

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

FINAL PLAN OF REMEDIAL ACTION



SCANNED
SEP 27 2005
File# DE1331
B9

September 2005

Boulevard Property
100 South Justison Street
Wilmington, Delaware

DNREC Project No. DE-1331

This final plan of remedial action (final plan) presents the Department of Natural Resources and Environmental Control's (DNREC's) final cleanup alternative for the Boulevard Property in Wilmington.

The purpose of the final plan is to provide specific information about the soil and groundwater contamination and the cleanup alternative DNREC has selected. As required in Section 12 of the Delaware Regulations Governing Hazardous Substance Cleanup (Regulations), DNREC provided notice to the public and an opportunity for the public to comment on the proposed plan. During the comment period, there was a request for DNREC to hold a public hearing on the contents of the proposed plan. The hearing was held in Wilmington on August 30, 2005. The Secretary of DNREC issued Secretary Order No. 2005-A-0039 on September 19, 2005 indicating that the proposed plan should be adopted as the final plan of remedial action for the site. All investigations of the site, the proposed plan, and comments received from the public, DNREC's responses to the comments, Secretary Order Number 2005-A-0039, and this final plan constitute the Remedial Decision Record.

This final plan summarizes the remedial investigation and interim remedial actions that have already taken place at the Site. Each of these reports is included in the administrative record file. The Secretary's Order and additional comments and documents submitted post-hearing are attached as Appendix I. Copies of all documents can be obtained or viewed at the DNREC Lukens Drive office in New Castle, Delaware.

INTRODUCTION

The Boulevard Property (henceforth “the Site”) is approximately 2.88 acres in size and is located at 100 South Justison Street on tax parcel 26-042.00-008 in Wilmington, Delaware (Figure 1). The adjacent property, located at 101 S. West Street, is the Former Berger Brothers Property (tax parcel 26-042.00-019). The development plan for the Boulevard property calls for joint redevelopment with the adjoining Berger Brothers property. The development plan for the two properties is called Christina Crescent (formerly known as the West Street Project), and includes construction of an office building and a parking garage. A Proposed Plan of Interim Response Activities (IRA) for the West Street Project was issued by the Department of Natural Resources and Environmental Control, Site Investigation and Restoration Branch (DNREC-SIRB) in October of 2004.

In order to evaluate the environmental conditions prior to the development of the Boulevard Site, Pettinaro Construction Company (Pettinaro), the property owner, entered into the Voluntary Cleanup Program (VCP) under the provisions of the Delaware Hazardous Substance Cleanup Act (HSCA), 7 Del. C. Chapter 91 in September 2004. Through the VCP Agreement, Pettinaro agreed to perform an investigation to identify whether any risks to public health, welfare and the environment are present at the Site and to implement the remedy, if necessary. Pettinaro contracted with BrightFields, Inc. to perform the investigation.

SITE DESCRIPTION AND HISTORY

The Boulevard Site is located in the Christina Riverfront section of Wilmington, Delaware and comprises an area of approximately 2.88 acres. The property is bordered by West Street to the south, the Berger Brothers Property to the east, Justison Street to the west, and Amtrak rail lines to the north (Figure 1). Surrounding properties are commercial and industrial. A warehouse formerly occupied most of the Site until it was demolished in February 2005. The proposed future Site use calls for developing the Site in concert with the adjacent Berger Brothers Property. The combined properties are referred to as Christina Crescent (formerly referred to as the West Street Project) and will encompass an area of 5.90 acres. The new Christina Crescent will include office buildings on its southern portion and a parking garage adjacent to the Amtrak viaduct on the north portion of the property, with walkways and landscaped areas in between (Figure 2).

INVESTIGATION HISTORY AND RESULTS

BrightFields completed a Remedial Investigation Report and Focused Feasibility Study (RI/FFS) in March 2005 for the Site. This investigation involved collection of samples from surface soil, subsurface soil, and groundwater beneath the Site. Several contaminants were detected in soil and groundwater above Delaware’s unrestricted or restricted use Uniform Risk-Based Standard (URS) values. A detailed discussion of the sampling results is included in the RI/FFS report. The following is a summary of the investigation results.

SOIL

In surface soil (0 - 2 ft below ground surface (bgs)) arsenic, lead, benzo(a)pyrene and PCBs were detected at concentrations above DNREC's restricted use (commercial/ industrial) criteria. In subsurface soil lead and benzo(a)pyrene (2.5 - 12 ft bgs) were detected at concentrations above restricted use criteria. However, when the Reasonable Maximum Exposure (RME) concentrations, calculated as the 95% of the Upper Confidence Level (UCL) of the arithmetic mean, were compared only arsenic and benzo(a) pyrene exceeded the restricted use criteria as shown in the following table.

SOIL

<u>Contaminant</u>	<u>RME Concentration* (mg/kg)</u>	<u>URS for Restricted Use (mg/kg)</u>	<u>Default Natural Background Concentration (mg/kg)</u>
INORGANICS			
Arsenic	18.5	4	11
Lead	587	1000	30-100
ORGANICS			
Benzo (a) pyrene	1.83	0.8	
PCBs			
Arochlor-1248	0.57	3	
Arochlor-1254	0.16	3	
Arochlor-1260	0.23	3	

* 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 – milligram per kilogram

A layer of stained soil with sheen and droplets of free-phase product was observed at a depth of 20-25 feet in the deeper groundwater zone. This was interpreted as non-aqueous phase liquid (NAPL) in the subsurface. Soil sample collected at this depth contained benzene, benzo(a)pyrene, and other PAHs.

GROUNDWATER

Groundwater at the site occurs in two different zones (shallow and deep). In the shallow groundwater zone, groundwater was encountered at depths ranging from 2 to 5 feet bgs in the borings completed across the Site. The upper shallow groundwater zone consists of saturated fill (3-10 ft thick) which overlies the former surface deposits of low permeability marsh deposit and silt with some fine sand and clay. Shallow groundwater beneath the Site is estimated to flow south-southeast toward the Christina River. The shallow groundwater zone and the deep groundwater zone are separated by approximately 5-20 feet of low permeability marsh deposit and silt with some fine sand and clay.

The deep groundwater zone was encountered at depth of 20-25 feet bgs and consists of inter-layered silt, clay, and sand deposits. One (1) well was installed in this zone, to

monitor potential impacts of NAPL observed in an adjacent soil boring. The NAPL was identified as relatively unweathered tar.

Trichloroethene (TCE) and vinyl chloride are the contaminants of concern in the shallow groundwater, which were identified in the up gradient well. These contaminants are possibly from an offsite source. Benzene, toluene, ethylbenzene, and naphthalene are the contaminants of concern in the deep groundwater. Manganese and iron were also detected in the deep groundwater zone above the URS. The DNREC's URS criteria for iron and manganese are based on the Secondary Maximum Contaminant Levels (SMCLs) that are aesthetic-based (taste and odor), not health-based criteria. Therefore, iron and manganese are not considered contaminants of concern. The following tables summarize the results for groundwater and the maximum concentration of the contaminants of concern.

SHALLOW GROUNDWATER (2-5 ft bgs)

<u>Contaminant</u>	<u>Maximum Concentration*</u> (ug/L)	<u>Groundwater URS</u> (ug/L)
ORGANICS		
Trichloroethene	15	5
Vinyl Chloride	9.2	2

* Maximum Concentration detected in groundwater.

DEEP GROUNDWATER (20-25 ft bgs)

<u>Contaminant</u>	<u>Maximum Concentration*</u> (ug/L)	<u>Groundwater URS</u> (ug/L)
ORGANICS		
Benzene	49,000	5
Toluene	3,000	1,000
Ethylbenzene	4,700	700
Naphthalene	6,400	20

* Maximum Concentration detected in groundwater.

SITE RISK EVALUATION

A risk assessment was performed to evaluate the possible effects on human health and environment by the contaminants of concern at the Site.

Soil

The carcinogenic cumulative risk posed by Site soil to a commercial worker would be 1.87×10^{-5} (1.87 in 100,000), which exceeds DNREC's acceptable risk level of 1×10^{-5} . The individual compounds that most significantly contribute to the carcinogenic risk are benzo(a)pyrene (25.0% of the total risk) and arsenic (51.8% of the total risk). The non-carcinogenic cumulative risk calculation resulted in a Hazard Index (HI) of 0.37, which is below DNREC's acceptable risk level of HI of 1.0. The mean lead concentration across the Site is 587 mg/kg, which is below the restricted use criteria of 1,000 mg/kg.

Under a construction worker risk scenario, the non-carcinogenic and carcinogenic risks were calculated for incidental ingestion, dermal contact, inhalation of soil particles, and total (cumulative) risk. Neither the individual nor the cumulative carcinogenic risks exceeded the acceptable risk level of 1×10^{-5} . The cumulative non-carcinogenic risk to construction workers from exposure to contaminated soil at the Site resulted in a total Hazard Index of 1.66.

The soil with NAPL detected at a depth of 25 feet does not pose a risk to construction and utility workers for direct contact because of its depth below construction activities. The risk of groundwater contamination and indoor intrusion of vapor associated with the NAPL are discussed in their respective sections of this document.

Groundwater

The risk assessment performed for Site groundwater shows that consumption of groundwater from the Site would pose unacceptable carcinogenic and non-carcinogenic risks. However, two safeguards to prevent human exposure will be in place. First, a restrictive covenant consistent with Delaware's Uniform Environmental Covenants Act (UECA) will be established. Second, the Site area lies within DNREC's existing City of Wilmington Groundwater Management Zone (GMZ) and is also regulated by City of Wilmington municipal law, all of which prevent installation of water wells and the consumption of groundwater within the City limits.

Groundwater to Surface-water Impact: Mass loading screening calculations indicated that shallow groundwater discharge to Christina River surface water does not pose a potential risk to surface water receptors. The screening mass loading calculations for the deep groundwater discharge to Christina River surface water indicated that benzene and xylene pose a potential risk to surface water receptors. However, groundwater modeling performed to further evaluate the deep groundwater discharge indicated that no such risk to surface water receptors exists.

Vapor Intrusion

The potential risk of vapor intrusion into indoor air due to the elevated levels of VOCs in the NAPL layer and groundwater at the Site was calculated as 6×10^{-5} and 8×10^{-5} . The conservative risk assessment exceeds DNREC's cleanup criteria of 1×10^{-5} . The proposed office buildings and parking garage will be built across the Site and the adjacent Berger Brothers Site (Figure 2). Similar to the Berger Brothers Site, a vapor barrier underneath all structures for the Boulevard Site will be required to meet the cleanup goals.

INTERIM RESPONSE REMOVAL ACTIVITIES

The following response activities will occur as part of redevelopment of the Christina Crescent Project, as stated in the DNREC-approved Proposed Plan of Interim Remedial Activities (IRA) for the West Street Project. IRAs were performed at the site prior to the issuance of the proposed plan and will continue until construction completion. Any

actions which involve the removal of contaminated soil and/or groundwater will be managed in accordance with the DNREC-approved Contaminated Materials Management Plan (CMMP). The CMMP will be amended as required by changing Site conditions. Any addendums to the CMMP will be approved by DNREC prior to implementation.

- Excavation associated with demolition of the former building foundation and subsequent filling of excavation;
- Site grading;
- Erosion and Sediment Controls;
- Excavation of trenches for utility installation, and/or relocation, grade beams, an elevator shaft, post holes for perimeter fence installation and light pole bases;
- Excavation dewatering, sludge/silt removal, free product removal;
- Installation/construction of storm water management infrastructure;
- Augering pilot holes for foundation piles and installation of the piles;
- Construction of the office buildings and parking garage, and new street-scaping;
- Backfilling of trenches; stockpiling of any extra soil; (Utility trenches will be backfilled with DNREC-approved clean fill);
- Restoration of paved areas; and
- Removal and proper management of petroleum-contaminated materials or underground storage tanks (USTs) that are encountered during construction activities at the Site per applicable DNREC Tank Management Branch (TMB) and HSCA regulations and guidance.

At the completion of the proposed response actions, the property owner or his representative will provide DNREC with a Construction Completion Report with appropriate documentation of all the remedial actions conducted at the Site. This will be included in the Remedial Decision Record.

REMEDIAL ACTION OBJECTIVES

According to Section 8.4(1) of the HSCA Regulations, site-specific remedial action objectives (RAOs) must be established for all plans of remedial action. The Regulations provide that DNREC will set objectives for land use, resource use, and cleanup levels that are protective of human health and the environment. The following qualitative remedial action objectives are appropriate for the Boulevard Site:

- Prevent human exposure to contaminated soil and groundwater under future restricted land use for as long as the contaminated soil remains at concentrations exceeding acceptable concentrations;
- Prevent the use of groundwater for all purposes at the site for as long as the groundwater is contaminated with hazardous substances at unacceptable concentrations;
- Restrict environmental degradation due to contaminated soil and groundwater;
- Minimize potential exposure to contaminated soil and groundwater for workers during Site development;
- Control potential contaminated soil erosion and subsequent overland transport of contaminated soil and surface water to the Christina River during Site development;
- Properly reuse or dispose of all excavated soil and groundwater generated during construction, in accordance with local, state and federal regulations.

These objectives are consistent with the planned development of the Site and the surrounding land and development plans for the City of Wilmington, zoning policies, state regulations governing water supply, and worker health and safety.

Based on the above qualitative remedial action objectives, the following quantitative remedial action objectives (RAOs) based on a restricted site use are proposed:

- Prevent human exposure to soil contaminated with PAHs and metals that would result in a cumulative carcinogenic risk factor greater than 1×10^{-5} and a non-carcinogenic risk greater than Hazard Index of 1.0 for as long as concentrations of hazardous substances exceed acceptable concentrations.
- Prevent human exposure to groundwater contaminated with VOCs that would result in a cumulative carcinogenic risk factor greater than 1×10^{-5} and a non-carcinogenic risk greater than Hazard Index of 1.0 for as long as concentrations of hazardous substances exceed acceptable concentrations.
- Prevent human exposure from indoor intrusion of vapor from subsurface soil and groundwater contamination (vapor intrusion) in future buildings having a cumulative carcinogenic risk factor greater than 1×10^{-5} and a Hazard Index of 1.0 for as long as concentrations of hazardous substances exceed acceptable concentrations.

EVALUATION OF POTENTIAL REMEDIAL ALTERNATIVES

To accomplish the above remedial action objectives, three potential remedial alternatives were evaluated.

Alternative 1: No Action

Alternative 2: Contaminated Soil Removal and Capping: Removal of all contaminated soil across the entire site and the implementation of institutional

controls to control potential exposure to utility workers and unauthorized digging.

Alternative 3: Selective Soil Removal, Capping and Long-term Stewardship. Exhumation and safe disposal of contaminated soil encountered during site grubbing and grading, building construction, excavation for foundations, footings and parking garages, as well as utility corridors using adequate safe worker safety training and protections. All utility corridors will be constructed with clean fill and a marker layer indicating the presence of contaminated soil beneath the layer. This soil excavation and disposal operation will be integrated into the project construction timetable to ensure expedited excavation and disposal and avoidance of interruption with the overall project timetable. In addition, the entire site surface, will be capped with at least two (2) feet of clean fill and a vapor barrier will be constructed under appropriate portions of the developed site. Finally, DNREC and the site developer will be undertaking a long-term stewardship program including a restrictive covenant consistent with Delaware's UECA.

Alternative 4: Capping and Institutional Controls: Covering the existing surface of the site with two feet of clean fill and capping the site with buildings, pavement, hardscaping and landscaping. All utility corridors would be constructed with clean fill and a marker layer indicating the presence of contaminated soil beneath the layer. Institutional controls to control potential exposure to utility workers and unauthorized digging.

Alternative 1 (no action) is not a viable alternative because it is not protective of human health or the environment and does not comply with the current laws. Alternatives 2 and 4 are considered to be equally protective and effective in the short term. Alternative 2 which involves extensive soil excavation is more difficult to implement due to the extent of dewatering that would be required, as well as more expensive to implement. Alternative 3 (Selective Soil Removal, Capping and Long-term Stewardship) does not provide as much protective conservatism as Alternative 2 because it only removes contaminated soil encountered during site preparation and construction activities. It provides more protection than Alternative 4 because it explicitly incorporates contaminated soil removal as part of the project and ensures that long-term stewardship action will be taken as part of the project. Alternative 4 will be less costly because of the disposal of a lesser quantity of soil but is equally protective in the short term, but may not be as effective in the long run.

DNREC has selected Alternative 3 (Selective Soil Removal, Capping and Long-term Stewardship) as the preferred remedial action for the Site based on its cost effectiveness, sustainability, and appropriateness with regards to meeting remedy selection criteria found in HSCA regulations.

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 feasibility study, DNREC requires that the following remedial actions be taken at the Site:

1. The surface of the Site will be covered with buildings, pavement, or a minimum of two feet of clean fill material including the landscaped areas. The entire surface of the Site will be altered from its current condition.
2. All construction and redevelopment work will be done in accordance with the DNREC-approved Proposed Plan of Interim Remedial Activities, Site-specific Contaminated Material Management Plan (CMMP) and a Site-specific Health and Safety Plan (HASP), which results in removal and proper disposal of excavated contaminated soil
3. All utility corridors will be constructed with clean fill and there will be a marker layer placed over the contaminated soil indicating the presence of contaminated soil beneath the layer.
4. The office building and parking garage will be designed to include an effective vapor barrier beneath their foundations.
5. A DNREC-approved Operation and Maintenance (O&M) Plan will be established and implemented within ninety (90) days following construction completion. The O&M plan will detail the procedures and practices including regular inspections to minimize the potential for disturbing the cap and to promote the long-term integrity of the cap and vapor barrier.
6. A Ground Management Zone (GMZ) is already in place for the City of Wilmington (August 2001). The Site is within the City of Wilmington boundary limits. The GMZ will prohibit the installation of any water wells on, or groundwater usage at the site without prior written approval of DNREC. In addition, the City prohibits drinking water wells to be installed within the City limits.
7. The Site use will be restricted to commercial use by the owner by the placement of a restrictive covenant consistent with Delaware's UECA. Any future development of the parcels will be limited to commercial development.
8. A restrictive covenant consistent with Delaware's UECA will be placed on the Site following the completion of the construction activities prohibiting any land-disturbing activities including excavation, digging at the Site without prior written approval of DNREC except in the clean utility corridors and clean landscaping areas. The location of these clean areas will be noted in the Construction

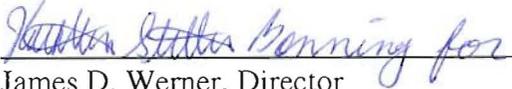
Completion report and the O&M Plan, which will be maintained in DNREC's Site file. The Site will be incorporated into DNREC's Long-Term Site Stewardship program as it develops.

PUBLIC PARTICIPATION

The Department held a 20-day comment period on the proposed plan of remedial action between July 20, 2005, and August 8, 2005. During the comment period, a request was made for DNREC to hold a public hearing on the proposed plan. The public hearing was held in Wilmington at the Carvel Building on Tuesday, August 30, 2005. Upon review of the hearing record, the Secretary of DNREC, by way of Secretary's Order No. 2005-A-0039, adopted the proposed plan as the final plan of remedial action for the Site on September 19, 2005.

DECLARATION

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


James D. Werner, Director
Division of Air and Waste Management


Date of Review of Final Plan

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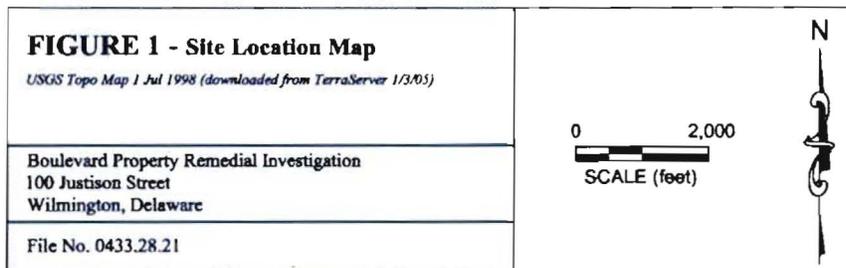
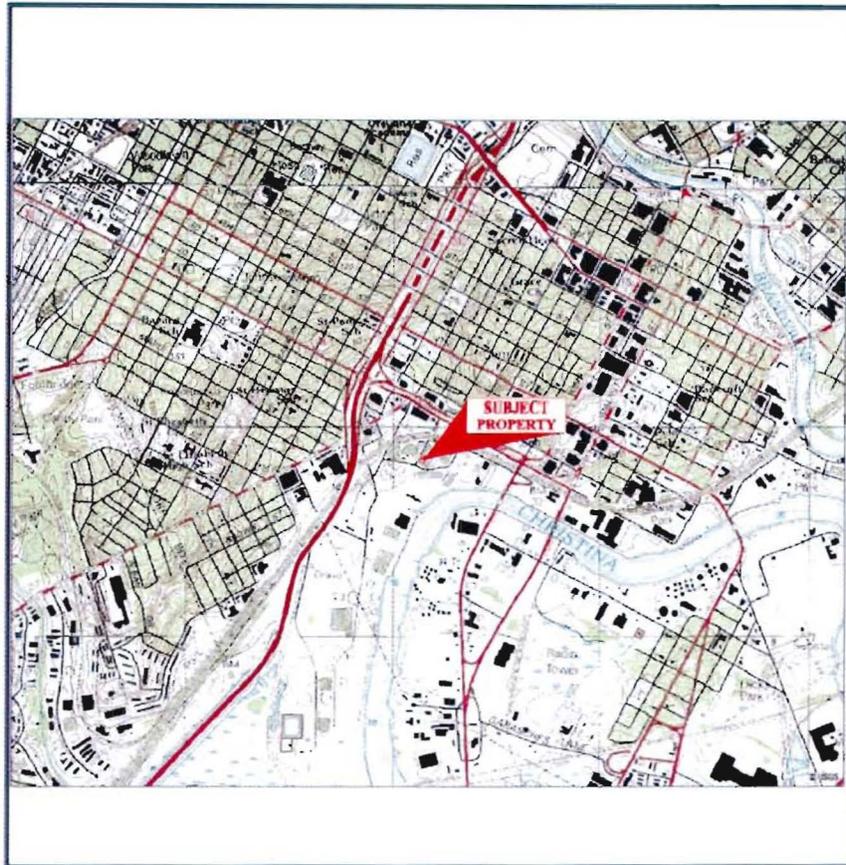


Figure 1 Site Location Map

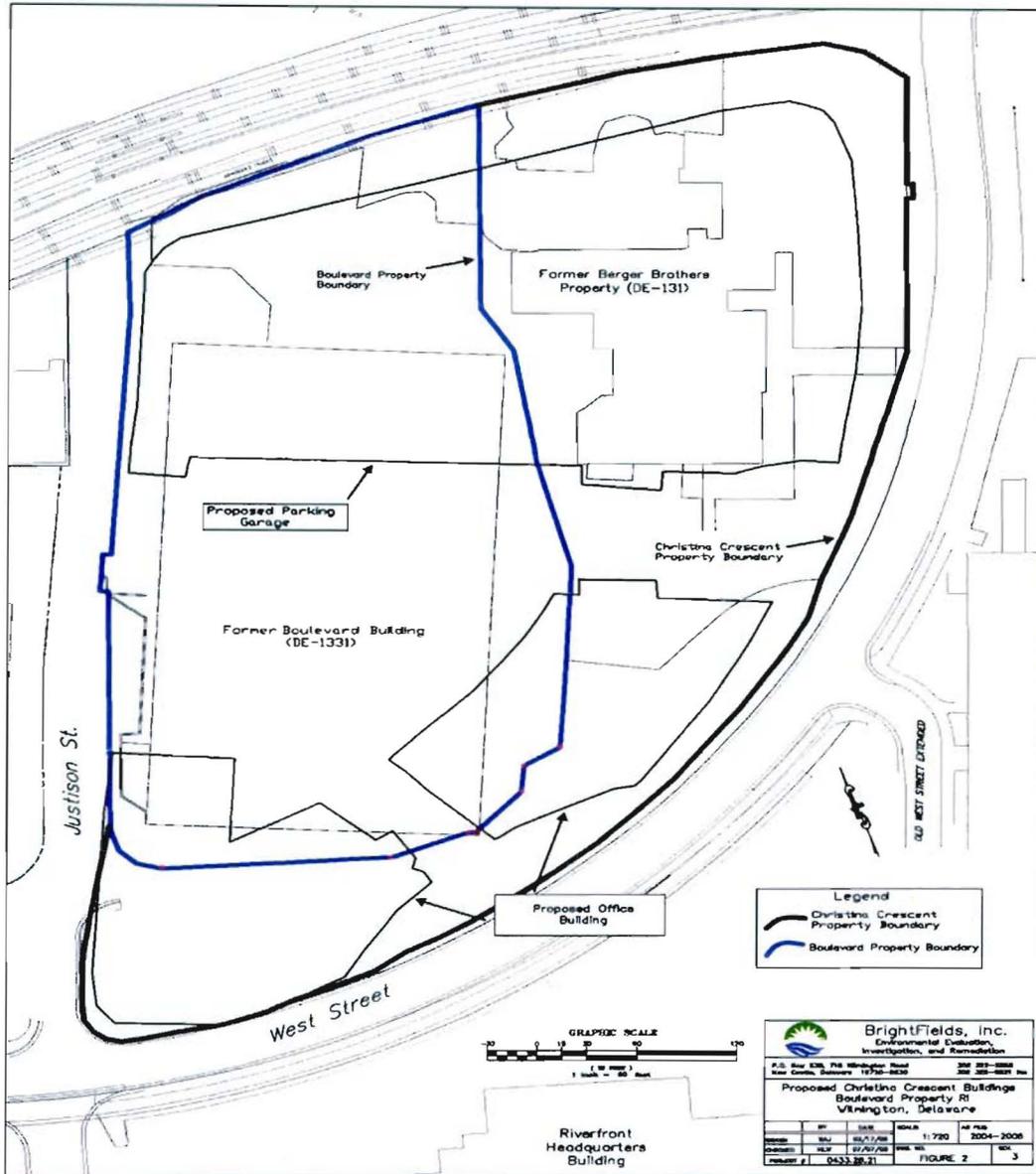


Figure 2 Site Map Showing Future Development Plan

APPENDIX I: Department's Post-Hearing Responses to
Comments and Secretary's Order No. 2005-A-0039



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STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL
DIVISION OF AIR AND WASTE MANAGEMENT
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WASTE MANAGEMENT SECTION
SITE INVESTIGATION &
RESTORATION BRANCH

TELEPHONE: (302) 395-2600
FAX: (302) 395-2601

September 14, 2005

Mr. Robert P. Haynes
Office of the Secretary
State of Delaware
Department of Natural Resources and Environmental Control
89 Kings Highway
Dover, DE 19901

VIA HAND DELIVERY

**RE: Proposed Plan of Remedial Action
Boulevard Property (DE-1331)
Wilmington, Delaware**

Dear Mr. Haynes:

The purpose of this letter is to respond to your questions addressed to DNREC in a letter dated September 7, 2005. In your letter, you requested that the Delaware Department of Natural Resources and Environmental Control -Site Investigation and Restoration Branch (Department) technical personnel address questions that were raised at the August 30, 2005 public hearing for the Proposed Plan of Remedial Action for the Boulevard Property (Site). The questions presented in the letter and the Department's responses are presented below:

1) What is the time frame for the proposed construction?

Construction of the preliminary foundation structure including concrete grade beams is scheduled to begin in late September 2005. Final building construction is scheduled to be completed in the summer of 2006 with buildings opening in the fall of 2006. Concrete grade beams are viewed as permanent structures by DNREC. The construction of the concrete grade beams cannot begin until after the final plan of remedial action is approved. The final plan cannot be approved until after the hearing decision. Therefore, a hearing decision is necessary by September 15, 2005 in order to avoid a delay in the construction schedule. A delay would jeopardize the construction completion and possibly stop the redevelopment of the site. Any additional cleanup at the site could be jeopardized.

2) What is the impact of unanticipated users/uses of the office building on the Department's risk analysis and remedy; i.e., child care scenario?

There is no impact to users of the office building because of the remedial action. A vapor barrier will be placed underneath the building to prevent intrusion of vapor into the building. Since

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there will be no exposure to vapor, there is no risk to adults or children using the office building. Monitoring the integrity of the vapor barrier in the future would be covered in the Operations and Maintenance (O&M) plan.

3) What are the cost estimates for the remedies and would they jeopardize the voluntary remediation?

<u>Remedial Options</u>	<u>Estimated Cost to Implement</u>
Alternative #1: No Action	\$6,000.00
Alternative #2: Contaminated Soil Removal and Capping (Removal of all contaminated soil)	\$25,021,000.00
Alternative #3: Selective Soil Removal, Capping and Long-Term Stewardship	\$597,000.00
Alternative #4: Capping and Institutional Control (No soil removal)	\$221,000.00

DNREC's screening process for remedial alternatives is presented below. DNREC screens all the remedial options based on the following criteria:

- Protection of public health, welfare and the environment;
- Compliance with applicable laws and regulations;
- Community acceptance;
- Compliance monitoring requirements;
- Permanence;
- Technical practicability;
- Restoration time frame;
- Reduction of toxicity, mobility and volume of contamination;
- Long-term effectiveness; and
- Short-term effectiveness.

DNREC determined that Alternatives #2 and #3 provided equal protection to human health and the environment. Both alternatives met the requirements for the other criteria. According to Section 8.5(4)(c) of the Delaware Regulations Governing Hazardous Substance Cleanup, if two options are equally protective of human health and the environment then "preference shall be given to the remedial action which is most cost effective, and cost shall include present and future direct and indirect capital costs, operation and maintenance costs, compliance monitoring costs and other foreseeable costs." Since Alternative #3 was protective and more cost effective to implement, DNREC chose to implement Alternative #3.

The remedial selection is based solely on the 10 criteria presented above; DNREC does not base the remedy selection on whether the potentially responsible party (PRP) or owner wants to pay for the remedy or may elect to end the voluntary cleanup program agreement with DNREC. The PRP may walk away from the project at anytime. DNREC may pursue enforcing against PRPs to accomplish the cleanup.

4) Was removal of the coal tar portion of the site considered as a remedy?

Removal of the coal tar was considered as a remedy at the site. The removal of the coal tar at the site was addressed in a letter from Brightfields, Inc. to DNREC dated May 4, 2005. The removal of the coal tar (also referred to as NAPL) was determined to be technically impractical according to Subsection 8.5 of the Delaware Regulations Governing Hazardous Substances Cleanup” for the following reasons:

- 1) The only risk to human health or the environment is from vapors which will be addressed through the use of a vapor barrier.
- 2) Current technologies are not efficient at removing the coal tar because it is present only as droplets in small lenses deep in the ground. The viscosity of the coal tar is such that it can't be pumped from the ground as a liquid.
- 3) Extensive shoring would be required to excavate to 30 feet depth. The shoring may not be sufficient to prevent the collapse of West Street.

In summary, since there are substantial questions about how easily the coal tar can be removed, if it is safe to dig to that depth, it generates more waste than the amount of coal tar present in the ground and the health risk to vapors can be addressed with a remedial technology, DNREC determined that it is technically impractical to remove the coal tar.

5) How much water from the site is estimated to impact the surface water and how will it impact the surface waters?

As calculated by Brightfields, Inc. in the Remedial Investigation (RI), the amount of groundwater flowing from the Site to the Christina River is 69 to 1,421 cubic feet per day. The reason for the range is that mass loading calculations used a range of soil types (poorly sorted fine to coarse sand) that the groundwater is flowing through. These soil types represented the range in the types of soil present at the site.

The conservative mass loading calculations performed by Brightfields and reviewed and approved by DNREC indicated that there will be no impact to the surface waters from the groundwater at the site. The calculations included the use of the EPA-recommended Bioscreen model which conservatively predicted concentrations at the groundwater-surface water interface.

6) Has there been any analysis of the soil removed from the site for pre-construction activities and does the analysis change any of the results or conclusions?

Soils removed during the pre-construction activities were analyzed. Disposal characterization samples (TCLP) were collected prior to excavation from the geotechnical borings and the site was also separated into three soil disposal grids and a shallow and deep sample were collected from each grid.

The results are in agreement with the results of the remedial investigation. Therefore, no change in the conclusion about contamination at the Site is necessary.

7) How long does a vapor barrier, as recommended, last?

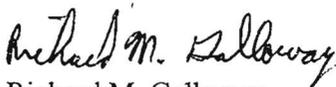
The vapor barrier will be designed to last for the life of the building. One of the barrier's design criteria will be that it is required to be highly resistant to petroleum vapors (type of vapor anticipated at the site) according to the best available standard, American Standard for Testing and Materials document ASTM E154-99 Section 14. The manufacturer of the recommended product is Stego Industries and they state that the life expectancy of their product per ASTM E 154 is "indefinite." In addition, the integrity of the barrier will be monitored periodically through the O&M process. The barrier design and testing requirements will be finalized during the Remedial Design, which requires evaluation and approval by DNREC.

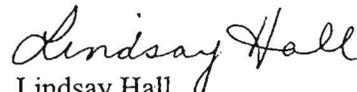
8) Did the Department follow the same analysis and selection of remedies protocol for this site as it did for other sites?

Yes, DNREC followed the same analysis and selection protocols for this site as it does for other sites. As described in detail in DNREC's response to Question #2, the remedies are selected to address the pathways of concern. Brightfields proposed three remedies for the site and DNREC chose to present four alternatives. DNREC screened the remedial alternatives using the 10 criteria presented in response to question #2 and two alternatives were determined to be equally protective. As required by the Regulations Governing Hazardous Substance Cleanup, DNREC chose Alternative #3: Selective Soil Removal, Capping and Long-Term Stewardship because it was the most cost effective of the two alternatives.

Please feel free to call with any questions or concerns at (302) 395-2600.

Sincerely,


Richard M. Galloway
Project Manager


Lindsay Hall
Project Manager

RMG/LJH/plw

~~RMG05074.doc~~; LJH05051.doc; DE-1331 II H5

Pc: Kathy Stiller Banning, Environmental Program Manager II
Qazi Salahuddin, Environmental Program Manager I



STATE OF DELAWARE

**DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL**

89 KINGS HIGHWAY
DOVER, DELAWARE 19901

Office of the
Secretary

Phone: (302) 739-9000
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Secretary's Order No. 2005-A-0039

**Re: Approval of Final Plan of Remedial Action for the Boulevard Property
(DNREC Project No. 1331) at 100 South Justison Street, City of Wilmington,
Pursuant to the Hazardous Substance Cleanup Act, 7 *Del. C.* §§9101 *et seq.***

Date of Issuance: September 19, 2005

Effective Date: September 19, 2005

Under the authority vested in the Secretary of the Department of Natural Resources and Environmental Control ("Department" or "DNREC") under 7 *Del. C.* §9107(e), the following findings, reasons and conclusions are entered as an Order of the Secretary. This Order considers the Department's proposed plan of remedial action for the Boulevard Property at 100 South Justison Street in the City of Wilmington, which the Department has investigated and proposed for redevelopment pursuant to the Department's Brownfields and Voluntary Cleanup Programs administered under the Hazardous Substance Cleanup Act ("HSCA").

The Department's proposed plan of remedial action was the subject of a public hearing at the request of one person. Consequently, the Department held a public hearing and the Hearing Officer developed a recommended remedial decision record, which includes the public comments, as considered and summarized in the September 15, 2005 Hearing Officer's Report ("Report") appended hereto. The Hearing Officer recommends expedited consideration of the proposed plan in light of the business and environmental

reasons as described by the Department. I concur that valid reasons support the Department's prompt consideration of the proposed plan and the approval of a final plan. The Report also recommends approval of the proposed plan as the final plan without modification. I agree with the Report and adopt it as part of this Order along with its reasons, and this Order finds and concludes that the proposed plan of remedial action for the Boulevard Property is adequately supported, is not arbitrary or capricious, and should be adopted as the final plan of remedial action that is consistent with HSCA and the Department's regulations.

The record clearly shows the amount of study and investigation the Department required of the Boulevard Property. The Department even considered the information available from the surrounding properties. The record shows that the proposed plan is based upon sound scientific evidence, is consistent with state and federal law, and provides for the safe and environmentally sound redevelopment of a Brownfields property in a manner that is well in excess of the level the law requires. The fact that the Boulevard Property's proposed usage will be a certified 'Green Building,' as recognized by nationally recognized standards, provides further support for final approval of the plan that will allow for the Boulevard Property's remediation to occur as quickly as possible. The final plan will implement a safe remediation that is designed to prevent human exposure to the hazardous substances discovered in low levels slightly in excess of several of the Department's standards. The chances of human exposure even without remediation are remote, but any remote chance is completely eliminated by the Department's approved remediation plan. The Department's proposed plan, as developed by the Division of Air and Waste Management, details analysis and the steps that will be

required as part of the redevelopment. The remediation also will continue in the future through the operations and maintenance plan that the final plan requires.

The Report discusses the public comments and I agree with the Report that they reflect valid environmental concerns; but the proposed plan does satisfy these concerns consistent with the law and existing standards, which were established to protect the public from harmful exposure to contaminants found on the Boulevard Property.

In sum, as more fully described in the reasons and findings above and in the Report, I adopt and direct the following as a final order of the Department:

1. The Department has jurisdiction under its statutory authority to make a determination in this pending action;
2. The Department provided adequate public notice of the subject matter of the pending action and the public hearing;
3. The Secretary delegated to a hearing officer the authority to preside over a public hearing held at the request of one person;
4. The Hearing Officer presided over the public hearing and developed a recommended remedial decision record and report for the Secretary's consideration;
5. The Department considered all timely and relevant public comments in making its determination in this Order;
6. The Department's technical experts supervised a thorough site investigation under the Brownfields program, considered the results of the site investigation, and prepared a proposed plan of remedial action consistent with the law and the Department's regulations and guidelines;

7. The Department proposed plan of remedial action was based on a record that shows a reasoned and deliberate process that supports the adoption of the proposed plan as a final plan as consistent with the Brownfields law and Department regulations;

8. The Department should approve the proposed plan as the final plan as quickly as possible to allow the site remediation to proceed without any undue delay and enable the site to be redeveloped consistent with the Brownfields law, Department regulations, and sound and safe economic redevelopment;

9. The Department's authorized official should implement the issuance of the final plan of remedial action as approved by this Order, and copies of this Order and final approved plan shall be provided to the persons who attended the public hearing and any other persons who expressed an interest in the Department's decision on the proposed plan; and

10. The Department shall provide written notice and other public notice as required by law of this Order to the persons affected by the Order, as determined by those who participated in the Department's review at the public hearing or participation through the submission of written comments.

s/John A. Hughes

John A. Hughes
Secretary