

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

**FINAL PLAN OF REMEDIAL ACTION**



*April 2007*

***Former Eastern Disposal Rubble Pit  
Dover, Delaware***

**DNREC Project No. DE-0066**

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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 the Former Eastern Disposal Rubble Pit in Dover, Delaware. For site-related reports and more information, please see the public participation section of this document.

The purpose of the Final Plan is to provide; 1) specific information about the soil and groundwater conditions, 2) the cleanup alternative DNREC has considered and 3) the preferred remedial actions for the Site. In addition, as described in Section 12 of the Delaware Hazardous Substance Cleanup Act (HSCA), DNREC provided notice to the public and an opportunity for the public to comment on the proposed plan. During the comment period from March 14 to April 4, 2007, DNREC did not receive any comment on the proposed plan; therefore, the proposed plan has been adopted as the Final Plan.

This Final Plan summarizes the July 2006 Brownfield Investigation. This report is included in the administrative record file upon which this Final Plan is based. Copies of the site-related documents can be obtained or viewed at locations listed at the end of this document.

## **INTRODUCTION**

The Former Eastern Disposal Rubble Pit (Site) is an approximately 28-acre property located near 255 State College Road along the Conrail tracks in Dover, Delaware and consists of three tax parcels: ED-05-06700-02-5300, ED-05-06700-02-5400 ED-05-06700-02-5500 (Figure 1). The proposed development plan for the former Eastern Disposal Rubble Pit by the current owners is the construction of storage garages.

In order to evaluate the environmental conditions prior to the development of the Site, BrightFields, Inc. (BrightFields), a HSCA-certified environmental consulting firm, was retained by Kent Storage Facilities, LLC/Loralex, LLC, to conduct a Brownfield Investigation (BFI). The purpose of this investigation was to collect sufficient information to characterize environmental conditions on the property and to determine if any remedial action will be required in order to allow the development of a commercial storage facility on the site. All work was conducted under the Delaware Department of Natural Resources and Environmental Control (DNREC) Brownfields Program. In order to evaluate the environmental conditions prior to the development of the Site, Kent Storage Facilities, LLC/Loralex, LLC, (Kent Storage), the current owners of the Site, entered into the Brownfield Prospective Purchaser Agreement (PPA) under the provisions of the Delaware Hazardous Cleanup Act (HSCA), 7 Del. C. Chapter 91. The PPA was signed in October 2006. Kent Storage performed an investigation to identify whether any risks to public health, welfare, and the environment were present at the Site and to implement a remedy, if necessary. Kent Storage contracted with BrightFields to perform the investigation.

## **SITE DESCRIPTION AND HISTORY**

The Site is located on a private road running northwest from 255 State College Road along the Conrail tracks in Dover, Delaware. (Figure1). To the north of the Site is undeveloped land and further north are residences, to the east is Fork Branch Creek and across the creek is Delaware State University, to the south are private residences and further South is State College Road. Fork Branch Creek discharges into Silver Lake approximately 2000 feet downstream of the Site. Former Atlantic Coast Environmental, Inc. (ACE) facility is located immediately north of one of the Site tax parcels and west of the majority of the Site (Figure 2). ACE is a closed hazardous waste management facility under DNREC's Solid and Hazardous Waste Management Branch (SHWMB) post closure permit requirements.

The Site was originally operated as a sand pit by Walter B. Mitten and Sons and in 1979, JEMM Investors purchased the property and leased it to Eastern Disposal. Eastern Disposal operated a municipal solid waste collection and disposal company and used this area mainly for the storage of empty vehicles and trash containers. In 1979, when JEMM Investors purchased the property, there were reports that white goods and scrap metal had been disposed in the northeast corner of the property which had been a borrow pit. Eastern Disposal operated the site as a demolition debris disposal area from January through August 1992.

DNREC conducted a Site Investigation in 1990, which included soil, surface water and sediment sampling. Poly-aromatic hydrocarbons (PAHs) were detected in soil samples above DNREC's Uniform Risk-Based Standards ("URS") for unrestricted use. In 1993, Balsam Environmental Consultants, Inc. conducted an Environmental Assessment and installed six groundwater monitoring wells. In 1993, on the basis that groundwater did not appear to be impacted by the

PAHs in the soil, DNREC- SIRB issued a no further investigative action letter. According to the letter the Site posed no apparent threat to human health, welfare or the environment under restricted use scenario. However, the owners desire a Certificate of Completion of Remedy (“COCR”), which requires determination of the location and extent of contamination at the Site. A BFI of the Site was conducted to collect enough information to fulfill this requirement.

## INVESTIGATION RESULTS

BrightFields, Inc. completed a Brownfield Investigation (BFI) Report in July 2006 for the Site. This investigation involved the collection of samples from surface soil, subsurface soil, and groundwater beneath the Site. A discussion of the sampling results is included in the BFI Report. The following discussion summarizes the results of the investigation.

### SOIL

In all of the surface soil (0 to 2 feet below ground surface (bgs)) and all of the subsurface soil (deeper than 2 feet bgs), the metals (aluminum, iron and manganese) and semi-volatile compounds (benzo (a) pyrene and dibenz (a,h) anthracene) were detected slightly above the unrestricted URS in soils. Manganese was the only metal detected above the restricted URS. Manganese was within the range of Typical Delaware Soil Concentrations and is not considered a contaminant of concern for the Site. As a result, there were no contaminants of concern for the Site soil under restricted use.

However, contaminants that exceeded the unrestricted URS in the surface soil at the Site are shown in the Table 1.

Table 1: Soil Results

<u>Contaminant</u>	<u>Reasonable Maximum Exposure Concentration*</u> <u>(mg/kg)</u>	<u>URS for Unrestricted Use (mg/kg)</u>	<u>URS for Restricted Use (mg/kg)</u>	<u>Delaware Default Background Remediation Standard (mg/kg)**</u>	<u>Typical Delaware Soil Concentrations (mg/kg)**</u>
<i>Inorganics- Metals</i>					
<b>Aluminum</b>	<b>15,843</b>	<b>7,800</b>	<b>200,000</b>	<b>7,800</b>	<b>4,800-12,000</b>
<b>Iron</b>	<b>14,908</b>	<b>2,300</b>	<b>61,000</b>	<b>2,300</b>	<b>3,000-22,000</b>
<b>Manganese</b>	<b>279</b>	<b>160</b>	<b>180</b>	<b>180</b>	<b>60-350</b>
<i>Semi-Volatile Organic Compounds</i>					
<b>Benzo(a)pyrene</b>	<b>0.236</b>	<b>0.09</b>	<b>0.8</b>	<b>N/A</b>	<b>N/A</b>
<b>Dibenz(a,h)anthracene</b>	<b>0.055</b>	<b>0.09</b>	<b>0.8</b>	<b>N/A</b>	<b>N/A</b>

\* RME –Reasonable Maximum Exposure Concentration calculated as the 95% Upper Confidence Level (UCL) of the arithmetic mean of contaminants detected at the site. RME values calculated using EPA Pro-UCL Software (USEPA, 2004)

\* mg/kg – milligram per kilogram (parts per million or ppm)

\*\* From URS Guidance (DNREC, 1999)

N/A – Not Applicable

## GROUNDWATER

Groundwater at the Site occurred at depths ranging from approximately 4.6 to 6.8 feet bgs. Figure 2 shows the location of wells. Groundwater at the Site flows to the southeast. As part of the BFI, groundwater samples were collected from the groundwater monitoring wells.

Iron and manganese were the only compounds detected in groundwater above their respective URS values. DNREC's URS criterion for manganese and iron are based on the Secondary Maximum Contaminant Levels (SMCLs) that are aesthetic-based (taste and odor), not health-based criteria. Therefore, manganese and iron are not considered site contaminants of concern in groundwater.

The chemicals that exceeded the groundwater URS are shown in Table 2.

**Table 2: Groundwater Results**

<u>Contaminant</u>	<u>Maximum Concentration*</u> (ug/L)	<u>Groundwater URS</u> (ug/L)
<i>Inorganics – Dissolved Metals</i>		
Iron	786	300
Manganese	327	50

\* Maximum Concentration detected in groundwater.

## SITE RISK EVALUATION

A risk assessment was performed to identify the potential effects to human health and the environment by the contaminants of concern at the Site. The following risk assessment scenario takes into account all of the HSCA quality data collected for the site and according to commercial reuse (restricted) of the Site. This scenario assumes no soil would be removed from the site prior to redevelopment.

### Soil

Under a commercial (restricted use) scenario, the carcinogenic cumulative risk for soil is  $1.84 \times 10^{-6}$  (1.84 in 1,000,000) and the non-carcinogenic Hazard Quotient (HI) is 0.11. DNREC's acceptable risk guidelines require a cancer risk below  $1 \times 10^{-5}$  and a HI of 1.0. Since the carcinogenic risk and the HI are below these values, the Site does not require further action for restricted use.

### Groundwater

According to the risk assessment performed for iron and manganese in groundwater beneath the Site, the HI is 0.59. There is no carcinogenic risk for iron or manganese. The calculated risk for non-cancer risk is below the DNREC guidelines. In addition, the Site is within the city limits of the City of Dover and is regulated by City law which prevents the installation of water wells and the consumption of groundwater within the City limits. Based on this information, no further action for groundwater is required.

## 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 RAOs are appropriate for the Site:

### *Qualitative Objectives*

- Restrict the future use of the Site to restricted use (commercial).

### *Quantitative Objectives*

- Prevent human exposure to soil contaminated with the metals (aluminum, iron and manganese) and semi-volatile compounds (benzo (a) pyrene and dibenz (a,h) anthracene) above a cumulative cancer risk of  $1 \times 10^{-5}$  and a hazard index of 1.0, if site use changes to unrestricted.

## EVALUATION OF REMEDIAL ALTERNATIVES

A presumptive remedy is the preferred and established remedial alternatives for common categories of releases or facilities. The presumptive remedy considered for the Site is environmental covenants restricting the Site to commercial use. According to Subsection 8.5 (3) of the HSCA Regulations, "The Department may consider and approve any presumptive remedy that is determined to satisfy the requirements contained in Subsection 8.6". Environmental covenants were determined to be protective of human health, welfare and the environment and meet the remaining requirements if Subsection 8.6.

DNREC has selected environmental covenants as the preferred remedial action for the Site since the remedy meets the criteria presented above.

## 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 evaluation of the presumptive remedy, DNREC requires the following remedial actions be undertaken at the Site:

1. An environmental covenant, consistent with Delaware's Uniform Environmental Covenants Act, UECA (Title 7, Del. Code Chapter 79, Subtitle II), will be required at the Site, within 90-days following DNREC's adoption of the Final Plan of Remedial Action. The environmental covenant will describe the following:
  - a) The Site will be restricted to commercial use. Any future development will be limited to commercial use. DNREC review and approval will be needed to change the Site use from commercial to residential use.

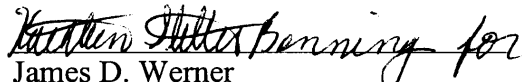
The monitoring of site use and any site maintenance necessary to restrict inadvertent site exhumation will be the responsibility of the Site owner, or in the event no viable responsible site owner can be identified, these long-term stewardship (LTS) duties will be performed by DNREC if funding (e.g., continued HSCA resources) is available.

## PUBLIC PARTICIPATION

The Department actively solicited written public comments and suggestions on the Proposed Plan of Remedial Action. The comment period began on March 14, 2007 and ended on April 4, 2007. No comments were received. If you have any questions or concerns regarding the Former Eastern Disposal Rubble Pit site, or if you would like to view reports or other information regarding the site, please contact the project manager, Rick Galloway at 391 Lukens Drive, New Castle, Delaware 19720, or at 302.395.2600.

## DECLARATION

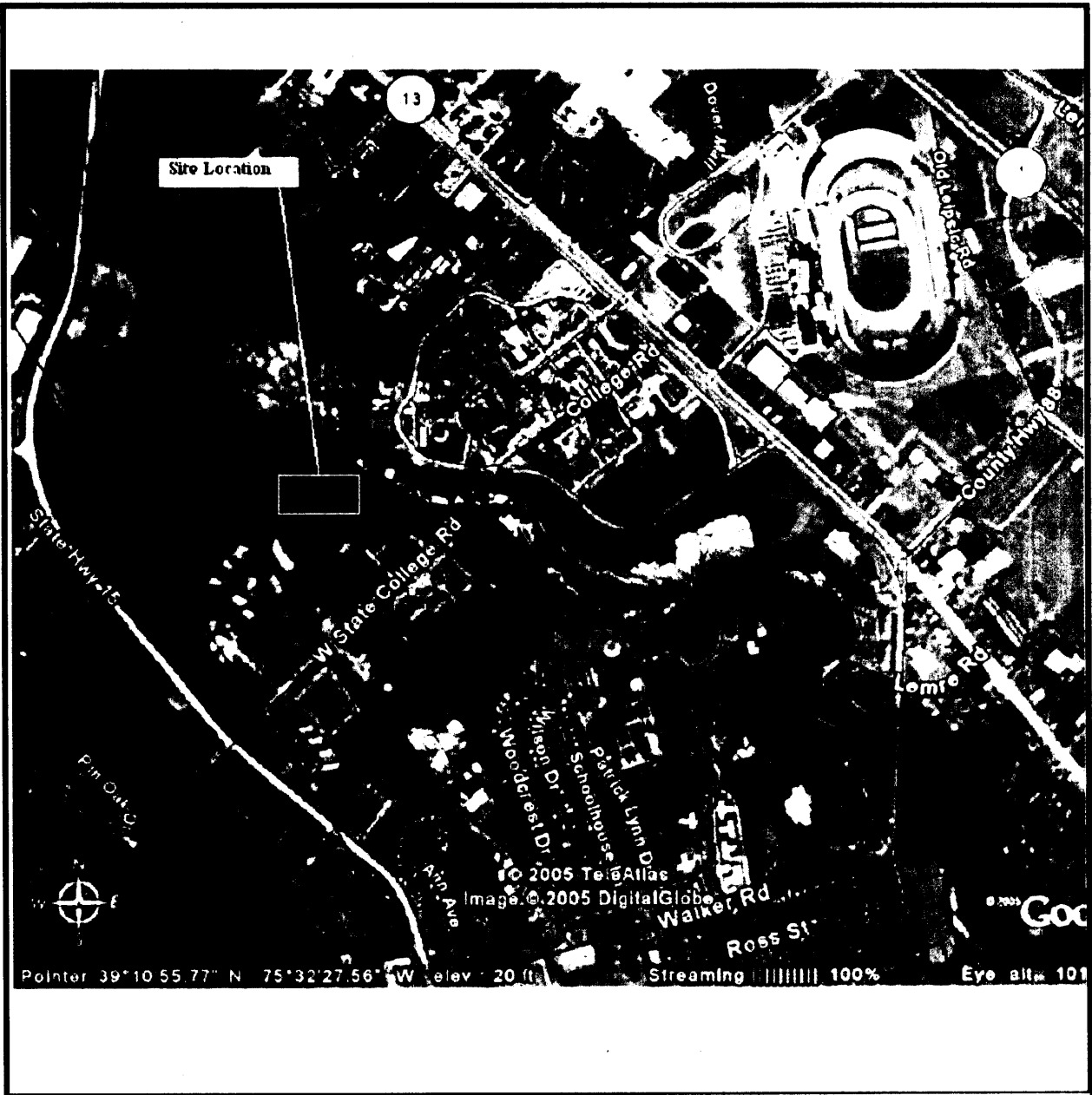
The Final Plan of Remedial Action for the Former Eastern Disposal Rubble Pit site is protective of human health, welfare and the environment, and is consistent with the requirements of the Delaware Hazardous Substance Cleanup Act.

  
James D. Werner  
Director, Division of Air and Waste

4/5/07  
Date of Review

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# SITE FIGURES

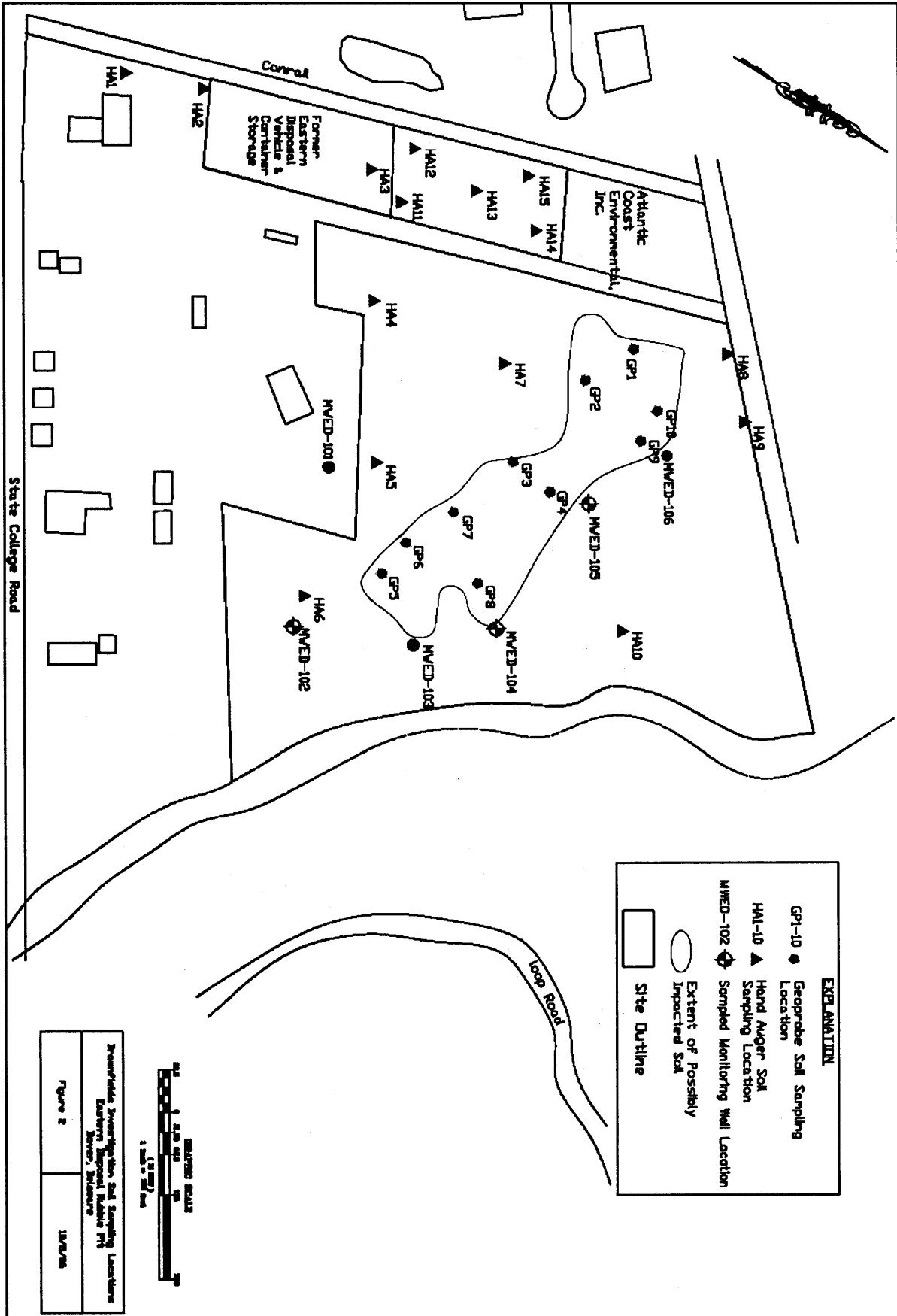


**Figure 1 – Site Location Map**  
**Eastern Disposal Rubble Pit**  
**Dover, Delaware**

0 2000 feet







Brunswick Investigation and Sampling Locations  
 Eastern National Building (ENB)  
 Survey, Brunswick  
 Figure 2  
 10/20/08