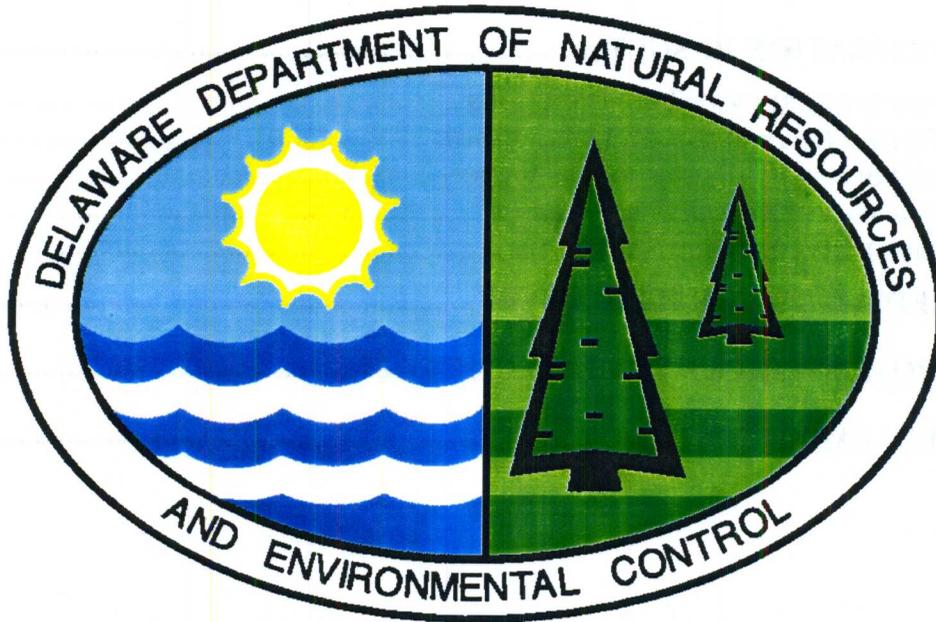


# PROPOSED PLAN OF REMEDIAL ACTION

Deemer Steel Site - Operable Unit-I  
New Castle, DE

DNREC Project No. DE 1243



February 2002

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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## 1.0 INTRODUCTION

The Deemer Steel Site (Site) is located at Ninth and Washington Streets, in New Castle, Delaware (Figure 1). In June 1997, Buck Kennett Associates, LLC (Buck Kennett) entered into a Voluntary Cleanup Program (VCP) Agreement with the Department of Natural Resources and Environmental Control, Site Investigation and Restoration Branch (DNREC-SIRB). Under the provisions of the Delaware Hazardous Substance Cleanup Act (HSCA), 7 Del. C. Chapter 91, Buck Kennett completed a Facility Evaluation (FE) to evaluate the potential presence of contaminants in the soil associated with historic Site uses. In July 1999, Buck Kennett entered into a second VCP Agreement. Through this second VCP Agreement, Buck Kennett agreed to investigate the potential risks posed to the public health, welfare, and the environment through the performance of a Remedial Investigation and Feasibility Study (RI/FS). The purpose of the RI/FS was to obtain sufficient detailed Site information to supplement the earlier FE and develop an appropriate remedial approach. Buck Kennett contracted WIK Associates, Inc. (WIK) to perform the FE and RI/FS of the Site. The Site was subsequently divided into three Operable Units (OUs) prior to the issuance of the Proposed Plans. In July 2001, WIK completed further grid sampling of Operable Unit I (OU-I) of the Site to adequately evaluate that section of the site. This Proposed Plan of Remedial Action is for OUI only.

The purpose of the RI/FS and subsequent grid sampling was to: 1) characterize the nature and extent of any soil and/or groundwater contamination at the Site, 2) evaluate risks to public health, welfare, and the environment associated with identified contamination, and 3) perform a FS that would identify and recommend a Remedial Action.

This document is the Department's Proposed Plan of Remedial Action (Proposed Plan) for OU-I. It is based on the results of the previous investigations performed at the Site. This Proposed Plan is issued under the provisions of the HSCA and the Regulations Governing Hazardous Substance Cleanup (Regulations). It presents the Department's assessment of the potential health and environmental risk posed by OU-I.

As described in Section 12 of the Regulations, DNREC-SIRB will provide notice to the public and an opportunity for the public to comment on the Proposed Plan. At the comment period's conclusion, DNREC-SIRB will review and consider all of the comments received and then issue a Final Plan of Remedial Action (Final Plan). The Final Plan will designate the selected remedy for the Site. The Proposed Plan, all prior investigations of the Site, the comments received from the public, DNREC-SIRB's responses to those comments, and the Final Plan of Remedial Action (Final Plan) will constitute the Remedial Decision Record.

Section 2.0 presents a summary of the Site description, Site history and previous investigations of the Site. Section 3.0 provides a description of the RI results. Section 4.0 presents a discussion of the Remedial Action Objectives. Section 5.0 presents the Proposed Plan, while Section 6.0 discusses public participation requirements.

## **2.0 SITE DESCRIPTION AND HISTORY**

### **2.1 *Site Setting***

The Site consists of three parcels of land, New Castle County Tax Parcel No. 21-014.00-499, 21-014.00-183 and 21-014.00-541, (7.67 acres) located at Ninth and Washington Street in New Castle, Delaware. Washington Street borders the Site to the west, Ninth Street borders the Site to the south and Gray Street borders a portion of the Site to the east. Two small streams join on the northern end of the Site and the resultant single stream crosses the Site from northwest to the southeast. The Site is currently a vacant lot. Surrounding land use includes primarily residential properties to the north, east and west. A City of New Castle water tower is present to the northeast of the Site, and the New Castle Steel Plant, a former National Priority List (NPL) Site, is located southeast of the Site across Ninth Street.

For the purposes of remedial alternative evaluation, the Site was divided into three operable units during the RI/FS (Figure 2). The Site is comprised of an easternmost parcel (0.9297 acres), Tax Parcel No. 21-014.00-499 designated as Operable Unit-I (OU-I); an adjacent parcel (5.9863 acres), Tax Parcel No. 21-014.00-183 designated as Operable Unit-II (OU-II) and a southeastern parcel (0.7493 acres), Tax Parcel No. 21-014.00-541 designated as Operable Unit-III (OU-III). This Proposed Plan is limited to the OU-I portion of the Site only. The Proposed Plan for OU-II and OU-III will be issued separately.

## **2.0 Site and Project History**

Title transfer records and historic aerial photographs were reviewed to evaluate the history and previous uses of the Site. Records indicate the Site has been owned and/or operated as a steel foundry by the Deemer Steel Casting Company (Deemer Steel) from the early 1900s until 1987. Sometime in the early 1990s, the buildings comprising the Deemer Steel operation were demolished. Currently the Site is overgrown with vegetation.

## **3.0 INVESTIGATION RESULTS**

### **3.1 *Results of Previous Investigations***

With the exception of the grid sampling that was exclusively performed on OU-1, the previous investigations were conducted on the entire Site made up of all three operable units. Previous investigations that did not include any testing of environmental conditions on the OU-I parcel are not described below, but can be found summarized in the Proposed Plan for OU-II and OU-III.

### **3.2 *Phase I Environmental Site Assessment***

WIK conducted a Phase I Environmental Site Assessment (ESA) on the Site in December 1990 (WIK, 1990). Based on the history of the Site, discussions with State and local agencies and the on-site inspection, WIK recommended that Phase II soil sampling be conducted at the Site. The Phase II investigation did not take place on the OU-I parcel.

### **3.3 Summary of the Facility Evaluation**

In July 1997, WIK conducted a Facility Evaluation (FE) to evaluate the nature and extent of soil contamination on the Deemer Steel Site (WIK, 1999). At the time of the FE, the Site was divided into Parcel A (west of the stream) and Parcel B (east of the stream). These parcel boundaries do not correspond to the actual tax parcel boundaries or the current operable units.

The FE investigation included the excavation of 21 test pits across the Site (Figure 3). Of all the samples collected on Site, one test pit was excavated on the OU-I section (TP-05). Elevated concentrations of metals were found to be present in the surface soils at depths of 0 to one foot below grade including arsenic, iron and manganese. However, the levels of arsenic did not exceed the State of Delaware background levels of 11 mg/kg of Arsenic. Subsurface levels of iron detected in the deep sample (4-5 feet below grade) were below the Delaware HSCA Uniform Risk-Based (URS) concentrations based on unrestricted use.

### **3.4 Summary of Remedial Investigation**

On December 6, 1999, WIK excavated five trenches, consisting of 22 test pits, and 10 additional test pits in the southeastern corner of Parcel A (which included OU-I) on the Site and installed 4 monitoring wells on Site (Figures 4 & 5). Only one sample was collected on the OU-I parcel, a groundwater sample from MW-3.

The groundwater sample was analyzed for full Target Analyte List/Target Compound List (TAL/TCL) parameters according to HSCA protocols. The analytical results were compared with the URS criteria.

Organic compounds were not detected in the groundwater above the HSCA URS criteria. However, three metals aluminum, iron, and manganese exceeded their respective URS concentrations in groundwater.

A cumulative risk assessment was performed to evaluate the cumulative risk associated with exposure to groundwater on the Site. The cumulative risk from soils will be addressed in the summary of the grid sampling section. The calculations were conducted using the DNREC Site Specific Calculator for Multiple Analytes (DNREC May 2000 version) assuming a current and future risk scenario.

The risk assessment indicates that the cumulative non-cancer risk results in a Hazard Index of less than 1 for groundwater sampled at MW-3. Also the URS values found in DNREC-SIRB's Remediation Standards Guidance Documents for the contaminants of concern iron, aluminum, and manganese, are based on the aesthetic qualities of the water such as taste, odor, and color, and do not relate to a human health risk. None of the contaminants of concern that screened above their URS in Monitoring Well 3 (iron, manganese, and aluminum) present a carcinogenic risk.

### 3.5 *Summary of the Grid Sampling*

In order to characterize the surface soil of OU I, WIK excavated ten shallow borings. The locations were selected by using a 60-foot triangular grid pattern (Figure 4). A post-hole digger was used to core through the surface and a stainless steel trowel or dedicated plastic scoop was used to obtain the sample from the sidewalls of the open boring. One soil sample was collected from six inches below ground surface (bgs), and one soil sample was collected from twelve inches bgs at each location, for a total of 20 samples.

The soil samples collected during the investigation were transported to DNREC-SIRB's laboratory and screened for metals, volatile organic compounds (VOCs), semi-volatile compounds (SVOCs) and, pesticides and polychlorinated biphenyls (PCBs). VOCs, SVOCs, pesticides or PCBs were detected above detection limits in one soil sample SS2-002. Six samples were selected after screening for analysis of TAL metals at the DNREC Environmental Services Laboratory in Dover. One sample, SS2-002, selected for TCL SVOCs, pesticides, and PCBs analysis at Severn Trent Laboratories (STL) Edison.

Based on the results of the 10 sample locations, the average concentration of arsenic in OU-I was 6.98 mg/kg, which is below the background standard of 11 mg/Kg. Concentrations of two other metals (iron and manganese) exceeded the unrestricted use URS. Soil sample SS2-002 screened above the method detection limit for organics during the mobile laboratory screening and was sent for confirmatory laboratory analysis of PAHs and PCBs. Four PAHs (benzo(a)pyrene, benzo(b)fluoranthene, benzo(a)anthracene, and dibenz(a,h)anthracene) were detected in the sample above the unrestricted use URS criterion. In addition, a PCB (Aroclor – 1254) was detected as 0.36 mg/kg, which is slightly above the unrestricted use URS of 0.3 mg/kg.

A cumulative risk assessment was performed to evaluate the cumulative risk associated with exposure to soils on the Site. The calculations were conducted using the DNREC Site Specific Calculator for Multiple Analytes (DNREC May 2000 version) assuming a current and future risk scenario.

A site-specific risk assessment was performed to evaluate the cumulative risks associated with the exposure to soil of the site. The contaminant of concern at the Site was determined to be iron, with an average on site concentration of 60,000 ppm. Iron concentrations at the Site are due to the Site being historically used as a former steel facility and foundry slag being placed across the property as fill material to allow the land to be used for storage of equipment and material.

Since arsenic was below the background standard and concentrations of carcinogenic compounds such as PAHs and PCBs were below method detection limits in nineteen out of twenty sampling locations, the Site does not pose an unacceptable carcinogenic risk.

#### **4.0 REMEDIAL ACTION OBJECTIVES**

According to Section 8.4 (1) of the Regulations, site-specific Remedial Action Objectives (RAOs) must be established for all Plans of Remedial Action. The remedial action will be based on the following factors:

- The Site is currently zoned as multi-family residential land and is currently vacant;
- The future Site use is expected to remain residential; and
- Surrounding land uses are mixed, including commercial and residential.

Qualitative objectives describe, in general terms, what the ultimate result of the Remedial Action at the Site should be. Considering that OU-I will be developed for residential use, the following qualitative objectives were developed:

- Control potential human contact (dermal and ingestion) of soil with elevated iron concentrations through removal of one foot of soil across OU-I.
- Placement of at least one foot of clean topsoil on the property that will allow the growth of vegetative cover.
- Preservation of mature trees on the property as they presently exist.

Quantitative objectives define specific levels of Remedial Action to achieve protection of human health and the environment. Based on the qualitative objectives, the following quantitative objectives were developed for OU-I.

- Prevent human contact with soil with iron concentrations greater than 23,000 mg/Kg.

#### **5.0 PROPOSED PLAN OF REMEDIAL ACTION**

Based upon the information and results of the investigation performed at the Site and the Remedial Action Objectives for OU-I, DNREC-SIRB's Proposed Plan of Remedial Action for the Site will include the following:

1. Removal and replacement of one foot of soil from the Site during the construction of the proposed residential development. This soil may be used on OU II and OU III as fill material as long as it is placed under the buildings or pavement as detailed in the Proposed Plan for those operable units. Soil will be allowed to remain in areas where mature trees are present. Soil generated from the excavation of the basements temporarily stored on OU II & OU III will be screened by DNREC-SIRB prior to any of this soil being reused on the OU-I parcel.
2. Integration of setbacks incorporated into the Site development plan to allow for preservation of mature trees on the property.

## **6.0 PUBLIC PARTICIPATION**

The Department actively solicits public comments or suggestions on the Proposed Plan of Remedial Action and welcomes opportunities to answer questions. Please direct written comments to:

DNREC Site Investigation and Restoration Branch  
391 Lukens Drive  
New Castle, Delaware 19720  
Attention: Ann Breslin

The comment period begins February 25, 2002, and ends at the close of business (4:30 p.m.) on March 18, 2002. If there is a request, a public hearing will be held on the Proposed Plan.

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