



## **DNREC-Site Investigation and Restoration Branch**

### **LEGAL NOTICE**

#### **REVISED PROPOSED PLAN OF REMEDIAL ACTION FOR THE CHRISTINA LAB SITE (DE-1219)**

**WHAT:** The Site Investigation and Restoration Branch (SIRB), on behalf of the Department of Natural Resources and Environmental Control (DNREC or the Department), announces the Revised Proposed Plan of Remedial Action (Revised Proposed Plan) for the Christina Lab Site. DNREC issues this Revised Proposed Plan under the authority of the Hazardous Substance Cleanup Act (HSCA), 7 Del. C. Chapter 91.

**WHERE:** The 20 acre Site is located in the City of Wilmington, Delaware, between Christina Avenue and the Christina River at the I-495 bridge.

**WHY:** The property, currently vacant, is the former site of various industries including a linoleum production plant and a DuPont Company pilot production facility. Subsurface soil consists of fill material from ore processing at the Lobdell Car Company which was formerly located on a parcel adjacent to the site.

The DuPont Company investigated the site under the Delaware Voluntary Cleanup Program. In 2005, DNREC issued a Final Plan for the site requiring "Installation of a cap over the entire site consisting of clean fill, stone base and asphalt cover." This wording is not consistent with current best practices to manage storm water on the site and prevent sediment discharge to the Christina River.

Therefore, the Revised Proposed Plan shall require the following:

- Cover most of the site (approximately 85%) with compacted, crushed stone or asphalt to prevent contact with surface soil.
  - Cover the rest of the site with berms or constructed drainage features as required by DNREC Storm Water and Sediment Program.
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- Record an environmental covenant consistent with Delaware's Uniform Environmental Covenants Act (Title 7, Del. Code Chapter 79, Subtitle II). The covenant will include a restriction on digging into site soils beneath the soil cap without prior written approval of DNREC.
- Develop an Operation and Maintenance (O&M) Plan to minimize the potential for cap disturbance, and to promote the long-term integrity of the cap.

For more details regarding the Revised Proposed Plan, a copy is available at the Wilmington Public Library or at the office of DNREC-SIRB, 391 Lukens Drive, New Castle, DE 19720. The Revised Proposed Plan is also posted on DNREC-SIRB's website at <http://www.dnrec.state.de.us/dnrec2000/Divisions/AWM/sirb/> under the subject "Announcements." For site specific information, please go to DNREC's superfund site files database at <http://www.dnrec.state.de.us/dnrec2000/Divisions/AWM/sirb/sitefiles.asp>.

Pursuant to 7 Del. C. § 9107 (e) (2), DNREC invites written comments on this Proposed Plan. The public comment period begins on December 15, 2008 and will close on January 12, 2009. Written comments should be addressed to Stephen F. Johnson at DNREC-SIRB's address listed above. For additional information, please contact Stephen Johnson at (302) 395-2600.

REVISED  
PROPOSED PLAN OF REMEDIAL ACTION

Christina Lab Site

Wilmington, Delaware  
DNREC Project No. DE-1219



December 2008

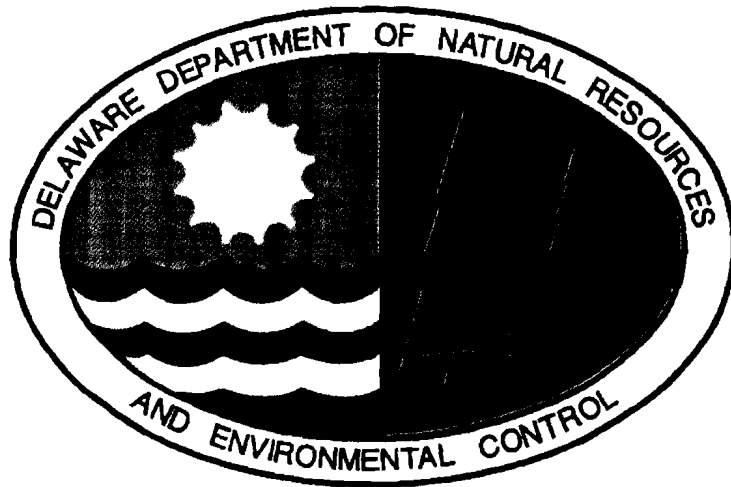
Delaware Department of Natural Resources and Environmental Control  
Division of Air and Waste Management  
Site Investigation & Restoration Branch  
391 Lukens Drive  
New Castle, Delaware 19720

CONTENTS

- Revised Proposed Plan: Questions and Answers
  - Attachment: What is a Proposed Plan?
  - Attachment: 2005 Final Plan of Remedial Action
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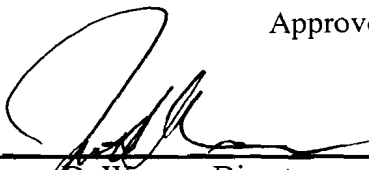
REVISED  
PROPOSED PLAN OF REMEDIAL ACTION

Christina Lab Site  
Wilmington, Delaware  
DNREC Project No. DE-1219



Approval:

This Revised Proposed Plan meets the requirements of the Hazardous Substance Cleanup Act.

Approved by:	
	
James D. Werner, Director Division of Air & Waste Management	
11 Dec 2008	
Date	

REVISED  
PROPOSED PLAN  
Questions & Answers

Christina Lab Site



**What is the Christina Lab Site?** The site is a vacant parcel of land on the Christina River just west of I-495 in Wilmington. It is owned by the DuPont Company.

In 2005, DNREC issued a Final Plan of Remediation for the Christina Lab site. DNREC is issuing this Revised Proposed Plan to clarify and amend the 2005 Final Plan. DNREC will receive and consider public comments as if this were a new Proposed Plan. The 2005 Final Plan is attached.

Tax Parcel Number: 26.0058.0019  
Address: 501 Christina Avenue  
Nearest major intersection: Christina Avenue and New Castle Avenue  
Area: 20.4 acres  
Surrounding Property: Surrounding land use is heavy industry.  
Site Utilities: Sewer and water are supplied by the City of Wilmington.  
Surface water: The site is on the Christina River  
Topography: The site is generally flat and two to three feet above mean sea level.  
Groundwater: Shallow and perched ground water level is affected by the tide.

**What happened at the Christina Lab Site?** The site received ore processing waste from the Lobdell Company in the early 20th century to fill in low spots and make it suitable for construction. Previous to 1961, various industrial facilities were located there including a sugar beet processing plant and a linoleum plant. The DuPont Company operated a pilot production facility on the site from 1961 to 1991 when it was known as the Christina Laboratory.

**What is the environmental problem at the Christina Lab Site?** The site soils are contaminated with arsenic and petroleum related compounds common to the area. The soil contamination has not impacted the groundwater.

**What does the owner want to do at the Christina Lab Site?** The site will be used for the storage of bulk materials and recycling.

**Why does DNREC want to change the Final Plan for the Site?** The 2005 Final Plan required "Installation of a cap over the entire site consisting of clean fill, stone base and asphalt cover." This wording is not consistent with best practices to manage storm water on the site and prevent sediment discharge to the Christina River. Also, the intended operator only needs asphalt on a portion of the site. The change in the material used in the cap will not affect the protectiveness of the remedy.

**What is the new Proposed Plan for the Christina Lab Site?**

1. Cover most of the site (approximately 85%) with compacted, crushed stone or asphalt to prevent contact with surface soil.
2. Cover the rest of the site with berms or constructed drainage features as required by DNREC Storm Water and Sediment Program.
3. Record an environmental covenant consistent with Delaware's Uniform Environmental Covenants Act (Title 7, Del. Code Chapter 79, Subtitle II). The covenant will include a restriction on digging into site soils beneath the soil cap without prior written approval of DNREC.
4. Develop an Operation and Maintenance (O&M) Plan to minimize the potential for cap disturbance, and to promote the long-term integrity of the cap.

**What are the long term plans for the Site after the cleanup?** In the future the site will be used for storage of bulk materials and a recycling operation.

DNREC plans to issue a Certificate of Completion of Remedy for the site after the completion of clean-up, the redevelopment of the property, and the implementation of the uniform environmental covenant.

**How can I find additional information or comment on the Revised Proposed Plan?**

The complete file on the site including the Remedial Investigation Report is available at the DNREC office, 391 Lukens Drive in New Castle. Most documents are also found on:

<http://www.dnrec.state.de.us/dnrec2000/Divisions/AWM/sirb/>

The 20-day public comment period begins on December 15, 2008 and ends at close of business (4:30 pm) on January 12, 2009. Please send written comments to the DNREC office or call Stephen F. Johnson Project Manager, at: 302-395-2600.

## What is a Proposed Plan?

A Proposed Plan of Remedial Action (Proposed Plan) is a summary of how DNREC plans to clean up a contaminated site. A Final Plan of Remedial Action (Final Plan) is the adoption of the Proposed Plan, after all comments made by the public within the comment period of twenty days have been considered and addressed by DNREC.

The Delaware State Legislature passed the Hazardous Substance Cleanup Act (HSCA) in 1990. The Legislature made sure that members of the public would be informed about environmental problems in their own neighborhoods and have a chance to express their opinion concerning the clean up of those environmental problems before DNREC takes action.

After DNREC studies a site, it summarizes the problems there and proposes one or more possible solutions in a Proposed Plan. The Proposed Plan contains enough information to allow lay persons to understand the site. More detailed information can be found in the reports and documents approved by DNREC. All of the documents and reports created by DNREC or consultants during the course of the investigation of the site are available to the public at the offices of DNREC-SIRB or at DNREC's website:

<http://www.dnrec.state.de.us/dnrec2000/Divisions/AWM/sirb/sitefiles.asp>.

DNREC issues the Proposed Plan by advertising it in at least one newspaper in the county where the site is located. The legal notices for the Proposed Plans and the Final Plans usually run on Wednesdays or Sundays in the legal classified section of the News Journal and/or the Delaware State News. The public comment period begins on the day (Wednesday), or the day after (Sunday) the newspaper publishes the legal notice for the Proposed Plan.

DNREC frequently holds public meetings during the comment period. Those meetings are usually held near the site in the evening. Citizens can request a public meeting if DNREC did not already schedule one.

Comments are collected at the public meetings, by phone or in writing. DNREC considers all comments and questions from the public before the Proposed Plan is finalized and adopted as a Final Plan.

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**STATE OF DELAWARE**

**DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL-  
SITE INVESTIGATION AND RESTORATION BRANCH**

**FINAL PLAN OF REMEDIAL ACTION**

SCANNED  
JAN 07 2005  
DE 1219  
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**Christina Lab Site  
Wilmington, DE**

**DNREC Project No. DE-1219**

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This final plan of remedial action (final plan) presents the Department of Natural Resources and Environmental Control's (DNREC's) preferred cleanup alternative for the remediation at Christina Lab (site) in Wilmington, Delaware. The final plan is issued under the provisions of the Delaware Hazardous Substances Cleanup Act, 7 Del. C Chapter 91 (HSCA) and the Regulations Governing Hazardous Substance Cleanup (Regulations). As described in Section 12 of the Regulations, DNREC provided notice to the public and an opportunity for the public to comment on the proposed plan of remedial action (proposed plan). During the comment period of April 15, 2004 through May 4, 2004, DNREC did not receive any comments on the proposed plan, therefore the proposed plan has been adopted as the final plan. The final plan designates the selected remedy for the site. All investigations of the site, the proposed plan and the final plan will constitute the Remedial Decision Record.

The final plan summarizes several reports including the July 2003 Environmental Summary and Risk Assessment, and the November 2003 revised Risk Assessment and Focused Feasibility Study, as well as the administrative record file upon which this final plan is based. All investigations performed at the site, the proposed plan, and the final plan will constitute the remedial decision record. Copies of these documents can be obtained or viewed by contacting DNREC.

## **INTRODUCTION**

The site is located along the Christina River at 501 Christina Avenue in Wilmington, Delaware. The site covers approximately 20.4 acres of land and is located within a highly industrialized area near the Port of Wilmington (New Castle County, Tax Parcel No. 26.0058.0019). The site is bounded to the east by the Christina River; to the west by F.A. Potts Company International Inc. and the Forbes Steel & Wire plant; to the north by a railroad line and Delmarva Power; and



to the south by F.A. Potts Company International Inc. (Figure 1). DuPont purchased the property in 1961 and used the site for testing equipment and machinery until 1991. All buildings were subsequently demolished in the early 1990s. In July 2003, DuPont entered into the Voluntary Cleanup Program (VCP) under the provisions of the Delaware Hazardous Substance Cleanup Act, 7 Del. C. Chapter 91 (HSCA), as administered by the Delaware Department of Natural Resources and Environmental Control-Site Investigation and Restoration Branch (DNREC). Through a VCP Agreement, DuPont investigated the potential risks posed to the public health, welfare, and the environment at the site by evaluating previous investigations performed at the site and performing a risk assessment. A focused feasibility study (FFS) was subsequently performed to evaluate remedial alternatives for the site.

**SITE DESCRIPTION AND HISTORY**

The site has been used for commercial and industrial purposes since the early 1900s. This was the location of a sugar beet processing facility in the 1920s. Delaware Floor Products manufactured linoleum at this facility from the 1930s through 1961. From 1961 until 1991 DuPont used the facility as a pilot plant production in the development of new products. DuPont ceased operations in 1991 and all buildings were subsequently demolished in the early 1990s. Currently, the site is a vacant lot, and access is controlled by a locked chain-link fence that surrounds the site.

**INVESTIGATION RESULTS**

Based on a review of all the environmental investigations conducted at the site, the analytical results indicated that soil is the only media of concern. Several polynuclear aromatic hydrocarbons (PAHs) and metals were detected in the surface and subsurface soil above their respective unrestricted or restricted use Uniform Risk-based Standard (URS) values and are presented in the following tables:

**SURFACE SOIL**

Benzo(a)anthracene	7.9	0.9	8	
Benzo(a)pyrene	6.4	0.09	0.8	
Benzo(b)fluoranthene	9.1	0.9	8	
Dibenz(a,h)anthracene	7.8	0.09	0.8	
Arsenic	41	0.4	4	11

\*RME –Reasonable Maximum Exposure Concentration calculated as the 95% Upper Confidence Level (UCL) of the arithmetic mean of contaminants detected at the site.  
 mg/kg – Milligrams per kilogram.

**SUBSURFACE SOIL**

benzo(a)anthracene	5.2	0.9	8	
benzo(a)pyrene	4.4	0.09	0.8	
Arsenic	66	0.4	4	11

\*RME –Reasonable Maximum Exposure Concentration calculated as the 95% Upper Confidence Level (UCL) of the arithmetic mean of contaminants detected at the site.

The PAHs and arsenic detected in soil were retained as the contaminants of concern (COCs) for the subsequent risk assessment. Arsenic was detected in both surface and subsurface soils at concentrations that are above the range of typical background concentrations for Delaware soil.

With regards to groundwater, no contaminants were found above their primary maximum contaminant level (MCL). Iron and manganese at concentrations of 300 ug/l and 76 ug/l respectively, were the only contaminants detected in groundwater above the federal secondary maximum contaminant level (SMCL) for drinking water. SMCLs are based on aesthetic qualities of the water such as taste and odor and do not present a risk to human health or environment. Therefore, groundwater was not considered as a media of concern at the site. In addition, groundwater beneath the site and the vicinity is not presently being used as a drinking water source.

### **SITE RISK EVALUATION**

DuPont calculated the site-specific risk associated with exposure to soil contaminated with arsenic and certain PAHs for an on-site worker under a restricted use scenario assuming the site will be used as a storage area. For surface soil a potential carcinogenic risk of 1.0E-04 and a non-carcinogenic risk or Hazard Index (HI) of 1.3 were calculated. For potential worker exposure to subsurface soil during excavation activities, a potential carcinogenic risk of 9.0E-07 and a non-carcinogenic risk or HI of 0.1 were calculated. The carcinogenic and non-carcinogenic risks for surface soil are above DNREC’s cleanup standard of 1.0E-05 and HI of 1.0.

In addition, an ecological risk assessment was performed. Based on this assessment, DNREC concluded that there are no potential ecological risks for the site.

### **REMEDIAL ACTION OBJECTIVES**

The following qualitative objectives are determined to be appropriate for the site:

- Prevent human exposure to impacted soil under future restricted land use.

This objective is consistent with the future proposed use of the site as a commercial storage area, New Castle County zoning policies, and state regulations governing water supply, and worker health and safety.

Based on the qualitative objectives, the quantitative objectives are:

- Prevent human exposure to soil contaminated with PAHs and metals that would result in a carcinogenic risk above 1.0E-05 and a non-carcinogenic risk above a HI of 1.0.

### **FINAL PLAN OF REMEDIAL ACTION**

Based on DNREC’s evaluation of the site information, which includes current and past environmental investigations, historical information, the above remedial action objectives, and

the remedial alternatives evaluated in the FFS, DNREC determined that the following remedial actions be taken at the site:

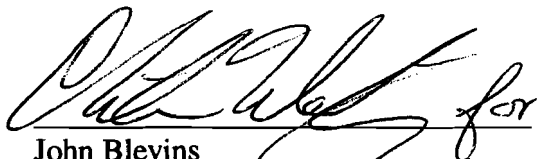
1. Installation of a cap over the entire site consisting of clean fill, stone base and asphalt cover. A remedial design providing details of the cap and the resulting storm water erosion control management plan shall be submitted within sixty (60) days following DNREC's adoption of the final plan for DNREC's review and approval prior to installation of the cover system. The capping system should be implemented in compliance with the applicable federal, state and local laws and regulations including but not limited to Delaware Sediment and Storm Water Regulations, 1991.
2. A deed restriction shall be placed on the property within sixty (60) days following DNREC's adoption of the final plan on the site prohibiting any land-disturbing activities at the site without prior written approval of DNREC.
3. An Operation and Maintenance (O&M) Plan shall be established and implemented sixty (60) days following the completion of remedial action. The O & M Plan shall detail the procedures and practices, including regular inspections, to minimize the potential for cap disturbance, and to promote the long-term integrity of the cap.

**PUBLIC PARTICIPATION**

The Department actively solicited written public comments and suggestions on the proposed plan of remedial action. The comment period began April 15, 2004, and ended on May 4, 2004. No comments were received. If you have any questions or concerns regarding the Christina Lab site, or if you would like to view reports or other information regarding this site, please contact the project manager, Qazi Salahuddin, at 391 Lukens Drive, New Castle, Delaware 19720, or at 302.395.2600.

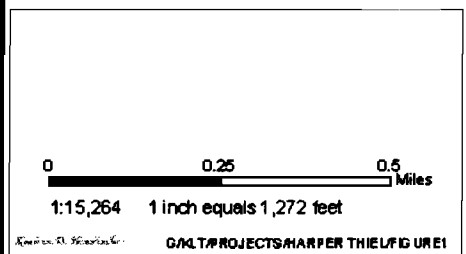
**DECLARATION**

The final plan of remedial action for the Christina Lab site is protective of human health, welfare and the environment, and is consistent with the requirements of the Delaware Hazardous Substance Cleanup Act.

  
John Blevins  
Director, Division of Air and Waste

6/9/04  
Date

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DE 1219 II B9



**SITE INVESTIGATION &  
RESTORATION BRANCH**  
391 LUKENS DR  
NEW CASTLE, DE 19720-2774  
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**Figure 1**  
**Location Map**  
**Christina Lab Site**  
**Wilmington, Delaware**