FINAL PLAN OF REMEDIAL ACTION

DelSteel Property
8 Eastlawn Avenue
Wilmington, Delaware **DNREC Project No. DE-1359**

This final remedial action plan (final plan) presents the Department of Natural Resources and Environmental Control's (DNREC's) preferred cleanup alternative for the remediation at the DelSteel Property in Wilmington, Delaware. For site-related reports and more information, please see the public participation section of this document.

The final plan provides specific information about contamination present at the site and the cleanup alternatives DNREC has considered and proposes for remediation of the site. In addition, as described 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. No comments were received. The final plan designates the selected remedy for the site. All previous investigations of the site, the proposed plan, comments received from the public, DNREC's responses to the comments, and the final plan will constitute the Remedial Decision Record.

This final plan summarizes the 2005 Brownfield Investigation (BI). This report is included in the administrative record file upon which the final remedy is based. Copies of the site-related documents can be obtained or viewed at locations listed at the end of this document.

INTRODUCTION

The DelSteel Property (henceforth "the Site") is approximately 1.6 acres in size and is located at 8 Eastlawn Avenue on New Castle County tax parcels 26-016.30-125, 26-016.30-126, 26-016.30-127, 26-016.30-128, 26-016.30-129, 26-016.30-130, 26-016.30-169, 26-016.30-170 in Wilmington, DE (Figure 1). The development plan for the DelSteel Property is called McMullen Square and includes the construction of 38 townhomes.

In order to evaluate the environmental conditions prior to the development of the Site, Eastern States Development Company, Inc. (Eastern States), the prospective purchaser of the Site, entered into a Brownfield Development Agreement (BDA) under the provisions of the Delaware Hazardous Cleanup Act (HSCA), 7 Del. C. Chapter 91 in July 2005. Through the BDA, Eastern States performed an investigation to identify whether any risks to public health, welfare, and the environment are present at the Site and to implement a remedy, if necessary. Eastern States contracted with BrightFields, Inc., a HSCA-certified environmental consulting company, to perform the investigation.

SITE DESRIPTION AND HISTORY

The DelSteel Property is located at 8 Eastlawn Avenue in Wilmington, Delaware and comprises an area of approximately 1.6 acres. The Site is bordered by Eastlawn Avenue to the northeast, North Market Street to the northwest, Riverview Cemetery to the southwest, and rowhouses to the southeast (Figure 1). Surrounding properties are commercial and residential. The Site has been owned and occupied by DelSteel, Inc. since 1918. There is currently one vacant building and an asphalt parking lot on the Site. The development project proposed by Eastern States will include demolition of the existing structure, removal of the asphalt parking lot, and regrading of the property to accommodate the construction of 38 townhouses and landscaping (Figure 2).

INVESTIGATION RESULTS

BrightFields completed a Brownfield Investigation (BI) Report in January 2006 for the Site. This investigation involved the 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 use Uniform Risk-Based Standard (URS) values. A detailed discussion of the sampling results is included in the BI Report. The following discussion summarizes the results of the investigation.

SOIL

Surface soil (0 to 2 feet below ground surface (bgs)) and subsurface soil (deeper than 2 feet bgs) analytical results were evaluated together since the development plan for the Site includes regrading and the addition of two feet of clean fill in open areas, which will result in the current surface soil becoming subsurface soil. The following metals, aluminum, arsenic, iron, manganese, and vanadium were detected at concentrations

above DNREC's unrestricted use (residential) criteria in soil at the Site. The following polycyclic aromatic hydrocarbons (PAHs), benzo(a)pyrene, benzo(b)fluoranthene, and dibenz(a,h)anthracene were detected at concentrations above DNREC's unrestricted use (residential) criteria in soil at the Site. However, when the Reasonable Maximum Exposure (RME) concentrations, calculated as 95% of the Upper Confidence Level (UCL) of the arithmetic mean, were compared, arsenic and benzo(b)fluoranthene met the unrestricted use criteria. The following table shows these results.

SOIL

Contaminant	RME Concentration* (mg/kg)	URS for Unrestricted Use (mg/kg)	Default Natural Background Concentration (mg/kg)
INORGANICS			
Aluminum	**33,100**	7,800	
Arsenic	11.0		11.0
Iron	**36,500**	2,300	
Manganese	**419**	160	
Vanadium	**58.3**	55	
ORGANICS			
Benzo(a)pyrene	**0.507**	0.09	
Benzo(b)fluoranthene	0.630	0.9	
Dibenz(a,h)anthracene	**0.134**	0.09	

*RME – Reasonable Maximum Exposure Concentration (calculated as 95% of the Upper Confidence Level of the arithmetic mean of contaminants detected at the Site).
Bold – Exceeds URS unrestricted use criteria.

To summarize the soil contamination, aluminum, iron, manganese, vanadium, benzo(a)pyrene, and dibenz(a,h)anthracene were determined by the Department to be contaminants of concern (COCs) in soil at the Site.

GROUNDWATER

Groundwater was encountered at depths ranging from 8.7 to 19.5 feet bgs in the soil borings completed across the Site. Measured groundwater elevations in the wells installed during the BI ranged from approximately 63.49 feet above the North American Vertical Datum of 1988 (NAVD88) in well MW3 to approximately 64.38 feet NAVD88 in well MW2. Groundwater beneath the Site is estimated to flow southeast at a rate of approximately 0.0025 ft/ft.

Manganese, benzo(a)anthracene, indeno(1,2,3-cd)pyrene, and dieldrin were the compounds detected in groundwater above their respective URS values. Since DNREC's URS criterion for manganese is based on the Secondary Maximum Contaminant Levels (SMCLs) which are aesthetic-based (taste and odor), not health-based criteria, the Department does not consider manganese a COC in groundwater at the Site. Since benzo(a)anthracene and indeno(1,2,3-cd)pyrene were only detected in groundwater in monitoring well MW1, the Department has determined that these compounds are considered COCs for the area near MW1 only. The Department has determined that

dieldrin is a site-wide COC in groundwater. The following table summarizes the results for groundwater and the maximum concentration of the COCs.

GROUNDWATER

Contaminant	Maximum Concentration* (ug/L)	Groundwater URS (ug/L)
ORGANICS		
Benzo(a)anthracene	**0.094**	0.09
Indeno(1,2,3-cd)pyrene	**0.095**	0.09
Dieldrin	**0.056**	0.004

* - Maximum concentration detected in groundwater.
Bold – Exceeds URS criteria.

SITE RISK EVALUATION

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

Soil

The cumulative carcinogenic risk posed by the Site soil to a resident would be 7.33×10^{-6} (7.33 in 1,000,000), which is below DNREC's acceptable risk level of 1×10^{-5} for unrestricted use. The non-carcinogenic cumulative risk calculation resulted in a Hazard Index (HI) of 2.99, which exceeds DNREC's acceptable risk level of 1.0.

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 results in a total Hazard Index of 1.07.

Groundwater

The risk assessment performed for groundwater beneath the Site shows that the consumption of groundwater from the Site would pose both carcinogenic and non-carcinogenic risks. However, 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, both of which prevent the installation of water wells and the consumption of groundwater within the City limits.

REMEDIAL ACTION OBJECTIVES

Section 8.4(1) of the HSCA Regulations states that site-specific Remedial Action Objectives (RAOs) will 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 RAOs are appropriate for the Site:

- Prevent human exposure to contaminated soil and groundwater under future 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 substances at unacceptable concentrations;
- Restrict environmental degradation due to contaminated soil and groundwater;
- Minimize potential exposure to Site contaminants of concern for construction workers at the Site and future Site residents;
- Properly reuse or dispose of all excavated soil and groundwater generated during construction in accordance with local, state, and federal regulations; and
- Prevent environmental impacts due to impacted media at the Site.

The objectives established by the Department are consistent with the planned development of the Site for residential use, New Castle County zoning policies, state regulations governing water supply, and worker health and safety.

Based on the qualitative objectives, the quantitative objectives are:

1. Prevent human exposure to soils contaminated by metals and PAHs that would result in a cumulative carcinogenic risk factor greater than 1×10^{-5} and a non-carcinogenic risk with a Hazard Index greater than 1.0 for as long as concentrations of these substances exceed acceptable concentrations.
2. Prevent contact with groundwater contaminated with PAHs and dieldrin that would result in a cumulative carcinogenic risk factor greater than 1×10^{-5} and a non-carcinogenic risk with a Hazard Index greater than 1.0 for as long as concentrations of these substances exceed acceptable concentrations.

FINAL PLAN OF REMEDIAL ACTION

Based on DNREC's evaluation of the site information and the above remedial action objectives, several Site remediation alternatives were evaluated including: no action; capping the entire site; and soil removal. DNREC requires, based on the limited contamination present at the Site, that the following actions be implemented:

1. The surface of the Site will be covered with buildings, pavement, hardscape, or a minimum of two feet of clean fill material, including the landscaped areas.
2. All construction and redevelopment work including utility trench excavations will be done in accordance with the DNREC approved Site-specific Contaminated Material Management Plan (CMMP) and a Site-specific Health and Safety Plan (HASP), which will ensure the proper handling and reuse of excavated soil.
3. All utility corridors will be constructed with clean fill.
4. Uniform Environmental Covenants will be placed on the property, no more than ninety (90) days following DNREC's adoption of the final plan. The Covenants will: a) prohibit any digging, drilling, excavating, grading, constructing, earth moving, or any other land disturbing activities on the property without the prior

written approval of DNREC; b) require written approval from DNREC prior to any repair, renovation or demolition of the existing structures on the property, or any paved surfaces; and c) identify that the site is included in the GMZ for the City of Wilmington which prohibits the installation of any water well on, or use of groundwater at, the site without the prior written approval of DNREC.

5. Prepare and implement the Operations and Maintenance Plan (O&M Plan), within sixty (60) days of the issuance of the Final Plan, to be approved by DNREC to maintain the integrity of the site structures, including, but not limited to paved areas, hardscaped surfaces, and other impervious ground cover.

PUBLIC PARTICIPATION

The Department is actively solicited written public comments and suggestions on the proposed plan of remedial action. The comment period commenced on March 15, 2006 and ended at the close of business (4:30 p.m.) on April 3, 2006. No comments were received.

DECLARATION

This Final Plan of Remedial Action for the DelSteel Property is protective of human health, welfare and the environment and is consistent with the requirements of the Delaware Hazardous Substance Cleanup Act.

Kathleen Sterling for
James D. Werner, Director
Division of Air and Waste

4/5/06
Date of Review

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