Landfills and provide a compilation of all available **groundwater/surface water monitoring** and hydrogeologic characterization data for each facility, **as** reflected in **Table A-1**.
- **Summary:** The **GIST** will be **tasked** with an **expedited** evaluation of existing historical data and hydrogeologic information **in** order to prioritize **the** initial **scope of work** for continuing groundwater monitoring and any **additional** investigation activities (e.g., monitoring well installations) **required** under plume identification. DuPont shall provide **all historical data** and **hydrogeologic** information it may have related **to** the Facilities.
- **Timing:** **Within** 30 days of the completion of **Task A**, **the GIST will** review all **the** C8 analytical and facility hydrogeologic information to determine the **scope of work** for groundwater **monitoring** and additional investigation. **The** GIST will then establish a schedule for those activities. It **is** anticipated that a **summary** of **all** historical information for each facility will be **submitted to GIST** within **60 days of the Consent** Order's effective date.

Task C: Plume Identification/Groundwater Assessment

- **Objective:** Determine the vertical and horizontal extent of **any and** all C8 impacted groundwater exceeding 1 ug/l **or as directed by the GIST**, which may determine a **lower** threshold **than** 1 ug/l. This **task** shall also include an assessment of **C8** impacted groundwater at Letart Landfill and its impact on the **Ohio** River and public **water** supplies **along** the river.
- **Summary:** **The GIST** shall first review **historical** data and results of **Task A** to determine an appropriate **scope of work**. Activities should be prioritized **to** address groundwater plumes contributing **to or with** the potential to **flow toward off-site** receptors, with emphasis on those areas where **groundwater is** used **as** a drinking water **source**.

Upon completion of investigation activities, W o n t shall provide the GIST with predicted groundwater flow and contaminant transport models to assess future plume migration.

- Timing: Upon review of all available information and on a schedule to be determined by the GIST, the GIST will complete an initial evaluation of data to determine and prioritize plume identification.

The timing of the initial phase of plume identification/investigation activities and other activities will be on a schedule established by the GIST. Further investigatory activities needed and agreed to by the GIST to carry out the goals of the GIST shall be performed by DuPont on a schedule established by the GIST.

Modeling

Any and all modeling performed pursuant to this attachment and the Consent Order shall use Groundwater Modeling System, or some other model as approved by the GIST.

TABLE A-1

CONFIDENTIAL - FOR EPCRA USE ONLY - NOT FOR PUBLIC RELEASE	
<p>a. Dependent upon the availability of certain information, an historical data <i>summary</i> documented in a report that includes:</p>	<ul style="list-style-type: none"> • A location <i>map</i>. • A site <i>map</i> showing the location of all known groundwater monitoring wells, residential groundwater wells and public water supply within a 1-mile radius the <i>Facilities</i>. • Top-of-groundwater <i>maps</i>. These should span the entire sampling life of <i>the</i> site and should be no less than <i>yearly</i>. If DuPont has only one year's worth of data for a given site, then these <i>maps</i> should be for each quarter; if DuPont has several years worth of data for each site, then these <i>maps</i> can be <i>annual</i>. • C8 concentration contour <i>maps</i>. These should span the entire sampling life of <i>the</i> site and should be no less than <i>yearly</i>. If DuPont has only one year's worth of data for a given site, then these maps should be for each quarter; if DuPont has several years worth of data for each site, then these <i>maps</i> can be <i>annual</i>. • All the C8 groundwater data that has been collected to date. These data should be submitted in easy-to-read tables. These tables should use the method, "<math>x</math>", to designate all concentrations below the laboratory's minimum detection limit (not "ND" or some other abbreviation), and they should use "mg/" or "µg/" as the Unit designation. • If unable to provide <i>the</i> above data, DuPont shall document the reasons why it is unable to gather and submit the information.
<p>3. A groundwater monitoring plan for the <i>Facilities</i> which should address, at a minimum:</p>	<ul style="list-style-type: none"> • C8 sampling. The samples should be taken from all the wells at the three landfill sites and from a select number of wells at the Washington Works plant. These select wells are to be chosen by the GIST before the groundwater monitoring program begins based on evaluation of historical data/information. The frequency of sampling shall be monthly for the first four months following the Effective Date and quarterly thereafter. Any new wells required for monitoring or plume identification purposes will be integrated in each site's groundwater monitoring program on a schedule agreed to by the GIST.

- o Report of Results. Reporting should be quarterly and to the WVDEP Groundwater Program at the following address.

WVDEP Division of Water Resources
Groundwater Program
1201 Greenbrier Street
Charleston, ~~West~~ Virginia 25311
Re: DuPont/C8 monitoring

- Each report should include the following:
 - (a) A site location map.
 - (b) A site map showing the groundwater monitoring well locations.
 - (c) A top-of-groundwater map.
 - (d) A C8 concentration map.
 - (e) Groundwater elevation and well screen data.
 - (f) A table of all the historical C8 sampling data. Note: where available information allows, abbreviations should not be used to designate No ~~Detect~~ concentrations and the units "ppb" and "ppm" should not be used.
 - (g) Laboratory analysis sheets.
 - (h) Chain of custody records.

Attachment B

GROUNDWATER WELL USE SURVEY

Name: _____

Address: _____

Phone: _____

Best Time to Contact Owner: _____

1. Do you have one or more water well(s) on this property? (It need not be in use currently.)
If no, stop now and return survey. Yes _____ No _____

County Water Well Permit No. _____

2. Is the well(s) currently (circle one) used unused or filled in?

3. Is the well(s) used for drinking water? Yes _____ No _____

4. Is this well(s) used for other purposes? If yes, please specify uses below:

5. What is the approximate frequency of use? Circle One:

Daily Weekly Monthly Summer

6. Date last used? _____

7. Is there a pump in the well? Yes _____ No _____

8. Is there a conditioner, softener, chlorinator, filter, or other form of treatment for the system? Yes _____ No _____

If so, what is the form of treatment? _____

9. Is there any faucet ~~where~~ water does not *first* pass through the treatment system?
Yes _____ No _____

If yes, is it (circle one) inside or outside? .

10. What year was the well constructed? _____

11. Please provide the following information regarding the well(s) if known: (circle one)

A. Total Depth (feet below ground surface):

30-60 60-90 90-120 120 or more

B. Casing Type:

PVC steel stone none other _____

C. Well Construction:

dug drilled open or uncased bedrock

D. Screened Interval (*length* in feet):

0-10 10-20 20-30 36-60 60 or more

E. Well Diameter (inches):

0-6 6-12 12-24 24 or more

Attachment C

C8 ASSESSMENT OF TOXICITY TEAM

A team of scientists shall be assembled to assess the toxicity and risk to human health and the environment associated with exposure to ammonium perfluorooctanoate (C8) releases from DuPont's activities. The C8 Assessment of Toxicity Team (CAT Team) shall include scientists from academia, government, non-profit organizations, and industry. The CAT Team also shall include the WVDEP Environmental Advocate, Pam Nixon, as a representative of West Virginia's citizens.

The WVDEP, utilizing funds from an escrow account funded by DuPont, shall contract with a non-profit organization, the National Institute for chemical Studies (NICS), for the services described herein. Point of contact for the NICS shall be Jan Taylor, Ph.D. The MCS shall subcontract with Marshall University's Center for Rural and Environmental Health for services in risk communication provided by James Becker, M.D. and his staff. Dr. Becker shall familiarize himself with the toxicity of C8, the work performed by TERA as described herein, and attend public meetings to provide expertise in risk communication. The MCS shall subcontract with the non-profit scientific organization, Toxicology Excellence for Risk Assessment (TERA) whose point of contact is Joan Dollartide, Ph.D. The TERA shall provide services in toxicology and risk assessment. Work assignments, tasks, and deliverables are described below.

CAT Team Member Organizations/ Representatives / General Functions

WVDEP

Dee Ann Staats, Ph.D. - Science Advisor - team leader; escrow funds disbursement oversight; project management and coordination; toxicology/risk assessment and communication;

Pam Nixon - Environmental Advocate - advisor,

NICS

Jan Taylor, Ph.D. - contractor administrative oversight;

James Becker, M.D. (Marshall University) - consultant in risk communication;

TERA (point of contact: Joan Dollartide, Ph.D.) - consultant in toxicology/risk assessment;

¹ The parties may, in their discretion, elect to substitute their representatives with persons of similar qualifications.

DuPont

Gerald Kennedy, Director of Applied Toxicology and Health, Haskell Laboratory
- reviewer toxicology; escrow funds disbursement oversight;

John Whysner, M.D. - toxicology/risk assessment and communications;

Paul Bossert - Washington Works Plant Manager - communications;

The following members of the CAT Team shall act as reviewers or advisors.

**WV Department of Health and Human Resources - Bureau for Public Health
(WVDHHR-BPH)**

William Toomey - Manager, Source Water Assessment Program - advisor,
Barbara Taylor - Director, Office of Environmental Health Services - advisor,
Local representative - advisor,

Environmental Protection Agency (EPA)

Headquarters - Jennifer Seed - reviewer and advisor toxicology;
Region III Philadelphia -

Samuel Rotenberg, Ph.D. - reviewer and advisor toxicology/ risk
assessment;

Garth Connor - advisor hydrogeology;

Roger Reinhart - reviewer and advisor Safe Drinking Water Act;

Cincinnati - John Cicmanec, DVM - reviewer and advisor toxicology;

Agency for Toxic Substances and Disease Registry (ATSDR)

Atlanta - John Wheeler, Ph.D. - reviewer and advisor in toxicology/ risk
assessment;

Philadelphia - Lora Werner - coordinator for ATSDR;

Non-CAT Team Efforts

Other efforts are currently underway which may produce information for the CAT Team to utilize. The CAT Team will coordinate and communicate closely with these other efforts. These include:

1. Dupont's air modeling of C8 emissions from the Washington Works plant;
2. WVDEP's air modeling of C8 emissions from the Washington Works plant;

3. USEPA Draft Hazard Assessment which **summarizes** the available toxicity information regarding C8, **to the extent completed prior to the assessment** contemplated herein;
4. ATSDR's **Health** Consultation **that** estimates the **risk** to the community associated with C8 in drinking water from the **Lubeck Public Service District**, **to the extent completed prior to the assessment** contemplated herein.
5. Existing **C8** concentrations in Lubeck **Public Service District data**.
6. Groundwater **C8** Analysis (see **GIST** activities described in Attachment **A**) and Well **Use Survey** (see **example survey** in Attachment **B**) at the residences **in the area of the 3** landfills and the **Washington Works Plant**.

Tasks of CAT Team

The tasks to be performed by the CAT Team are described **briefly** in Table I, and in more detail **below**. These **tasks** are **discussed** below within the context of a **Scope of Work** for both Dr. Becker and for TERA as well.

Tasks of the **CAT Team** shall be organized into **three** phases. Phase I includes those **tasks necessary** to prepare for and hold the **first public meeting**. In **Phase II**, **TERA** shall conduct such scientific **tasks as:** reviewing available toxicity and epidemiological **studies**; developing Provisional **Reference Doses** and **Screening Levels** for protection of human health; evaluating existing information relative to ecological health; and conducting one **general risk** assessment involving **comparisons** of exposure concentrations to **Screening Levels**, for the **three** landfills and the **Washington Works Plant**, and the **Lubeck Public Service District**. TERA shall prepare a report **on their findings**. **Phase III** includes those **tasks necessary** to prepare for and hold the **second public meeting**. The results of the C8 groundwater analysis and risk assessment shall be presented in **the second public meeting**.

No communication between Dupont representatives and NICS, Dr. Becker, or **TERA** shall be **permitted** without the participation of **Dr. Staats**. **All** information will be provided to Dr. Becker and TERA by WYDEP; **thus**, all **information** contributed to the effort by Dupont shall be sent **in triplicate** to **Dr. Staats** for **forwarding** to Dr. Becker and **TERA**.

Phase I TASK A-1: First Public Meeting

Two public **meetings** are anticipated for this project. The First Public **Meeting** shall occur in Phase I for **the** purposes of introducing the **CAT Team** and other **involved parties to the public**; relating historical information **on previous** concentrations of C8 in Lubeck Public Service District **water** supply, informing the citizens of the **ensuing activities**; and inviting the public to participate by cooperating with sampling and **survey efforts** in the Groundwater C8 Analysis and Well **Use S we y**. In order to prepare for the

First Public Meeting, **CAT Team members** shall familiarize themselves with the available toxicological information concerning C8.

A CAT Team meeting shall be held immediately prior to the first public meeting to: (1) conduct a site visit to the three landfills and the Washington Works Plant, and surrounding residential areas; (2) discuss the toxicity of C8 and other pertinent data; (3) prepare an agenda for the public meeting; (4) coordinate and prepare for the public meeting. Finally, the First Public Meeting will be held and public questions and comments will be recorded by WVDEP.

TABLE 1. TASKS OF CAT TEAM

<p>Task A: Public Meetings (two meetings are anticipated) Objective: to inform the local citizens of the following: (in Meeting #1) intent to perform a groundwater well use survey and analysis for C8; intent to develop Screening Levels; and to ask for their cooperation in conducting the water use survey; and (in Meeting #2) results of survey, chemical analysis, and risk assessment. Note that an interim public meeting may be required should six months pass from the first public meeting and the CAT Team Final Report has not been issued. Primary Responsibility: Staats</p>
<p>Task B: Development of Provisional Reference Doses Objective: to develop Provisional Reference Doses for C8 for the inhalation and ingestion (and dermal, if possible) routes of exposure. Primary Responsibility: TERA</p>
<p>Task C: Development of Screening Levels Based on Protection of Human Health objective: to utilize the Provisional Reference Doses to develop human health risk-based Screening Levels for C8 in air, water, and soil. Note a determination of the potential carcinogenicity of C8 will be conducted as well. Primary Responsibility: TERA</p>
<p>Task D: Ecological Data Review Objective: to review available information to determine whether sufficient studies have been performed and data have been collected to develop screening criteria for ecological receptors. Primary Responsibility: TERA</p>
<p>Task E: Draft Report and Final Report Objective: to present and discuss the results of the above tasks. Primary Responsibility: TERA</p>

Phase II Tasks B, C, D, and E Development of Provisional Reference Doses and Screening Levels, and Risk Assessment

In Phase II, TERA shall conduct the toxicological and risk assessment activities. After having reviewed the toxicological information regarding C8 provided by WVDEP, TERA shall consult with toxicologists on the CAT Team, as coordinated by Dr. Staats, regarding its proposed approach for this project. Following such consultation, TERA

shall develop Provisional Reference Doses for **C8** for the **oral, inhalation, and dermal** (if possible) routes of exposure. **Then TERA** shall calculate Screening Levels for water, soil and air based on the **risk** factors they have estimated. TERA shall perform one **general risk** assessment involving **comparison** of exposure concentrations to Screening Levels for the **three** landfills and the **Washington Works** Plant, and the **Lubeck** Public Service District water supply, **that focuses on** current risk to **human health**, including workers and residents. **This risk** assessment shall include: **(1)** identification of reasonably anticipated land use, surface water and groundwater use; **(2)** identification of receptors; **(3)** identification of exposure pathways; **(4)** identification of exposure concentrations; and **(5)** comparison of exposure concentrations to appropriate Screening Levels. **TERA** shall utilize **data** obtained from **the other efforts discussed** above such as air modeling; groundwater **C8** concentrations in residential and public wells; residential groundwater well use survey; the USEPA's Draft Hazard Assessment; and ATSDR's **Health** Consultation (if available). TERA **also** shall review available information to determine whether sufficient studies have been performed and **data** have been collected to develop **screening criteria** for **protection of** ecological health, particularly aquatic life. TERA shall prepare a **draft and a final** document that **discusses the** results of their effort and **summarizes** the data **utilized from other** efforts. **As the tasks of the CAT Team and other** involved parties' progress, data **gaps** and **research recommendations may** become evident. **These** shall be included in TERA's report as suggestions for **further** research to elucidate **the** toxicity of **C8**.

Phase III Second Public Meeting

The purpose of the **Second** Public Meeting is **to** present to the citizenry the results of the efforts of the **GIST** and **CAT Teams** including **C8** concentrations in **groundwater** from residential wells and public wells the screening levels and the **general risk** assessment. **Air modeling results of the efforts** of WYDEP and Dupont will be discussed also. The WYDEP will address any further actions that **may** be **necessary**.

SCOPE OF WORK FOR JAMES BECKER, M.D.

Dr. Becker is a medical doctor specializing in environmental health at the Marshall University School of Medicine Center for Rural and Environmental Health. He will be assisting the WVDEP in his specialty area of risk communication at the two anticipated public meetings. The specific tasks assigned to Dr. Becker are described below.

Phase I Task A-1: First Public Meeting

Dr Becker will assist in preparation for the first public meeting, and attend the meeting providing expertise in risk communication. He will familiarize himself with the available toxicological data, which will be provided to him by WVDEP, with particular emphasis on the epidemiological studies. Note that the toxicological data already has been summarized in the Draft Hazard Assessment prepared by USEPA. No literature search or document retrieval will be required. Specific subtasks required in Phase I to prepare for the first public meeting are described below:

Subtask 1 – Familiarization with toxicological data provided by WVDEP including but not limited to:

- a. 8 compact discs of information provided to USEPA under TSCA by 3M Corp (note only a small portion of this information concerns C8);
- b. Draft Hazard Assessment document from USEPA;
- c. ACGM Threshold Limit Value (TLV).
- d. Journal articles and other information provided by WVDEP.

Subtask 2 – Attend a meeting prior to the first public meeting to:

- a. conduct a site visit of the 3 landfills and the Washington Works Plant, and local residential areas;
- b. discuss and prepare an agenda;
- c. discuss the toxicology and risks associated with C8 with the other CAT Team members.

Subtask 3 – Attend First Public Meeting

Phase III Task A-2 Second Public Meeting

Dr Becker will assist in preparation for the second public meeting, and attend the meeting providing expertise in risk communication. The following subtasks will be required:

Subtask 1 – Familiarization with the toxicological and risk assessment report prepared by TERA;

Subtask 2 – Attend a meeting prior to the second public meeting to:

- a. discuss the toxicology and risks associated with C8 with the other CAT Team members;
- b. discuss and prepare an agenda.

Subtask 3 – Attend Second Public Meeting

Note that the second public meeting is assumed to be the final public meeting; however, results of data collection may warrant additional public meetings and an expansion of the Scope of Work.

SCOPE OF WORK FOR TERA

TERA (Toxicology Excellence for Risk Assessment) is a non-profit organization that applies sound toxicological data to the risk assessment process to find common ground between environmental, industry, and government groups. TERA will be providing services in toxicology and risk assessment. TERA scientists will be developing risk factors and screening criteria; and conducting one general risk assessment for the 3 landfills, Lubeck Public Service District water supply and the Washington Works Plant. The specific tasks assigned to TERA are described below.

Phase II Tasks B, C, D, and E: Development of Provisional Reference Doses and Screening Levels, and General Assessment of Risk

Subtask 1 – TERA staff will familiarize themselves with the toxicological data provided to by WVDEP. No literature search or document retrieval will be required. Toxicological data to be provided to TERA shall include but is not limited to the following:

- a. 8 compact discs of information provided to USEPA under TSCA by 3M Corp (note only a small portion of this information concerns C8);
- b. USEPA Draft Hazard Assessment for C8;
- c. Journal articles and other information submitted to WVDEP by DuPont.

Subtask 2 – TERA staff will:

- a. identify all possible critical toxicological studies suitable for developing Reference Doses for the oral, inhalation, and dermal (if possible) routes of exposure;
- b. outline methodology for developing said Reference Doses and for developing Screening Levels for air, water, and soil based on said Reference Doses corresponding to each critical study identified in subtask 2-a;
- c. convene a meeting at the TERA facility in Cincinnati, Ohio, to present their findings in subtask 2-a and 2-b, and consult with CAT Team toxicologists as coordinated by Dr. Staats;
- d. finalize Reference Doses and Screening Levels based on recommendations of the CAT Team toxicologists as coordinated by Dr. Staats.

Subtask 3 – TERA shall conduct one general risk assessment for the three landfills and Washington Works Plant, and the Lubeck Public Service District water supply based on current risk to human health. This risk assessment shall include:

- a) identification of reasonably anticipated land use, surface water and groundwater uses;

- b) identification of receptors;
- c) identification of exposure **pathways**;
- d) identification of exposure concentrations;
- e) comparison of exposure **concentrations** to appropriate Screening Levels;

TERA shall **utilize** the following **data** in **the risk assessment** process:

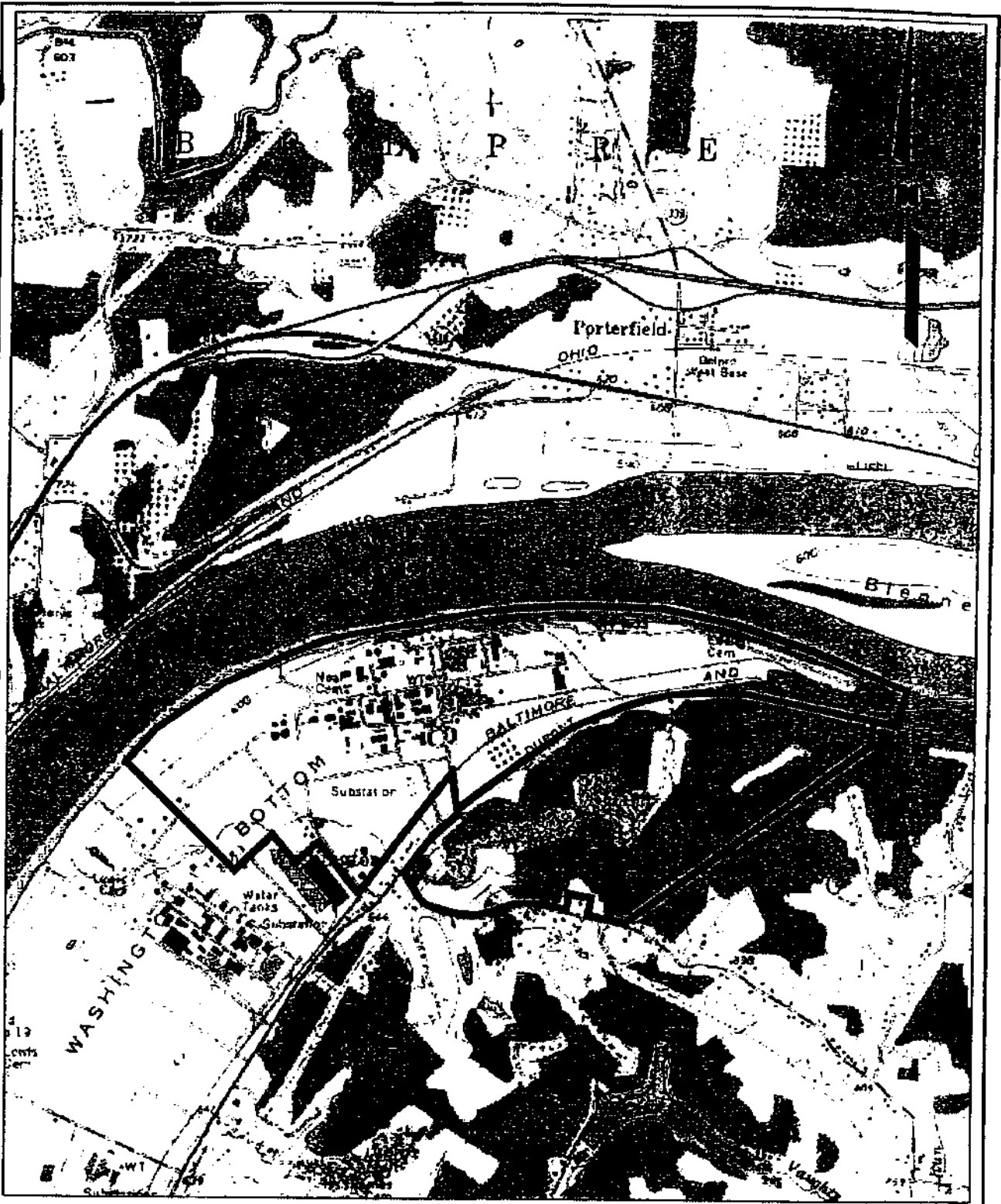
- a) air **modeling** data **from** DuPont;
- b) air modeling **data** from **WVDEP**;
- c) **water use data from the Well Use Survey**;
- d) groundwater data **from** the Groundwater Well **Analysis** of C8 for residential **wells**;
- e) **drinking water data from Lubeck Public Service District wells**;
- f) any available **ATSDR Health Consultation that assesses potential health effects** from exposure to **C8 in public supply drinking water**.

Subtask 4 – **TERA** shall review the ecological **data** and determine whether there is sufficient information to **support the development of a C8 Screening Level for protection of ecological health**

Subtask 5 – **TERA** shall compile and discuss **the results of the above tasks into a comprehensive report (draft and final versions), which also refers to and provides a brief summary of the following:**

- a) USEPA's Draft Hazard **Assessment** of C8;
- b) DuPont's **air modeling data**;
- c) **WVDEP's air modeling data**;
- d) groundwater **data from the Groundwater C8 Analysis and Well Use Survey of Local Residents, and Lubeck Public Service District**;
- e) ATSDR **Health Consultation that assesses potential health effects** from **exposure to C8 in public supply drinking water, if available**.

Additionally, **TERA shall include in the report any insights or recommendations for future research gleaned during this process that would further elucidate the toxicity of C8. Also, TERA shall provide in the report of a summary discussion of the relevance the carcinogenicity of C8 in rats to humans.**



Source: USGS Little Hocking, Ohio -
Quadrangle

CRG
Corporate Remediation Group
An ARCO Company
DuPont and URS Companies

EXHIBIT 1

SITE LOCATION MAP

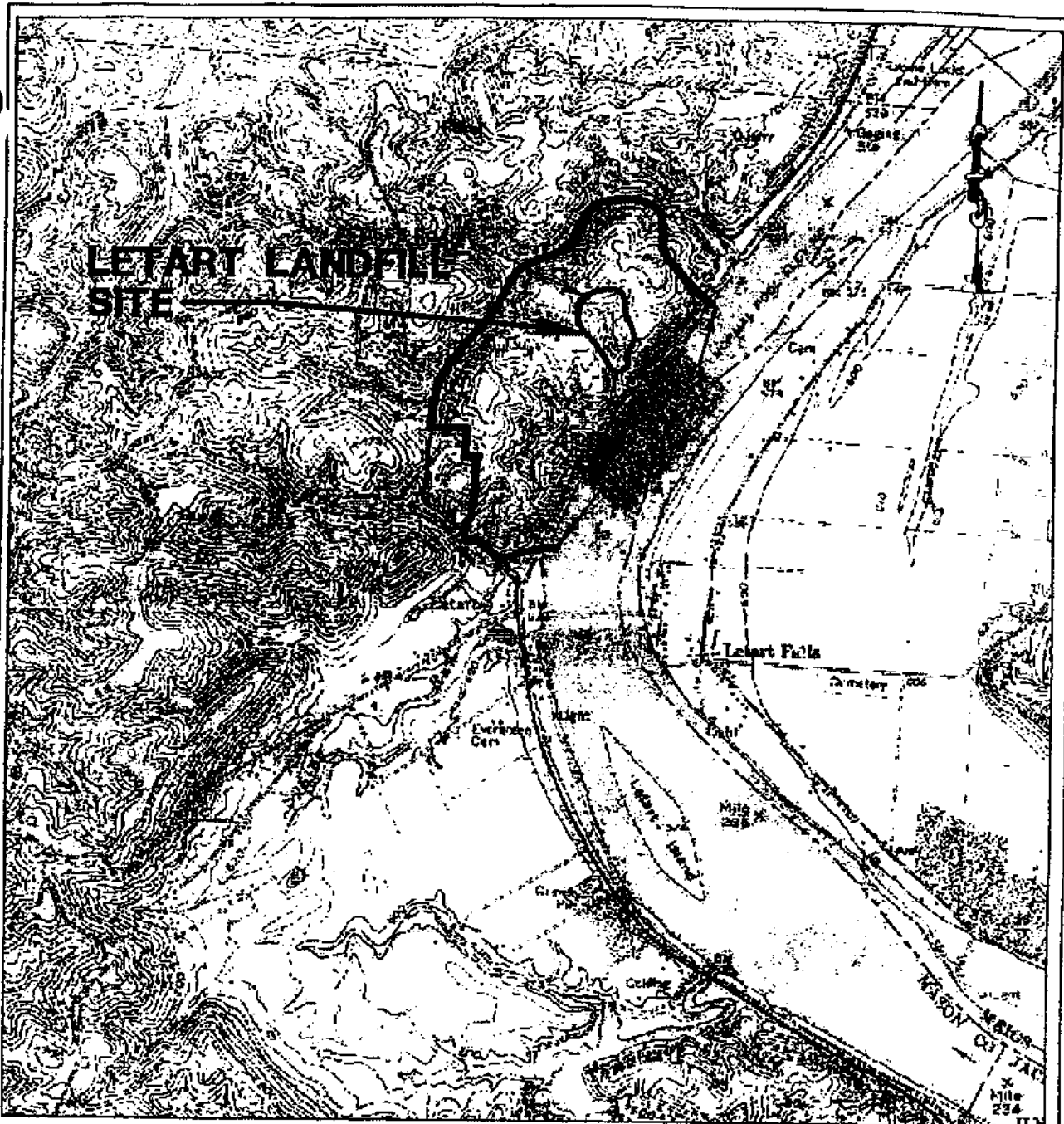
DuPont Washington Works
 Washington, West Virginia

DATE	BY	CHKD BY	APP'D BY	FILE NO.
6/27/01	M. HARRIS			1

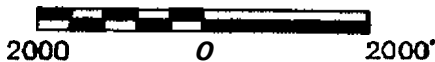
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SCALE



SOURCE: NEW HAVEN VV-8162 QUADRAN

Corporate Remediation Group
*An Alliance between
 DuPont and The W-C Diamond Group*



SITE LOCATION MAP

Letart Landfill Site
 Parkerburg, WV

EXHIBIT 2

DATE	BY	REVISION	DESCRIPTION
12/2/94			1

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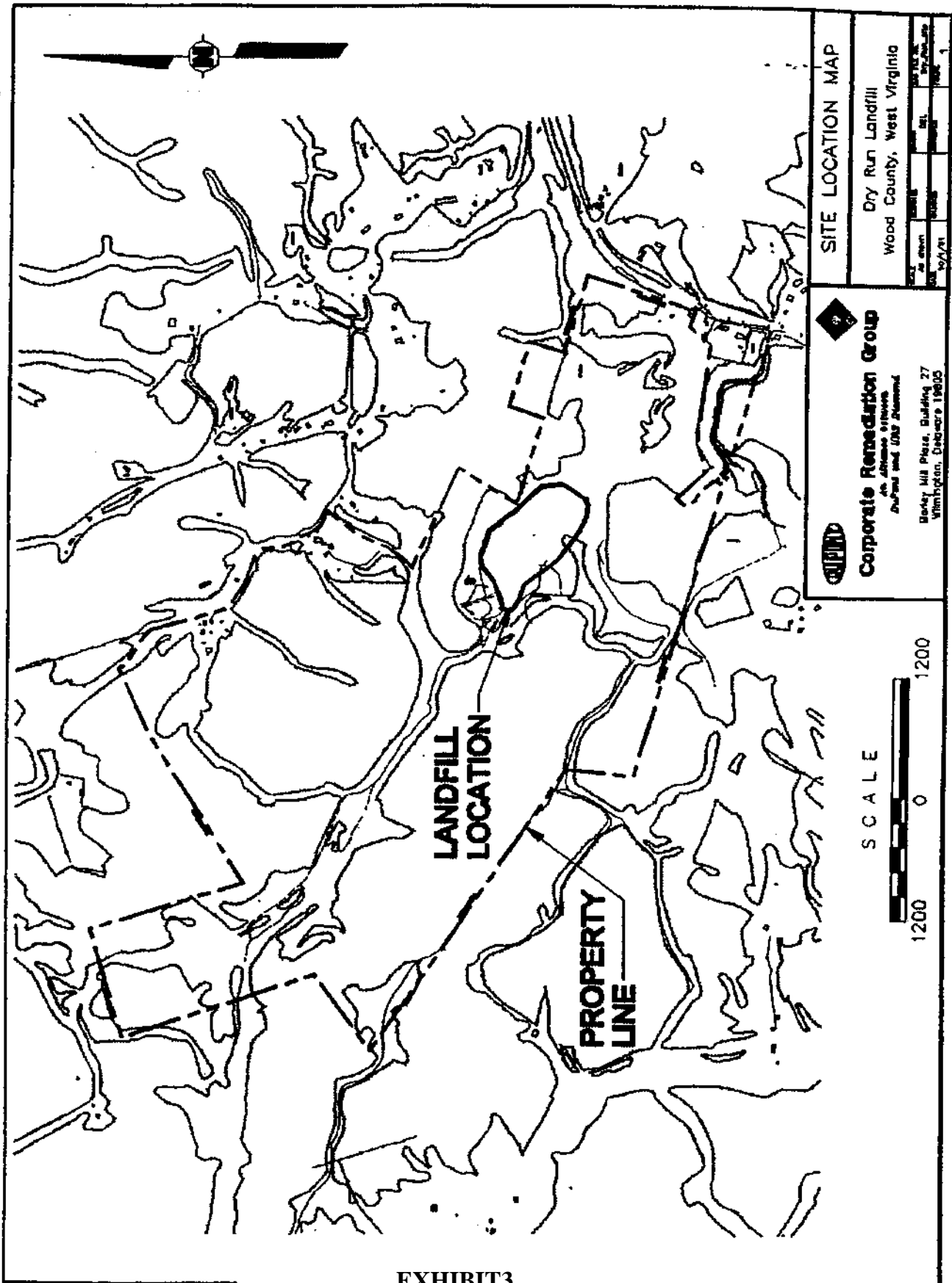


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