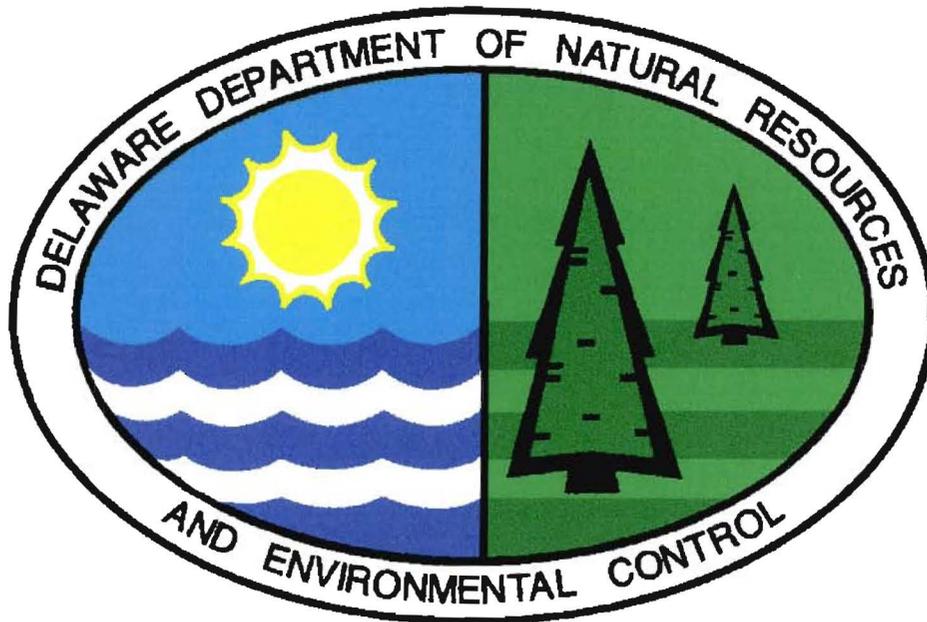


# FINAL PLAN OF REMEDIAL ACTION

Maryland Avenue Site  
Wilmington, DE  
DE 1099



January 1999

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

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# Final Plan of Remedial Action

## Maryland Avenue Site

### I. INTRODUCTION

The Maryland Avenue site is located in Wilmington, Delaware near the Maryland Avenue Exit of Interstate 95. The site consists of ten parcels of land containing approximately 7 acres. Historically, the site has been maintained for commercial and residential uses. In order to determine the potential for environmental liability prior to purchase of the site, the Reybold Group entered into the Department of Natural Resources and Environmental Control's (DNREC) Voluntary Cleanup Program (VCP). Through a VCP agreement, Reybold agreed to investigate the potential risks posed to the public health and environment. Reybold contracted WIK Associates, Inc. to perform a Facility Evaluation (FE) at the site.

The purposes of the FE were to: 1) understand the nature and extent of any soil and/or groundwater contamination at the site, 2) evaluate risks to public health and the environment associated with identified contamination, and 3) perform a feasibility study that would identify and recommend a remedial action, if required by DNREC. The potential purchaser of the property desired to obtain a Certificate of Completion of Remedy from DNREC upon completion of all required tasks.

This document is the Department's Final Plan of Remedial Action for the site. It is based on the results of the previous investigations performed at the site. This Final Plan is issued under the provisions of the Delaware Hazardous Substance Cleanup Act, 7 Del. C. Chapter 91 (HSCA) and the Regulations Governing Hazardous Substance Cleanup (the Regulations). It presents the Department's assessment of the potential health and environmental risk posed by the site.

Section II presents a summary of the site description, site history and previous investigations of the site. Section III provides a description of the facility evaluation results. Section IV presents a discussion of the remedial action objectives. Section V presents an analysis of remedial alternatives, including identification of and rationale for selection of alternatives and description of alternatives. Section VI discusses public participation requirements.

The Department has provided public notice and an opportunity to comment on the Proposed Plan in accordance with Section 12 of the Regulations. No comments were received during the public comment period, therefore the Department issues this Final Plan of Remedial Action. The Proposed Plan, the comments received from the public, responses to the comments and the Final Plan will constitute the "Remedial Decision Record".

### II. SITE DESCRIPTION AND HISTORY

#### *Site Setting*

The site primarily consists of undeveloped land bordered by Maryland Avenue to the north, Lower Elm Street to the east, elevated railroad tracks to the south, and Linden Street to the west. Another undeveloped parcel that is part of the site lies along the railroad tracks between Linden

and Beech Streets. Properties near the site are currently being developed as part of the Christina River development effort.

### *Site and Project History*

A Phase I Environmental Site Assessment was conducted by WIK in August 1997, followed by a Facility Evaluation conducted under the VCP Agreement.

The Phase I Environmental Site Assessment, which consisted primarily of a review of files, deeds, and aerial photographs, reported that the site had a variety of uses including a tannery.

In order to obtain a Certificate of Completion of Remedy, the prospective purchaser entered into a VCP agreement with DNREC and performed the Facility Evaluation (FE). The objectives of the FE were to evaluate the soil and groundwater quality of the Site, determine the potential risk to human health and the environment (based on the DNREC Remediation Standards), and if necessary, to perform a feasibility study. The FE included the excavation of test pits and drilling of geoprobe borings across the property to inspect the soil and evaluate subsurface conditions and collection and analysis of soil and groundwater samples throughout the property to identify areas where remediation might be required. The work performed complied with the DNREC-approved Work Plan.

Fieldwork for the FE began in November 1997. Test pits and trenches were excavated through the use of a backhoe to depths between 5.5 and 12 feet below grade surface (bgs) to examine subsurface soil and allow for the collection of subsurface soil samples. In addition to this, a Geoprobe drilling rig was utilized to obtain subsurface soil samples down to the groundwater. A hand auger was used in areas that were inaccessible by either the backhoe or Geoprobe.

A total of 56 soil samples were sampled and analyzed at the DNREC-SIRB Laboratory. Based on the results of DNREC-SIRB's initial screening analysis, a portion of the soil samples was sent to a HSCA approved laboratory for further analysis.

Five Geoprobe borings were drilled to depths of 8 to 20 feet bgs to intersect the groundwater and to allow for the collection of groundwater samples. These samples were sent to a HSCA approved laboratory for analysis.

### **III. INVESTIGATION RESULTS**

A Draft FE report dated January 1998 was submitted to DNREC-SIRB in February 1998. The FE revealed a variety of soil contaminants with the most significant being an arsenic hot spot and several areas containing polynuclear aromatic hydrocarbons (PAHs). Subsequent sampling was required by DNREC-SIRB. An arsenic and PAH hot spot investigation report was submitted by WIK Associates to DNREC-SIRB in October 1998. A Final FE was submitted to DNREC-SIRB in December 1998.

The arsenic hotspot is located immediately south of the intersection of Lower Elm and Liberty Streets. An abandoned 1-story, concrete block building is located on this corner and the arsenic hotspot is located between Liberty Street and the northeastern corner of the building. For the

purpose of this final plan and the remedial design, the arsenic hotspot will be referred to as “Area A”.

Elevated levels of PAHs were also detected along the railroad tracks bordering the site. An area adjacent to Linden Street and another area located near Beech Street will be referred to as “Area B” for the purpose of this final plan and the remedial design.

Groundwater beneath the site contained low levels of semi-volatile contaminants and slightly elevated levels of metals.

#### **IV. REMEDIAL ACTION OBJECTIVES**

DNREC considers the FE for the Site to meet the criteria of a Remedial Investigation (RI), and hereby adopts the FE as an RI. According to Section 8.4 (1) of the Regulations, site-specific remedial action objectives must be established for all Plans of Remedial Action.

Qualitative objectives describe, in general terms, what the ultimate result of the remedial action at the facility should be. Considering the Site will be developed for commercial use, the qualitative objectives are to minimize risk to site users such as construction workers, future employees, and visitors by controlling human contact (dermal, inhalation, or ingestion) with contaminated soil and groundwater. Additionally, DNREC-SIRB seeks to prevent migration of the contaminants by controlling soil erosion and subsequent overland transport of contaminated surface water and soil to the Christina River.

Quantitative objectives define specific levels of remedial action to achieve protection of human health and the environment. Based on the qualitative objectives, the quantitative objectives will be to ensure that no exposure occurs to any contaminants above concentrations specified in HSCA remediation standards for a restricted use scenario for a non-critical water resource area.

The site-specific cleanup standard for the arsenic hotspot in Area A is 40 mg/Kg also referred to as parts per million (“ppm”) of arsenic.

The cleanup standards for soil containing PAHs are as follows:

Compound	Concentration (mg/Kg)
Acenaphthene	5,000.0
Anthracene	5,000.0
Benzo(a)anthracene	8.0
Benzo(b)fluoranthene	8.0
Benzo(k)fluoranthene	78.0
Benzo(a)pyrene	0.8
Carbazole	290.0
Chrysene	780.0
Dibenz(ah)anthracene	0.8
Fluoranthene	5,000.0
Fluorene	5,000.0

Compound	Concentration (mg/Kg)
Indeno(1,2,3-cd)pyrene	8.0
Napthalene	5,000.0
Phenanthrene	5,000.0
Pyrene	5,000.0

## V. FINAL REMEDIAL ACTION PLAN

To accomplish the remedial action objectives, four potential remedial alternatives were evaluated. These are listed below:

1. In-situ capping of all impacted soil,
2. Off-site disposal of contaminated soil from Area A/In-situ capping of soil in Area B,
3. Off-site disposal of all impacted soil,
4. No further action.

Based on the information contained in the Facility Evaluation, subsequent investigation reports (FE Addenda), and the Feasibility Study, DNREC-SIRB will implement the following plan of remedial action:

- Removal of arsenic contaminated soil in “Area A”,
- Installation of a soil barrier to prevent direct contact with PAH contaminated soil in “Area B”,
- Establishment of a Groundwater Management Zone (GMZ),
- Prepare and record deed notices for all ten parcels restricting their use to commercial use only.
- Prepare and implement and Operations and Maintenance Plan to maintain the integrity of the soil barrier constructed in Area B.

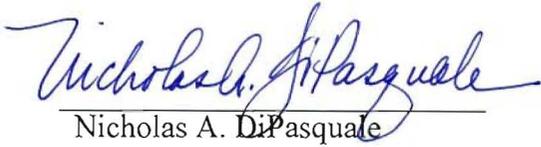
## VI. PUBLIC PARTICIPATION

In accordance with Section 12 of the Regulations, the Department established a comment period to allow the public to comment, offer suggestions, or ask questions about the Proposed Plan of Remedial Action. The comment period began on Thursday December 24, 1998, and concluded on Thursday, January 14, 1999. The Department did not receive any comments or requests for a public hearing.

In addition to the requirements set forth in the Regulations, the Department actively sought public input by providing copies of the Proposed Plan of Remedial Action to members of the Wilmington City Council, various civic groups, environmental groups, and concerned individuals. A copy of the Proposed Plan was also placed in the Wilmington Public Library.

## VII. DECLARATION

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



Nicholas A. DiPasquale  
Director

2/22/99

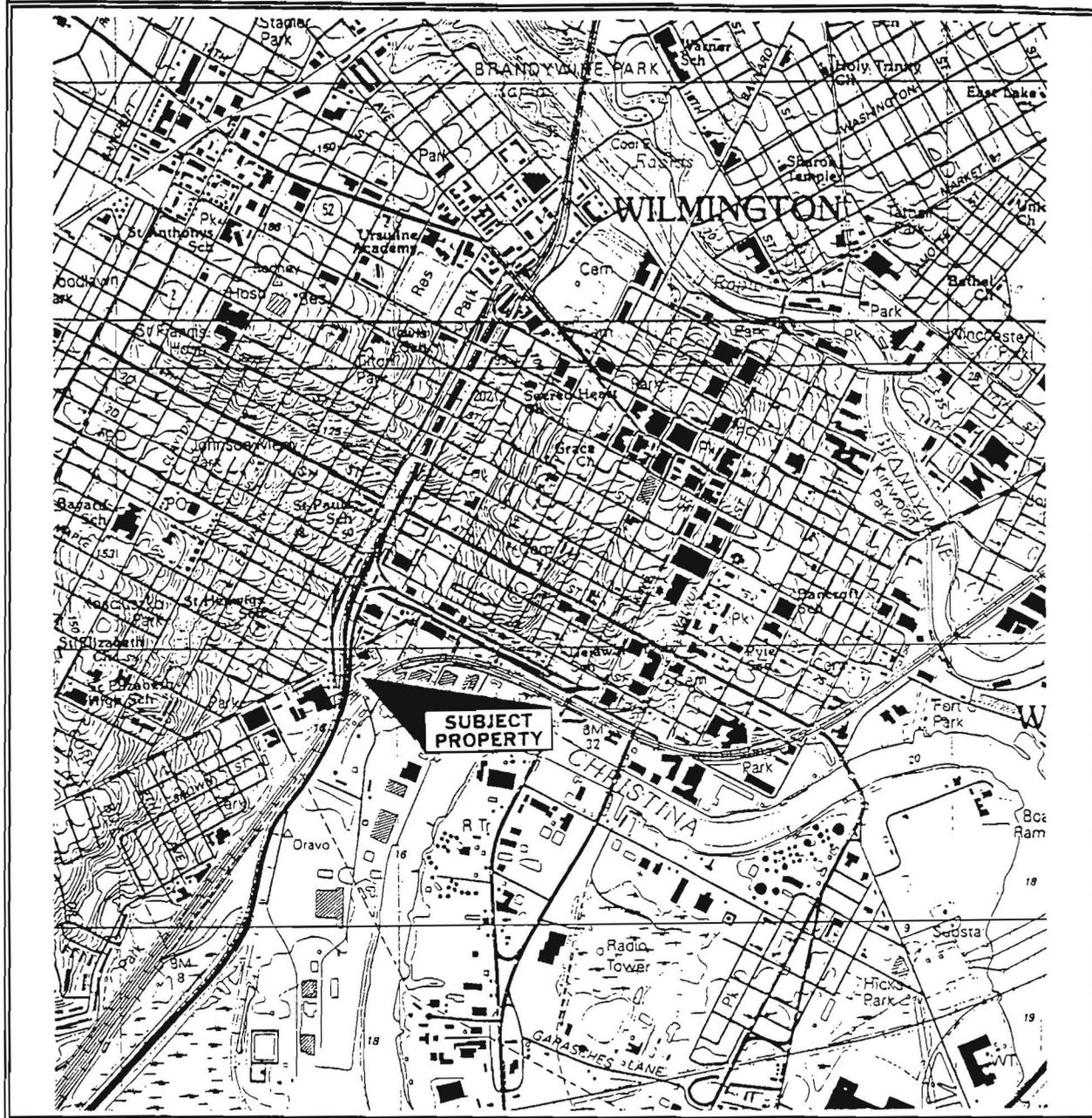
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## **Appendix A**

Figures 1& 2 from Facility Evaluation Report

Prepared by WIK Associates September 1998.



# FIGURE 1

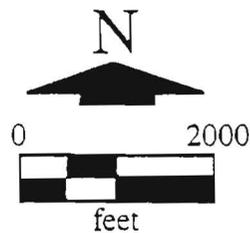
## Site Location/Topographic Map

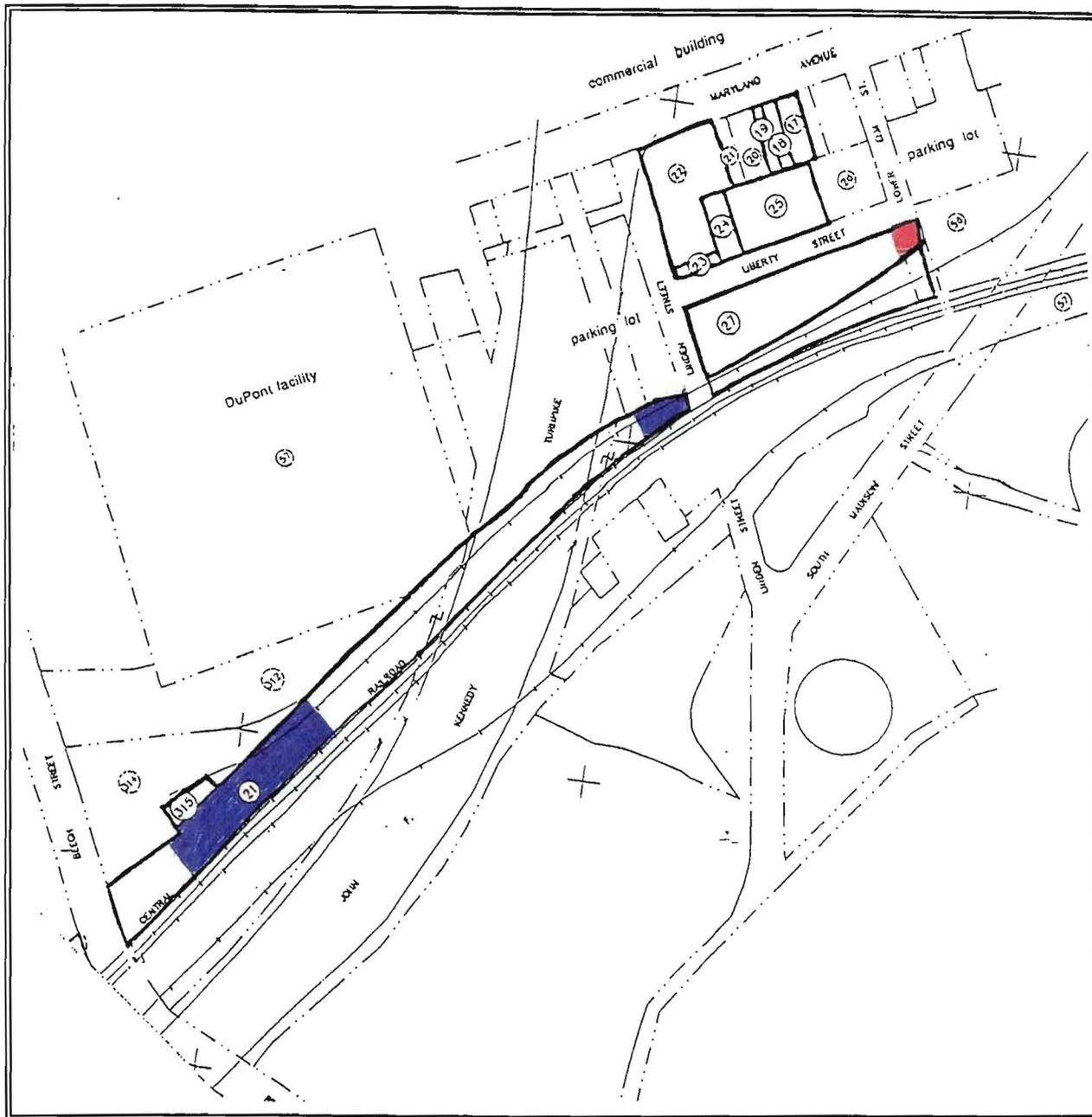
Wilmington South & Wilmington North Quadrangles:  
7.5 minute series

Maryland Avenue and I-95 Property

Wilmington, Delaware

File: 1097.04.21





**FIGURE 2**  
**Tax Parcels Comprising the Maryland Avenue Property**

Maryland Avenue and I-95 Property  
 Wilmington, Delaware  
 File: 1097.04.21



Note: Not Drawn To Scale

- Area A
- Area B