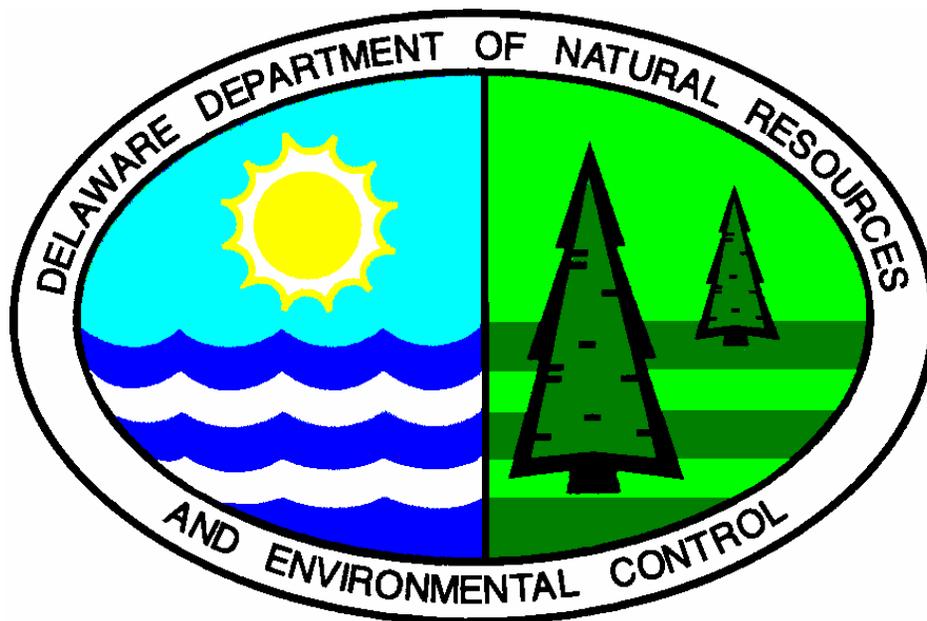


FINAL PLAN OF REMEDIAL ACTION

1121 THATCHER STREET

WILMINGTON, DELAWARE

DE-1097



November 2000

**Department Of Natural Resources and Environmental Control
Division of Air and Waste Management
Site Investigation & Restoration Branch**

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I INTRODUCTION

In October 1997 the Department of Natural Resources and Environmental Control (“DNREC” or “Department”), under the authority granted by the Hazardous Substance Cleanup Act (“HSCA”) 7 Del. C. Chapter 91 entered into a Voluntary Cleanup Program (“VCP”) Agreement with the City of Wilmington to conduct an Interim Action (“IA”) and a Facility Evaluation (“FE”) with DNREC approval and oversight. DNREC considered the FE to have satisfied the requirements of a full investigation (i.e. remedial investigation) at the site. An Interim Action was initially conducted at the site involving identification and removal of solid and other wastes in order to stabilize the site.

II. PURPOSE

This document is the DNREC-SIRB’s Final Plan of Remedial Action for the site. It is based on the results of previous investigations performed at the site. This Final Plan is issued under the provisions of the Delaware Hazardous Substance Cleanup Act (“HSCA”) and the Regulations Governing Hazardous Substance Cleanup (“Regulations”). It presents the Department’s assessment of the potential health and environmental risk posed by the site.

Section III presents a summary of the site description and site history. Section IV provides a description of the investigation results. Section V presents a discussion of the remedial action objectives. Section VI presents the proposed remedial action. Section VII discusses public participation requirements. Section VIII presents a description of the Final Plan of Remedial Action. Section IX presents the Director’s declaration.

The DNREC-SIRB provided public notice and a 20-day comment period on the Proposed Plan in accordance with Section 12 of the Regulations. No written comments were received from the public. The Final Plan, which designates the selected procedures and stipulations concerning current and future activities, the Proposed Plan, comments received, the Department’s response to comments, and all of the site documents forming the basis for the Proposed and Final Plans, will constitute the “Remedial Decision Record” required for issuing the Final Plan.

III. SITE DESCRIPTION AND HISTORY

The 1121 Thatcher Street Property is located on the north bank of the Brandywine River, southeast of the Northeast Boulevard Bridge. The City of Wilmington used the approximately three-acre property as a public works yard from 1927 to 1988 for vehicle maintenance, offices and storage. From 1988 to present the property appears to have been used primarily for surplus material storage. The City utilizes the small brick building on the site as a community police substation. The property is currently being evaluated by Mosaic Education and Marion T. Academy for the construction of a Charter School.

The site is bounded generally by 12th Street to the north, Thatcher Street to the east, 11th Street to the south, and the Brandywine Creek to the west. Prior to the demolition of the building conducted by Mosaic Education in June 2000, the majority of the site was paved with asphalt or covered by buildings. The building concrete floor foundations still remain and cover a large portion of the property. Unpaved areas covered in gravel exist in the northern portion of the

property. A small brick building is still present along 12th Street. The property is relatively flat. From 11th Street the surface elevation of the site gradually increases toward the Brandywine Creek. The western boundary consists of the Brandywine Creek. The boundary is a steep, vegetated slope dropping rapidly from the paved property to the creek. The bank is vegetated with many large trees, shrubs and other native vegetation. Surrounding land is generally commercial and/or residential.

The historical land use for this property is a mixture of commercial, industrial and municipal activities. The City of Wilmington Street and Sewer Department has utilized portions of the property since 1927 until 1964. Known occupants of the property include Interstate Amiesite Co. Inc., a paving company between 1927 and 1940; the Delaware Bedding Co., a mattress manufacturer from 1927 to sometime between 1951 and 1989. Sometime between 1901 and 1927, the course of the Brandywine Creek was altered to form a single channel on the east side of what had been Thatcher's Island.

In November 1997, the City of Wilmington conducted a series of site investigations in accordance with the VCP Agreement with DNREC-SIRB. These investigations are described in the Facility Evaluation Report (WIK, February 2000), Interim Action Work Plan (WIK, June 2000) and the Interim Action Project Closeout Report (WIK, August 2000). The Interim Action Project Closeout Report was evaluated as an addendum to the Facility Evaluation Report. Based on these investigation results, a Remedial Design Report (Duffield, July 2000) was submitted to address how the remedial action objectives will be achieved as part of the proposed site redevelopment plan.

IV. INVESTIGATION RESULTS

A FE was initiated in June 1999. The FE was conducted in order to: 1) understand the nature and extent of any contamination at the site; 2) evaluate risks to the public and environment associated with identified contamination; and 3) determine if further response action is necessary. As a follow up to the FE, two supplemental investigations were conducted between October and December 1999 to further characterize specific site areas. In June 2000, DNREC-SIRB approved an Interim Action Work Plan, which was implemented to address a small area of arsenic contaminated soil within the subsurface.

Following the completion of the FE and Interim Activities by the City of Wilmington, the results demonstrated that the current site condition poses no increased risk for persons utilizing the site. However, maintenance and repair of the existing asphalt and gravel cover is to be continued to effectively control contact with subsurface soils that may pose a potential risk to human health.

In support of the City of Wilmington VCP activities, Marion T. Academy entered into a separate VCP Agreement with DNREC-SIRB in order to continue remedial activities. Marion T. Academy intends to redevelop the property for use as a school and police substation. On behalf of Marion T. Academy, a Remedial Design Report (July 2000) was submitted for review. The Remedial Design Report addresses how the DNREC-SIRB established remedial action objectives would be achieved as part of the proposed site redevelopment plans.

The Facility Evaluation and the two supplemental investigations included over seventy-four (74) soil samples, four (4) groundwater samples and three (3) sediment samples in order to characterize the type and level of contamination on the property.

Results from the soil investigation identified contaminants of concern exceeding the DNREC SIRB Remediation Standards Guidance under the Delaware Hazardous Substance Cleanup Act (December 1999).

Soil sample results indicated elevated levels of arsenic and benzo(a)pyrene. Much of the arsenic impacted soil is located in the subsurface, approximately 4 to 8 feet below ground surface. Other areas indicating exceedances are beneath the buildings concrete foundation. One area of elevated arsenic concentration described as a “hot spot” with up to 796 mg/kg arsenic in the north central portion of the property was targeted for further characterization. Subsequently, DNREC-SIRB approved a scope of work, (Interim Action Work Plan, WIK June 2000) to remove and properly dispose of subsurface soils within the “hot spot” area. Final analysis verified that the level of arsenic in the “hot spot” excavation was reduced to an average concentration of 39 mg/kg.

Groundwater results identified arsenic, iron and manganese are present at concentrations exceeding regulatory criteria. Included as an attachment to the Interim Action Work Plan, an estimate of contaminated groundwater discharging to surface water was compared to the Remediation Standards Guidance (December 1999) for protection of the environment. According to the calculation of surface water quality due to groundwater discharge, surface water quality criteria are not exceeded.

The reported findings for shallow and deep soils indicate that contaminants of concern do not pose a cumulative cancer risk greater than 1 in 10,000 (or 1×10^{-4}). However, deep soil contamination slightly exceeds the cumulative cancer risk standard of 1 in 100,000 (or 1×10^{-5}).

V. REMEDIAL ACTION OBJECTIVES

According to HSCA Regulation 8.4(1), remedial action objectives must be established for all Plans of Remedial Action. The remedial action will be evaluated for contaminants of concern, utilizing the qualitative and quantitative objectives and the following considerations:

- The site land use is expected to be a City of Wilmington police substation and a school building with the remaining site area covered with asphalt pavement.
- The risk to human health and the environment.

Qualitative Remedial Objectives:

Based on the above considerations, the following qualitative objectives were developed:

- Restrict human contact (dermal and ingestion) with contaminated soil;
- Control overland runoff of storm water and off-site migration of hazardous substances from site soils;
- Establish a Groundwater Management Zone (GMZ), which will restrict the placement of wells and use of groundwater at the site; and
- Restrict exposure to potential hazardous substances from site soils along the Brandywine Creek embankment, within the limits of the property.

- Restrict the property to commercial land use only.

Quantitative Remedial Objectives:

Based on the above qualitative remedial action objectives, the following quantitative remedial action objective was developed:

- Prevent human contact with contaminants that exceed 1 in 100,000 (or 1×10^{-5}) cumulative cancer risk.

VI. FINAL REMEDIAL ACTION PLAN

Based on DNREC-SIRB's evaluation of the site information and the above remedial action objectives, the recommended remedial action for the site will include the following:

1. Restrict human contact from site soils and groundwater using a combination of: site structures (i.e., buildings), bituminous-concrete pavement and fencing and institutional controls.
2. The remedial design will incorporate engineering controls to prevent potential impacts of site soils from storm water runoff and to eliminate potential exposure pathways.
3. As part of the remedy and deed restriction, an Operation and Maintenance ("O&M") plan must be established and implemented. At the completion of the remedial activities, an O&M plan prepared by a HSCA-qualified consultant and approved by DNREC-SIRB will comprise procedures and practices to minimize the potential for disturbing the remedial design (i.e., capping systems and fences) and to promote the long-term integrity of the remedial action. The intent of the O&M plan is to monitor the integrity of the cover. Monitoring of the cover must include, but not be limited to:
 - a. Semi-annual visual inspection of the site and remedial design;
 - b. Identify and repair cracks within the cover system greater than two inches thick;
 - c. Restrict landscaping so as not to affect the integrity of the cover;
 - d. Notify DNREC-SIRB prior to any intrusive or excavation activity within the cover;
 - e. Maintain the cover system to ensure restriction of direct human contact with subsurface soil and movement of surface water through the cover.
 - f. Deed will be amended by the property owner restricting the property to commercial land use and incorporating the O&M plan.
 - g. A groundwater management zone ("GMZ") will be established, which will restrict groundwater withdrawals at this site. The GMZ will be administered via a memorandum of understanding between DNREC's Division of Air and Waste Management and Division of Water Resources.

VII. PUBLIC PARTICIPATION

The Department of Natural Resources and Environmental Control, Site Investigation & Restoration Branch invited written comments on this Proposed Plan pursuant to 7 Del. C. § 9107(e)(2). The comment period began on Wednesday, October 11, 2000 and ended on Tuesday, October 31, 2000. No written comments from the public were received. For additional information contact Rebecca Hawkins at (302) 395-2600.

VIII. DECLARATION

This Final Plan of Remedial Action for the 1121 Thatcher Street Site is protective of human health, welfare and the environment and is consistent with the requirements of the Delaware Hazardous Substance Cleanup Act.

Denise Ferguson-Southard, Director
Division of Air and Waste Management

Date

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