APPENDIX A

COMMUNICATIONS

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING

JENNIFER M. GRANHOLM
GOVERNOR

STEVEN E. CHESTER
DIRECTOR

August 11, 2006

CERTIFIED MAIL

Thomas E. Stilley, PE
Project Director
DuPont Corporate Remediation Group
BMP19 - 2236
Wilmington, Delaware 19880-0019

Dear Mr. Stilley:

SUBJECT: Corrective Action Work; Du Pont E I DE Nemours Company (Du Pont), Montague, Michigan; MID 000 809 640

As a former hazardous waste management facility, the DuPont facility located in Montague, Michigan (Facility) is subject to corrective action under Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), and its administrative rules. To date, DuPont has been conducting corrective action work at the Facility on a voluntary basis, with the Michigan Department of Environmental (MDEQ), Waste and Hazardous Materials Division (WHMD), providing oversight as necessary.

Corrective Action Implementation

The WHMD supports corrective action work at the Facility continuing on a voluntary basis until federal deadlines are established for the Facility under the Government Performance Results Act or circumstances warrant entry into an order or other enforceable mechanism. In an effort to allocate more resources to reviewing proposals and overseeing field activities, the WHMD has established commitments for conducting corrective action oversight at the Facility as part of its annual work planning process. These commitments are embodied in the Resource Conservation and Recovery Act (RCRA) Grant Work Plan for Fiscal Year 2007 (FY07), which runs October 1, 2006, to September 30, 2007. That being said, it is necessary to formalize what corrective action work will be conducted at the Facility over the course of FY07 and the associated schedule.

Waste Management Units (WMUs) and Areas of Concern (AOCs)

As you are aware, the following WMUs and AOCs have been identified at the Facility:

1. Northeast landfill
2. North landfill
3. Bury pit landfill
4. Pierson Creek landfill
5. Waste neoprene landfill and basin sludge areas

6. Lime pile and CaF_2 basin
7. National Pollutant Discharge Elimination System surface impoundments
8. Former injection well
9. Railcar unloading areas
10. Former polychlorinated biphenyls (PCB) spill area
11. Hydrogen chloride storage tanks
12. Corrosive hazardous waste treatment tanks
13. Former flammable hazardous waste storage area
14. Former hazardous waste storage area
15. Generator accumulation area for solvents condensed from air strippers

Both of the former hazardous waste storage areas were closed in accordance with the applicable cleanup criteria as per the January 7, 2000, closure certification acceptance letters. Additionally, the former PCB spill area was cleaned up to the applicable cleanup criteria and documentation submitted to the MDEQ. Thus, twelve WMUs and AOCs remain subject to corrective action and require further investigation.

Facility Investigations

Based on the site information available, DuPont, with concurrence from the WHMD, has focused its investigative efforts on the plume of contaminated groundwater likely resulting from the previous railcar unloading activities. The constituents of concern relative to the plume are Freon 113, carbon tetrachloride, and PCE. Based on these investigations, DuPont is interested in addressing the plume using an enhanced groundwater pump and treat system coupled with a mixing zone for a small portion of the plume that the upgraded system will not capture. The WHMD reviewed modeling information relative to the upgraded system proposal. As previously communicated, this proposal was presented to the WHMD's Remediation Advisory Team (RAT) on May 31, 2006. The RAT approved the proposal as an interim measure, noting that other components will need to be in place before the proposal is approved as a final remedy, including in part: a groundwater waiver request for the portion of the plume that will not be captured, an approved mixing zone, deed restrictions, a monitoring plan to demonstrate the effectiveness of the remedy, an operation and maintenance plan, and potential financial assurance.

Submittals and Associated Deadlines

It is crucial that the nature of the corrective action work to be conducted at the Facility and the associated schedule be formalized in writing in order for the WHMD to meet its FY07 RCRA Grant Work Plan commitments and subsequent year's grant commitments. To assist in that effort, DuPont shall submit the following information to the WHMD by the deadlines noted in parentheses after each item:

1. An updated map clearly labeling and delineating the location of all of the above referenced WMUs and AOCs and other important Facility features. Three hard copies of the map in standard blueprint size, six hard copies of the map on legal size paper, and one electronic copy of the map in its native format shall be provided. (***30 days after receipt of this letter***)

2. A formal request to implement the proposed enhanced groundwater pump and treat system. The request shall include design, construction, and operating information, including associated schedules; a groundwater waiver request for the portion of the plume that will not be captured by the system; a request for a mixing zone determination, along with the required information; general information regarding how DuPont will proceed should a mixing zone not be obtained; draft language to be incorporated in the deed restriction; a monitoring plan to demonstrate the effectiveness of the remedy; and an operation and maintenance for the system. ***(60 days after receipt of this letter)***

3. A document listing the twelve remaining WMUs and AOCs in order of priority for investigation. The document shall include the basis for the prioritization, including a summary of what information was used and what monitoring is, or has been, conducted at the various WMUs and AOCs. (***90 days after receipt of this letter***)

4. A general schedule for conducting the investigations reference in Item 3 above. (***90 days after receipt of this letter***)

If you have any questions, please contact me.

Sincerely,

Ronda L. Blayer

Ronda L. Blayer
Environmental Engineering Specialist
Hazardous Waste Section
Waste Management Division
517-373-9548

cc: Mr. Steve Buda, MDEQ
Mr. Dale Bridgford, MDEQ
Mr. Dale DeKraker, MDEQ
Mr. Clay Spencer, MDEQ
Corrective Action File

7211-502

STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET: http://www.deq.state.mi.us

RUSSELL J. HARDING, Director

REPLY TO:

ENVIRONMENTAL RESPONSE
GRAND RAPIDS DISTRICT OFFICE
245 COLRAIN SW
GRAND RAPIDS MI 49548-1013

SITE: Montague
PROJECT #: 7211
CATEGORY: 0300
DATE RCVD:
BY WHOM:

FILE

December 30, 1997

Mr. Frank D. Smith, P.E.
Project Manager
DuPont Environmental Remediation Services
Barley Mill Plaza 27
PO Box 80027
Wilmington, DE 19880-0027

SUBJECT: DuPont Montague Facility, Montague, Muskegon County, Michigan
Preremedial Action Plan Investigation Report

Dear Mr. Smith:

This letter is a follow-up to the December 12, 1997 letter. Several questions remain regarding three areas investigated during the June 5, 1997 *Preremedial Action Plan Investigation.* The information regarding these areas was presented to the December 19, 1997 Quality Review Board meeting.

The following comments were generated during review of the document and the meeting:

Former Neoprene Waste Burial Area. Sampling conducted at 0-1 foot and 4-5 feet may not be representative of the waste materials. What is your basis for determining the pit has been sampled and not the fill? Please note to confirm an excavation was effective in remediating soil contamination, verification sampling consistent with the April 1994 *Verification of Soil Remediation Guidance Document* would be necessary.

Please provide the chemical process for developing neoprene and list the wastes likely generated during this process.

As stated in the December 12, 1997 letter, there is a July 15, 1976 letter, which identifies high antimony sludge in two pits north of the lime pile. Due to the antimony sludge stored previously in this area, antimony analysis should be conducted on soils from this area. Also, since the antimony sludge was generated during Freon manufacturing, other Freon constituents and wastes should be analyzed for in this area.

Former Copper Burial Pit. Were the samples more representative of the pit backfill material or residual waste? What is your basis for determining the residual waste has been sampled and not the backfill material?

Copper concentrations found in the copper burial pit area were greater than Type A Default Values and Type B 20X Drinking Water Values, therefore, the area of copper contamination must be defined.

As stated in the December 12, 1997 letter, provide reasons for sampling the area north of the lime pile and not the area located south of Mirror Lake and just north of Old Channel Trail. Also, please explain what activities did occur in this area south of Mirror Lake and north of Old Channel Trail.

Antimony analysis and Freon constituents/waste analysis should be conducted on the soils from this area. See comments above.

Pierson Creek Landfill Berm Breach Leachate. The investigation identified several metals in excess of the Type B 20X Drinking Water Values. These metals should be included in long-term groundwater monitoring.

Previous documents state that the berm breach material will be excavated. Since this is the case, no further work is necessary until excavation occurs. At that time, verification sampling will be necessary to assure the soil contamination has been remediated.

Please provide a written response to the comments in this letter and the December 12, 1997 letter, by January 30, 1998. If you have any questions concerning the above comments, please contact me at the number listed below.

Sincerely,

Heather Hopkins

Heather Hopkins
Environmental Quality Analyst
Environmental Response Division
(616) 246-1742

cc: Mr. Philip Chen, DuPont

HH/ts

DuPont Environmental Remediation Services
Barley Mill Plaza 27
P.O. Box 80027
Wilmington, DE 19880-0027
Tel. (302) 992-6768

DuPont Environmental Remediation Services

August 19, 1996

Ms Nancy Johnson
Environmental Quality Analyst
Michigan Department of Environmental Quality
Environmental Response Division
245 Colrain S.W.
Grand Rapids, MI 49548-1013

RESPONSE TO THE MDEQ HISTORICAL SPILLS/SITES OF CONTAMINATION LETTER
DuPont Montague Facility
Montague, Michigan

Dear Ms. Johnson:

The Michigan Department of Environmental Quality (MDEQ) June 10, 1996, letter entitled *Historical Spills, DuPont Montague Facility* provides information regarding approximately 37 spill events that occurred at the DuPont Montague facility between 1961 and 1983. DuPont Environmental Remediation Services (DERS) and the DuPont Montague facility conducted a library search to obtain additional information regarding these releases. DERS and the Montague facility reviewed 35 boxes (approximate) that contain the site files. In addition to this files search, the DuPont Information Center conducted a records search to identify any additional pertinent historical information.

Because of the DuPont records retention policy, information pertaining to many of the spills identified in the MDEQ letter does not exist. However, DERS used the information obtained during the site records and file search and the information provided in the MDEQ June 10, 1996, letter, to respond to each event in the enclosed document If you have any questions or comments regarding this submittal, please contact me at (302) 992-5985.

Sincerely,

Philip J. Chen, PG
Project Geologist

PJC:pem
Enclosure

cc: R. Austin, Legal; D. Bogue, Montague; S. Erickson, Louisville; W. E. Mancini, DuPont; W Lawrence, DuPont; F. D. Smith, DERS; File 2418

RESPONSE TO THE MDEQ HISTORICAL SPILLS/SITES OF CONTAMINATION LETTER

DuPont Montague Facility
Montague, Michigan

August 19, 1996 **DERS Project No. 2418**

Prepared by

DuPont Environmental Remediation Services
Barley Mill Plaza 27
P.O. Box 80027
Wilmington, Delaware 19880-0027

CONTENTS

APPENDIXES

1.0 INTRODUCTION

This document transmits the DuPont responses to the Michigan Department of Environmental Quality (MDEQ) June 10, 1996, letter entitled *Historical Spills, DuPont Montague Facility* (see Appendix A). For convenience, the MDEQ's comments are included in italics, and DuPont Environmental Remediation Services' (DERS') responses follow each comment in regular type. All comments reference the original numbers used by the MDEQ.

DERS and the DuPont Montague facility conducted a library search to obtain additional information regarding these releases. DERS and the Montague facility reviewed 35 boxes (approximate) that contain the site files. In addition, the DuPont Information Center conducted a records search to identify any additional pertinent historical information.

Because of the DuPont records retention policy, additional information pertaining to many of the spills did not exist. The historical information that was obtained indicates that the DuPont Montague facility has kept the state of Michigan well informed of all spills and spill-related activities and that these activities were conducted to the satisfaction of the state.

Only two areas identified in the MDEQ historical spills letter will require additional activities. These two areas, the lime pile related interceptor wells and the Pierson Creek Landfill, will be studied further as mutually agreed to by DuPont and the MDEQ.

2.0 SPECIFIC COMMENTS

Comment to Document 1—1961

No. 1 well contaminated from CD (chlorobutadiene) and thiocyanate. Suspected source was waste slurry pond. Settling ponds have overflowed sidewalls on several occasions. Waste from the CD area has found its way to the groundwater.

Response

As stated in Document 1, in 1961, Mr. Joseph Grof of 6888 Old Channel Trail noticed a taste and odor in his private well. The DuPont Montague settling ponds (also known as basins or waste ponds), which had periodically overflowed, were identified as a possible source of Mr. Grof's well problem. In 1961, the DuPont Montague facility conducted extensive laboratory analysis of water samples collected from 17 newly installed observation wells, site drinking-water wells, waste ponds, waste effluent, and Union Carbide sources. Analysis of the laboratory analytical results indicated no apparent connection between the Grof residential water problem and DuPont Montague plant operations. In November 1961, the state of Michigan Water Resources Commission (WRC) concluded that the DuPont settling ponds had contributed little or no taste and odor to the Grof residential well. However, the Michigan WRC insisted that the settling pond overflows stop.

From 1961 through 1965, several documented releases occurred from the DuPont settling ponds. In most cases, the stained soil resulting from these releases was excavated and removed. In 1972, after the discovery of a 4-feet-by-6-feet hole in the concrete bottom of the middle settling pond, a 55-foot-deep interceptor well (Interceptor Well No. 2) was installed to recover any impacted groundwater in the area of the settling ponds. Operation of this interceptor well was discontinued after approximately one year when it was determined that this contamination was limited in extent.

It has been over 24 years since the last recorded settling pond overflow. All stained soil has been removed, and impacted groundwater has been recovered. Currently, no further action is required for the waste slurry pond.

Comment to Document 2—June 19, 1961

Presence of thiocyanate in residential wells, south well, sludge pond, and open water area. Large spill of waste from overflow of settling pond.

Response

The groundwater study that followed the 1961 Grof complaint concluded that the source of thiocyanate detected in the groundwater was most likely the Union Carbide lime pile. DuPont purchased the Union Carbide facility in 1962 and, to improve groundwater quality downgradient from the lime pile,

- Supplied the residents impacted by the thiocyanate with city water.
- Improved the operation of the lime pile interceptor well.
- Requested Union Carbide to sell more lime.
- Began making acetylene with a new process that did not have a lime byproduct.
- Installed a second groundwater interceptor well to assist in capturing any lime pile impacted groundwater.
- Obtained an "'A' groundwater rating" from the Michigan WRC with the purchase of 34 acres of land southeast of the Montague facility, signifying that DuPont had obtained "adequate control" of the groundwater underlying their facility (see Appendix B).

These items indicate that the DuPont Montague facility has adequately and effectively addressed the thiocyante concern.

In the future, as part of the remedial action plan for the DuPont Montague facility, DuPont will reassess the effectiveness of the two groundwater interceptor wells located hydraulically downgradient from the lime pile. The results of the assessment will be communicated to the MDEQ.

Comment to Document 3—July 17, 1961

Washwater from CD storage area was put into a pit at the north end of the plant site.

Response

Based on the description of the landfill wastes (see Appendix C), the "pit" referenced in Document 3 was most likely the Bury Pit landfill. This landfill, as well as the North and the Northeast Landfills, has been investigated and characterized thoroughly. The groundwater in the area of these landfills is currently being monitored on a regular basis. Therefore, because these landfills have been thoroughly studied and are currently being monitored, no further action is required for the "pit at the north end of the plant."

Comment to Document 4—October 13, 1961

Spillage of CD waste effluent to the ground surface. Spillage contained to area around observation well No. 9. Settling basin reported to overflow.

Response

The location of observation well No. 9 is uncertain. No water-quality data is available for this well. However, for a discussion of the settling pond overflows, see the DuPont response to Document 1—1961.

Comment to Document 5—February 8, 1962

Ponds overflowed, flooded entire corner of property by well No. 2. Previous overflows on December 28, 1961, and January 29, 1952.

Response

Monitor well No. 2 is located adjacent to the settling ponds. No water-quality data is available for this well. For a discussion of settling pond overflows, see response to Document 1—1961.

Comment to Document 6—February 5, 1963

Break in east wall of south lime pond. Lime slurry flowed down ravine into Mirror Lake.

Response

The lime pile, referred to in Document 6 as the lime pond, had documented releases in 1963, 1970 and 1971. The released lime material, which accumulated within Mirror Lake, remained within the DuPont property. The Mirror Lake water body is not fed by, and does not feed, any of the surrounding water bodies. Any groundwater that may be impacted by this release is not of concern for the following reasons:

- Groundwater flowing from the lime pile area is captured by the two downgradient interceptor wells.
- All downgradient residences have been hooked up to the city of Montague municipal water system
- With the purchase of 34 acres of land southeast of the Montague facility, DuPont obtained an "A" groundwater rating from the Michigan WRC, signifying that DuPont had obtained "adequate control" of the groundwater underlying the site.

These items indicate that the DuPont Montague facility has adequately and effectively addressed any concerns pertaining to the lime pile.

In addition to the activities that have already been conducted by DuPont, as part of the remedial action plan for the DuPont Montague facility, DuPont will reassess the effectiveness of the two groundwater interceptor wells located hydrologically downgradient from the lime pile. The results of the assessment will be communicated to the MDEQ.

Comment to Document 7—February 28, 1964

Waste pond overflow, small pool near main road to the plant.

Response

See the DuPont response to Document 1—1961.

Comment to Document 8—May 20, 1965

Waste pond overflowed for about 30 minutes.

Response

See the DuPont response to Document 1—1961.

Comment to Document 8—May 21, 1965

Waste pond overflowed for eight hours, soaked into ground.

Response

See the DuPont response to Document 1—1961.

Comment to Document 9—August 2, 1965

Disposal of sludge product by burial in two sites in Section 35.

Response

Based on the coordinates stated in Document 9, it can be concluded that the "two burial sites" refer to two of the five cells that make up the Pierson Creek landfill. This landfill, as well as the Bury Pit Landfill, the North Landfill, and the Northeast Landfill, has been thoroughly investigated and characterized. Groundwater in the area of these landfills is currently being monitored on a regular basis. Therefore, with the exception of the planned Pierson Creek Landfill sampling activities presented in the DERS June 6, 1996, *Scope of Work for the Site Groundwater Monitoring Program and the Preremedial Action Plan Investigation,* no further action is required.

Comment to Document 10—August 12, 1965

Sludge disposal area inspected (SW 1/4, Sec. 35). One of the pits had a break in the side and there was evidence of spillage over the hill toward Pierson Drain.

Response

Based on the coordinates stated in Document 10, it can be concluded that the "disposal area" refers to the Pierson Creek Landfill. Under MDEQ oversight, the berm breach associated with this landfill was studied (DERS 1995 *Field Investigation Preclosure Activities, DuPont Montague Facility*). Therefore, with the exception of the planned Pierson Creek Landfill sampling activities presented in the June 6, 1996, *Scope of Work for the Site Groundwater Monitoring Program and the Preremedial Action Plan Investigation*, no further action is required.

Comment to Document 11—May 16, 1966

Sludges from the settling facilities for the past three years have been trucked to a point one mile west of the plant, placed in depression in the ground.

Response

The reference to a disposal point "one mile west of the plant" coincides with the location of the Pierson Creek Landfill. This landfill, as well as Bury Pit Landfill, the North Landfill, and the Northeast Landfill, has been thoroughly investigated and characterized. Groundwater in the area of these landfills is currently being monitored on a regular basis. Therefore, with the exception of the planned Pierson Creek Landfill sampling activities presented in the June 6, 1996, *Scope of Work for the Site Groundwater Monitoring Program and the Preremedial Action Plan Investigation*, no further action is required.

Comment to Document 12—September 25, 1967

Disposal of waste Neoprene® coagulum just northwest of the lime basin.

Response

Appendix D provides *Neoprene*®-related correspondence.

On September 25, 1967, Mr. E. W. Watts (DuPont Montague facility) contacted Mr. Robert J. Courchaine (state of Michigan WRC) and informed him of the site's plans to dispose of waste *Neoprene*® coagulum by burying it near the carbide lime basin. A location near the carbide lime basin was selected because the

- Groundwater in this area is not used for drinking water.
- Downgradient groundwater interceptor well No. 1 is located nearby. (in 1983, interceptor well No. 5 was installed to increase the efficiency of groundwater containment.)

On September 22, 1967, after a telephone conversation between Mr. Watts and Mr. Courchaine, the DuPont Montague facility began disposing of the waste *Neoprene*® near the lime basin. The location selected for the *Neoprene* coagulum disposal was just northwest of the basin near the center of the groundwater flow already affected by the lime pile, and in the path intercepted by the groundwater interceptor well.

In September 1967, leachate tests were conducted on the *Neoprene*® coagulum waste. All tests confirmed the DuPont position that the coagulum wastes contributed only very minor amounts of contaminants to the groundwater. Based on the results of these leachate tests, DuPont calculated that the chemical concentrations likely to be contributed by the coagulum to the 300 gallons per minute (gpm) stream of groundwater that is removed by the groundwater interceptor well would be very minor.

On November 27, 1967, Mr. Courchaine sent a letter to Mr. Watts stating, "We agree that with washing of the 3,500 pounds per day of coagulum and continuous operation of the 300 gpm interceptor well, the present method of disposal of the coagulum by burial should not result in a water pollution problem."

A July 15, 1976, internal letter indicates that the *Neoprene*® sludge material has been removed from the disposal site. The remaining pits were filled with lime and sand.

Based on the previous information, it can be concluded that the DuPont Montague facility kept the state of Michigan well informed of all *Neoprene*® coagulum disposal activities. At the time, the state of Michigan found the method of disposal acceptable. In 1976, the *Neoprene*® sludge was removed, and the excavated pits were filled in. No further action is required for the *Neoprene*® coagulum disposal area.

Comment to Document 13—November 26, 1967

Spill of a approximately 10,000 lb. of DGME (diethylene glycol mono-n-butyl ether) to the ground.

Response

On November 26, 1967, during a routine patrol of the Monomer tank car area, a large leak from the discharge pipe of the diethylene glycol mono-n-butyl ether (DGME) pump was discovered. A check of the tank car level indicated that about 10,000 pounds of DGME had spilled onto the ground. To remediate this release, the DuPont Montague facility removed the DGME from the ground and groundwater by installing and pumping groundwater from a temporary well and flooding the spill area with water to ensure that no DGME remained. Pumping of the temporary well continued until laboratory analytical results indicated that DGME concentrations were below the detection limit.

The retardation factor (R) for the compound DGME (also known as 2-butoxyethanol) indicates that the compound moves through soil at roughly the same velocity as water (R=1 for water, R= 1.01 for DGME [approximately]). Because DGME moves at roughly the same rate as water, the flooding of the area to "ensure that no DGME remained" was probably very effective; and most of the DGME was probably removed by the temporary interceptor well. Any DGME that was not removed by the temporary interceptor well has been flushed through the groundwater system during the past 29 years by infiltration of rain and thawing snow. Therefore, based on the effective removal of DGME from the ground and groundwater, the rate at which the DGME compound flushes through the groundwater system, and the age of the release, it can be concluded that the 1967 DGME

release does not present a risk to human health or the environment, and no further action is required.

Comment to Document 14—February 7, 1986

Five hundred gallons light fuel oil loss to ground surface. Location of loss was in the hydrocarbon acetylene area.

Response

As stated in Document 14, Mr. Watts (DuPont) indicated that he did not feel that the loss would create any potential pollution problem. Mr. Watts informed Mr. Courchaine (state of Michigan WRC) of the incident. Mr. Courchaine concurred with Mr. Watt's conclusion that the fuel oil should not create a problem.

Based on this information, it can be concluded that the DuPont Montague facility has kept the state of Michigan informed of the fuel oil loss that occurred 28 years ago. The state of Michigan concurred with the DuPont conclusion; therefore, no further action is required for this 1967 fuel oil loss.

Comment to Document 15—February 11, 1969

Three thousand pound acetaldehyde waste loss onto the ground on company property. Tank car loading spot?

Response

Both Documents 15 and 17, which deal with an on-site acetaldehyde release, indicate that Mr. Watts (DuPont) kept the state of Michigan well informed of any releases at the DuPont Montague facility (Document 15 is from Mr. Frank Vining, Michigan Department of Natural Resources [MDNR] WRC; Document 17 is to Mr. George Liddle Jr., MDNR WRC). Document 17 states that the February 11, 1969,

acetaldehyde release (quantity approximately 2,500 pounds) was judged incapable of causing toxicity; therefore, no corrective action was required.

The small amount of acetaldehyde released in February 1969 has, in the past 27 years, most likely flushed through the groundwater system. The retardation factor (R) for acetaldehyde indicates that this compound moves through soil at roughly the same velocity as water (R=1 for water, R=1.009 for acetaldehyde [approximately]). Because acetaldehyde moves at roughly the same rate as water, it can be concluded that the small amount of acetaldehyde released has been flushed through the groundwater system during the past 27 years by rain and thawing snow. Therefore, based on the small quantity of acetaldehyde released, the rate at which the compound acetaldehyde flushes through the groundwater system, and the age of the release, it can be concluded that the 1969 acetaldehyde released is not a risk to human health or the environment, and no further action is required.

Comment to Document 16—March 10, 1970

Break occurred in dike around lime deposits. Moderate amount of lime slurry flowed into one end of Mirror Lake.

Response

See the DuPont response the Document 6—February 5, 1963.

Comment to Document 17—September 14, 1970

Three hundred fifty gallons (2,300 pounds) acetaldehyde loss through relief valve on a loaded tank car.

Response

Document 17 states that observations of the discharge indicate that nearly all of the acetaldehyde vaporized to the atmosphere (boiling point=69° F), with little or none

falling to the ground. In addition, Document 17 states that the area under the center of the tank car drains to the process ditch system. DuPont concluded that, of the 2,300 pounds (350 gallons) discharged, only a few hundred pounds (a few dozen gallons) at the most could have entered the groundwater system.

The retardation factor (R) for acetaldehyde indicates that this compound moves through soil at roughly the same velocity as water (R=1 for water, R=1.009 for acetaldehyde [approximately]). Because acetaldehyde moves at roughly the same rate as water, the few dozen gallons released to the ground have most likely been flushed through the groundwater system during the past 26 years by rain and thawing snow. Therefore, based on the small quantity of acetaldehyde released, the rate at which the compound acetaldehyde flushes through the groundwater system, and the age of the release, it can be concluded that the 1970 acetaldehyde release is not a risk to human health or the environment, and no further action is required.

Comment to Document 18—1971

Break in berm allowed sludge to run down a ravine and fill in part of Mirror Lake. Break may have gone unchecked for three months. Copper burial pit was in use south of the Carbide plant until 1972.

Response

See the DuPont response to Document 6—February 5, 1963, for information regarding the berm break/lime pile.

Regarding the Copper Burial Pit, an October 3, 1972, letter to Mr. Robert Courchaine (state of Michigan Water Resources Commission) states that the copper was removed and shipped out of the state (see Appendix E). A December 6, 1979, letter (see Appendix E) to Mr. Chester Harvey, district engineer, states that in 1972, the "state of Michigan's Resource Recovery Division suggested that DuPont remove the contents of an abandoned copper burial pit. This was done the same year and documented in a letter to the West Michigan Shoreline Regional Development Commission."

Based on this above information, it can be concluded that the DuPont Montague facility has kept the state of Michigan informed of the copper pit abandonment activities that were conducted 22 years ago. Therefore, no further action is required.

Comment to Document 19—August 19, 1971

Small leak reported in the Lake Michigan pipeline under Chicago Avenue.

Response

With the exception of Document 19, no additional information was found regarding the small Lake Michigan pipeline leak that occurred approximately 25 years ago. However, Document 19 is a staff report from Mr. George Liddle (Michigan WRC); therefore, it can be concluded that the DuPont Montague facility has kept the state of Michigan informed of all pipeline leak related activities and that these activities were conducted to the satisfaction of the state. Therefore, no further action is required regarding the small pipeline leak.

Comment to Document 20—April 21, 1972

4-foot-by-6-foot hole discovered in the concrete bottom of the middle settling basin.

Response

See the DuPont response to Document 1—1961.

Comment to Document 21—March 1, 1967

Loss of hydrochloric acid during unloading of a tank car. The HCl went into a ditch which led to the company's waste treatment facilities.

Response

The hydrochloric acid (HCl) spill was released into the facility's ditch system, which conveyed the released material to the wastewater treatment plant and then to Lake Michigan. There is no reason to believe that any HCl was released to the ground. Based on Document 21, it appears that the state of Michigan was concerned about why the incident occurred and what actions were taken to prevent its reoccurrence. Although DuPont was unable to find the response to this request, DuPont is certain that this 1975 request was answered adequately. Because the Montague facility is being closed, the handling of HCl is no longer a concern; therefore, no further action is required.

Comment to Document 22—May 29, 1975

Failure in the underground injection pipe of the DuPont disposal well. Loss was approximately 1,000 gallons of oil/HCl/brine.

Response

Document 22 states that the injection pipe failure on May 29, 1975, occurred in the aboveground piping system and that none of the material released from this aboveground leak left the DuPont property. Some of the released material had collected within the plant diversion basin and was neutralized and disposed of. Any material that reached the ground was neutralized and excavated. The Michigan Geologic Survey (Mr. Ray Ellison) and the 24-hour WRC watch (Mr. Sam Alguire) were informed of the incident. Mr. Ellison visited the site on May 30 to review the situation.

Based on Document 22, it can be concluded that the material released was excavated and did not negatively impact the environment. In addition, the state of Michigan was kept well informed of the release and was able to review the situation within 24 to 48 hours after its occurrence. Therefore, it can be concluded that, with regards to the May 1975 aboveground piping system release, the DuPont Montague facility has kept the state of Michigan informed of all activities and that these activities were conducted to the satisfaction of the state. Therefore, no further action is required.

Comment to Document 23—June 22, 1976

Approximately five years ago a break occurred in a retention dike and was left uncorrected. A very large quantity of calcium hydroxide has migrated from the retention area. A 15 acre natural waters area which is a finger lagoon to White Lake is now acting as a storage lagoon.

Response

The structure referred to in Document 23 as "the calcium hydroxide waste storage impoundment" is today known as the lime pile. The water body referred to in Document 23 is today know as Mirror Lake. The release discussed in Document 23 is the 1971 berm break discussed as part of Document 18 (see the comment to Document 18 and the subsequent DuPont response for further information regarding the 1971 berm break).

Comment to Document 24—July 13 1977

Settling basin sludge deposited on the northwestern corner of the lime pile.

Response

See comment to Document 13 and the subsequent DuPont response for information regarding the disposal of settling basin sludge at the northwestern corner of the lime pile.

Comment to Document 25—December 10, 1978

Three thousand three hundred forty gallons of Freon® 113 spilled. Location: tank truck storage lot at Lamos and Wilkes Roads. Area of soil 35-feet-by-40-inches-by-3-feet deep was excavated, and soil was impounded on an impermeable concrete pad, excavation refilled with clean sand.

Response

The letter to the Michigan WRC (Document 25) states that the extent of the *Freon*® 113 impacted soil was determined by soil samples. All impacted soil was excavated, and the excavation was filled with clean sand.

The area affected by this release has been remediated, and the state of Michigan was kept well informed of the release and the subsequent remedial activities conducted. Therefore, no further action is required.

Comment to Document 26—June 5, 1967

Reference to and map of old CD (chlorobutadiene) pit located northeast of the emergency catch basin.

Response

Based on a conversation with Mr. Richard Dawes (DuPont Montague facility), the "old CD pit" was removed from service in the late 1960s. In 1996, a sample was obtained of the rainwater that had accumulated within the old CD pit. The analytical results did not detect any compounds above the state of Michigan Part 201 health-based drinking-water values. The old CD pit was subsequently abandoned in place by filling the pit with soil and concrete debris. Based on the age of the abandoned pit and the low laboratory analytical results, it can be concluded that further action is required for the old CD pit.

Comment to Document 27—October 1, 1979

Outline of historical contamination 1961 through 1978.

Response

All of the historical items stated in Document 27 have been addressed in this spill response letter, with the exception of the May 1963 event and the January 1964 event.

The May 1963 event in Document 27 refers to staining of the White Lake Beach Sand. In 1963, DuPont removed the stained material by dredging the beach (see Appendix F for federal permit). An internal DuPont letter states the following: the groundwater problem associated with the lime pile has "also resulted in a black, smelly deposit encroaching onto the White Lake Beach and shallows a few years ago. The company removed the material by dredging. Subsequently, an interceptor well has been operated discharging groundwater to the plant's Lake Michigan outfall. This procedure has prevented a recurrence of beach contamination (see Appendix F)." The impacted beach sand was removed, and the source of the problem has been addressed; therefore, no further action is required regarding the White Lake Beach Sands.

The January 1964 event in Document 27 refers to a residential well that had become contaminated from lime pile impacted groundwater. As stated in the DuPont response to Documents 6, these residences have been hooked up to the city drinking-water system, and DuPont has addressed the lime pile related groundwater problem (see comment to Documents 6).

Comment to Document 28—November 7, 1979

Loss of approximately 8 gallons of PCB, leaked from two capacitors located on top of a rectifier building-southeastern corner below downspout. Soils excavated.

Response

Based on Document 28, DuPont excavated the polychlorinated biphenyl (PCB) impacted soil. The subsequent soil analytical results indicated that all PCB-impacted soil was removed. All excavated soil was disposed of at an approved facility. Because all PCB impacted soil was removed (based on laboratory analytical results), no further action is required.

Comment to Document 29—April 12, 1988

Outline of historical contamination 1960 through 1983:

- February 28, 1970—Divinylacetylene and other chemical spilled over into a ditch
- January 9, 1974—Leaking tank car caused small release of hydrogen fluoride
- June 3, 1975—Loss of 400 to 600 pounds of ethyl acrylate and methyl acrylate
- March 7, 1977—Release of methyl methacrylate occurred
- July 21, 1977—Spill of 50 pounds of ethyl acrylate due to tank car leak
- August 25, 1981—One to three gallons of epoxy resin washed into a ditch
- May 1, 1982—One and one-half pounds of chloroform lost from a leaking pump
- October 25, 1982—Spill of 500 gallons of *Freon*® 113
- February 18, 1983— Perchloroethylene spill of about 300 to 500 gallons from leaking tank car

Response

Because of the DuPont records retention policy, no additional information was found regarding the nine historical contamination items identified. However, the retardation factor for many of these compounds of interest (i.e., ethyl acrylate, methyl acrylate, methyl methacrylate, chloroform) is very low. This low retardation factor suggests that, in the 15 to 25 years since the release occurred, these compounds have already been flushed through the site aquifer system and do not pose a risk to human health or the environment. In addition, based on Documents 1 through 28 in this spill response letter, the DuPont Montague facility has kept the state of Michigan well informed of all releases, and all response activities related to those releases were conducted to the satisfaction of the state. Therefore, DuPont concludes that, at the time of the spill, the nine items identified were addressed to the satisfaction of the state, and no further action is required.

STATE OF MICHIGAN

WILLIAM G. MILLIKEN, Governor

DEPARTMENT OF NATURAL RESOURCES

HOWARD A. TANNER, Director

350 Ottawa Avenue, N. W.
Grand Rapids, Michigan 49503

May 14, 1981

Mr. William Murrell
E.I. duPont de Nemours and Company
P.O. Box A
Montague, Michigan 49437

Dear Mr. Murrell:

We have completed our review of DuPont's "Residuals Management Plan" which was submitted on May 1, 1981, in accordance with Part I, C, 6 of proposed N.P.D.E.S. Permit No. MI 0000884. Our original concern regarding the presence of volatile hydrocarbons in the slurry material has been adequately addressed. A priority pollutant scan performed in March, 1981 by E.R.G. failed to detect any volatile hydrocarbons in either the calcium flouride precipitation basin or the center basin.

The company's residuals management plan is approved. The plan and associated monitoring requirements will be incorporated into the company's pending N.P.D.E.S. Permit. If you should have any questions or comments, please contact our Grand Rapids office.

Very truly yours,
WATER QUALITY DIVISION

Robert J. Courchaine
Division Chief

by: Mike Beck
Acting District Engineer

Mike Beck

RJC/MB:bjc

cc: W.Q.D. Files, Lansing
S. Ross

MICHIGAN
THE GREAT LAKE STATE

R1026-1 1/78

FILE

CC: E. Benjamins
R. M. Rule

July 15, 1976

TO: J. J. BEALL

FROM: E. R. BLY

There is approximately 20 yards of high antimony sludge in two pits north of the lime pile near the railroad spur. This should be handled as follows:

1. Dig sludge out of pits with front end loader and put in dump truck. Fill pits with adjacent lime and sand.

2. Haul to area north of pole shack and place on polyethylene sheeting.

3. Mix in concrete mixer the following proportions: 8 cu. ft. of sludge - 8 sacks of cement - 1 cu. yd. of sand, with enough water to make pourable mix.

4. Put into lever packs and bury in solid landfill dump.

Note: Steps one and two should be done immediately.

ERB:BJC

file

STATE OF MICHIGAN

WILLIAM G. MILLIKEN, Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING, LANSING, MICHIGAN 48926

RALPH A. MAC MULLAN, Director

August 4, 1971

FILE

Mr. Ernest A. Bly
E. I. DuPont De Nemours & Company
P. O. Box "A"
Montague, Michigan 49437

Dear Ernie:

Attached is the letter of authorization for the construction of a well on your plant properties. As you already know I will be on vacation during the initial stages of your program. I have notified our Cadillac office concerning this operation and they will probably make periodic inspections. I would appreciate it if you could work out some type of authorization for them to visit the well site at their convenience. The two people involved will be Russell Wiles and/or Jack Snider. Their address is:

Cadillac Field Office
District Headquarters
Box 629
Cadillac, Michigan 49601

Telephone: 616 - 775-9728

During the course of our conversations at my recent visit at your plant, you asked me whether or not the coring contract is normally handled through the drilling contractor or by the operator, in checking around the office, the consensus appears to be that this is handled either way. As far as I know the only in state company that does this is the Maness Petroleum Laboratories at Mount Pleasant. Hopefully the preceding will not foul up your contract with NADCo.

Sincerely,

Bob.

Robert E. Ives, Chief
Mineral Well Section

GEOLOGICAL SURVEY DIVISION

REI:gjw

Enclosure

MICHIGAN
THE GREAT LAKE STATE

1-L

STATE OF MICHIGAN

WILLIAM G. MILLIKEN, Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING, LANSING, MICHIGAN 48926

RALPH A. MAC MULLAN, Director

August 4, 1971

E. I. DuPont De Nemours & Company
ATTENTION: Mr. Ernest R. Bly
P. O. Box "A"
Montague, Michigan 49437

Dear Mr. Bly:

This letter, in lieu of a permit, will authorize commencement of the construction of a industrial waste disposal well (No. 1) by the E. I. DuPont De Nemours & Company in White River Township, Muskegon County, as provided under interim procedures established for Act 315 of the Public Acts of 1969.

CONDITIONS OF AUTHORIZATION:

1. The well is to be located in the NW¼ SW¼ NE¼ of Section 36, T.12N., R.18W., 1154.01 feet from South line of quarter section and 637.17 feet from West line of quarter section.

2. Construction of the well is to be in the manner prescribed on the application and accompanying data submitted by the company.

3. Any changes in the specified program is subject to the approval of the Supervisor of Mineral Wells.

4. A weekly progress report is to be submitted to this office during construction of the well.

5. The Supervisor or his representative is to be notified 24 hours prior to commencement of drilling, casing and cementing, and testing programs.

6. This authorization does not supersede any of the requirements of Act No. 245 of the P. A. of 1929, as amended.

7. This authorization is for the construction and testing of a well for the purposes indicated. It does not constitute approval for use as a disposal well. Final approval of the well and the disposal system shall be made by the Supervisor of Mineral Wells after receipt and review of the information obtained.

Authorization to construct this well is subject to the provisions and requirements of Act 315, P. A. 1969, except for the permit fee and bond requirements which have been waived during the above interim procedures period.

Sincerely,

Arthur E. Slaughter
Supervisor of Mineral Wells

By: Robert E. Ives
Robert E. Ives, Chief
Mineral Well Section

GEOLOGICAL SURVEY DIVISION

REI:gjw

cc: Mr. Alguire
Mr. Wiles

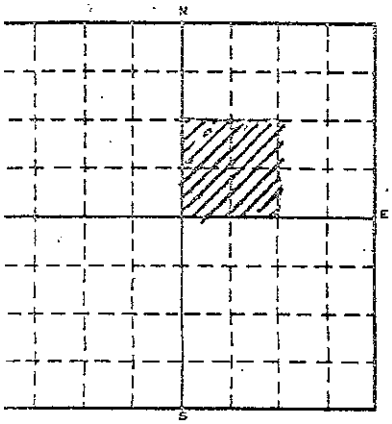
Enclosures

GAS, GEOLOGICAL TEST, BRINE DISPOSAL, GAS OR L.P.G. STORAGE OR FOR SECONDARY RECOVERY

DER AUTHORITY OF ACT 61 P.A. OF 1939, AS AMENDED, AND ACT 326, P.A. 1937 AS AMENDED.

SUPERVISOR OF WELLS
GEOLOGICAL SURVEY
STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
LANSING, MICHIGAN 48926

See Reverse Side Before Filling Out This Application



CATE WELL AND OUTLINE LEASE OR IT ON SECTION PLAT -- 640 ACRES

1. APPLICATION TO DRILL A WELL FOR: E.I. DuPont De Nemours & Co.
2. DATE: June 29, 1971
3. FEE ENCLOSED: $

4. LESSEE (OWNER OF LEASE RIGHTS): E. I. DuPont De Nemours & Co.

5. PERMANENT ADDRESS: Wilmington, Delaware
6. PHONE: 302-774-1000

7. LESSOR (FULL NAME OF OWNER OF MINERAL RIGHTS): E. I. DuPont De Nemours & Co.
8. WELL NO.: 1

9. SURFACE OWNER (IF OTHER THAN MINERAL OWNER):

10. DRILLING CONTRACTOR: North American Drilling Company

11. ADDRESS: P.O. Box 129, Mt. Pleasant, Michigan 48858
12. PHONE: 517-773-3945

13. NW ¼ OF SW ¼ OF NE ¼. SECTION 36 T 12N R 18W

ACRES IN LEASE OR UNIT (SPECIFY): 40 Acre Unit

15. TOWNSHIP: White River

16. COUNTY: Muskegon

Locate well in two directions from nearest lines of quarter section and property ownership or unit lines

165.24 FT. FROM North, South (north-south) LINE OF QUARTER SECTION

685.17 FT. FROM East, West (east-west) LINE OF QUARTER SECTION

1154.01 FT. FROM South of original DuPont (north-south) (PROPERTY) LINE

2007.55 FT. FROM East of original DuPont (east-west) (PROPERTY) LINE

17. KIND OF TOOLS TO BE USED *(Cable, rotary, combination)*: Rotary

19. FORMATION IN WHICH WELL IS TO BE COMPLETED: Mt. Simon

20. INTENDED DEPTH OF WELL: 6820

PROGRAM OF CASING, SEALING, CEMENTING AND COMPLETING WELL

ASING PROGRAM: 100'x 20" steel surface casing; 800'x 13-5/8" steel intermediary casing; 6000'x 7" steel casing plus 100'x 7" fibre glass reinforced plastic casing for the injection casing.

EMENTING PROGRAM: The bottom 1100'(±) to be Halliburton eppseal. The intermediate and injection casing to be common cement extended with Pozzmix and accelerated with $CaCl_2$. Surface casing to be cemented with common cement only.

OMPLETION PROGRAM: The 7" plastic casing will be fractured at the most opportune location in the Mt. simon.

CASING IS NOT TO BE STRIPPED FROM THE HOLE AND NO CHANGE IS TO BE MADE IN THE PROGRAM OUTLINED ABOVE WITHOUT APPROVAL OF THE SUPERVISOR OF WELLS OR HIS AUTHORIZED REPRESENTATIVE

ARE THERE ANY LAKES, STREAMS, DRAINAGE WAYS, SWAMPS, OR MARSHES NEARER THAN 300 FEET FROM WELL LOCATION? Yes ☐ No ☒

23. ARE THERE ANY BUILDINGS OR OTHER STRUCTURES WITHIN 75 FEET OF THE PROPOSED LOCATION? Yes ☐ No ☒

IF ANSWER TO NO. 22 ABOVE IS *Yes*, DESCRIBE AND GIVE DISTANCE FROM LOCATION.

PLICANT AGREES TO COMPLY WITH THE PROVISIONS OF ACT 61, PUBLIC ACTS OF 1939, AS AMENDED, AND ACT 326, PUBLIC ACTS OF 1937, AMENDED, AND RULES AND REGULATIONS PERTAINING TO THE LOCATING, DRILLING, CASING, SEALING, COMPLETING, PRODUCING, AND OGGING OF WELLS. BEFORE COMMENCING DRILLING OPERATIONS, CONTACT THE NEAREST FIELD OFFICE. *(See reverse side)*

ADDRESS CORRESPONDENCE AND PERMIT TO: Ernest R. Bly, DuPont Co., P.O. Box "A", Montague, Michigan 49437

26. PHONE: 894-4011

LEAVE BLANK

DATE ISSUED | PERMIT NO.

27. OWNER OF LEASE RIGHTS: E. I. DuPont De Nemours & Company

28. AUTHORIZED REPRESENTATIVE: W. O. Jewett, Plant Manager

FOR CASHIER'S USE ONLY . DO NOT WRITE IN THIS SPACE

DISTRIBUTION
1. WHITE, LANSING 4. GOLDENROD, FIELD
2. CANARY, CASHIER 5. GREEN, APPLICANT
3. BLUE, FIELD

R 7207
REV. 3/70

GEOLOGICAL SURVEY DIVISION

SURVEY RECORD OF WELL LOCATION

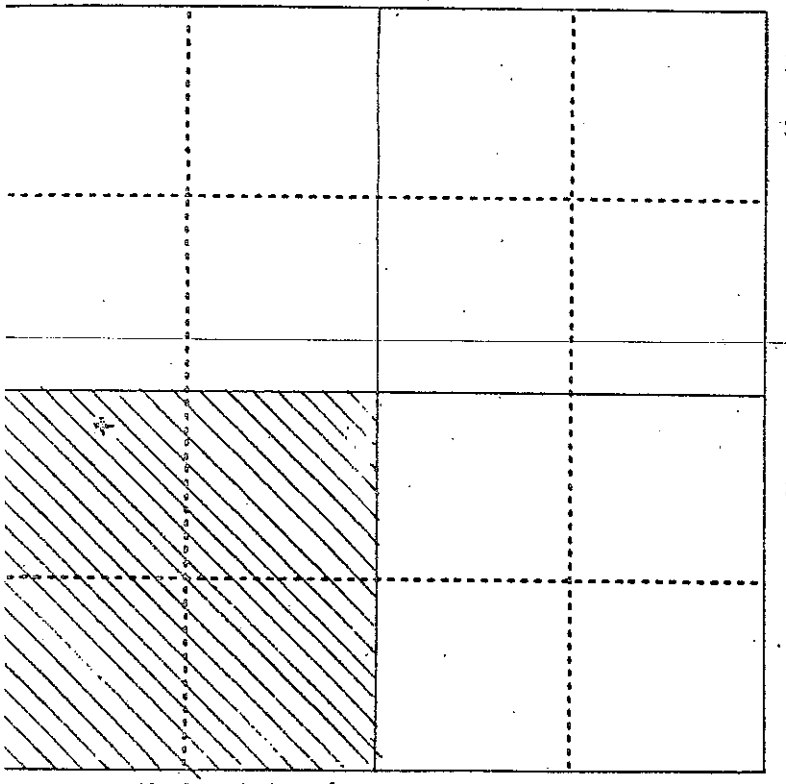
(Submit in triplicate with Application for Permit to Drill a Well for Oil, Gas, Geological Test, Brine Disposal, or Key Well for Secondary Recovery)

Operator E. I. DuPont De Nemours & Company

Well Name DuPont - Montague Number 1

Location Description NW ¼ of SW ¼ of NE ¼ of Section 36, T 12 N~~S~~, R 18 ~~X~~E W

_____ Quarter Section (160 acres more or less)



(Scale of plat -- 1 inch equals 660 feet)

1. Locate well site and show acreage in lease.

2. Locate well in two directions from *nearest* quarter section lines and from *nearest* lease or ownership property lines.

1154.01 SOUTH
-165.24 ft. from North line of quarter section.
(north-south)

637.17 WEST
685.17 ft. from East line of quarter section.
(east-west) original DuPont

1154.01 ft. from South ~~X~~ property line.
(north-south) original DuPont

2007.55 ft. from East ~~X~~ property line.
(east-west)

3. Is location staked? Yes

If location is not staked, describe how it is identified

_____

_____

_____

_____

_____

4. Type of land and cover grass and scrub trees - adjacent to chemical plant
(open farm land, grass, brush, timber, etc.)

5. Are any lakes, streams, swamps, drainageways, etc., within 300 feet of well site? no If yes, locate on survey plat, show distance from site and give brief description.

_____

_____

_____

6. Are any roads, power lines, regularly used buildings, etc., within 75 feet of well site? yes If yes, locate on survey plat, show distance from site and give brief description.

see attached plat (The road and power lines are DuPont owned and solely for DuPont use.)

Surveyed by Edward Scharmer (Name) Registered Surveyor (Title) June 1971 (Date)

Address of Surveyor Old Channel Trail, Montague, Michigan 49437

CERTIFICATION: I certify the above information is complete and accurate to the best of my knowledge and belief.

E. I. DuPont De Nemours & Company
Owner of Lease Rights

JUL 16 1971
Date

Signature _____
Authorized Representative
W. O. Jewett - Plant Manager