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FINAL PLAN OF REMEDIAL ACTION
FOR THE
NEWARK LUMBER SITE
NEWARK, DELAWARE

June, 1999

DNREC Project DE-1140

Prepared by:
Delaware Department of Natural Resources and Environmental Control
Division of Air and Waste Management
Site Investigation and Restoration Branch

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I INTRODUCTION

In November, 1998, the Delaware Department of Natural Resources and Environmental Control, Site Investigation and Restoration Branch ("DNREC-SIRB") performed a Facility Evaluation ("FE") of the Newark Lumber Site ("Site" or "Facility") in Newark, Delaware under the direction of the Hazardous Substance Cleanup Act ("HSCA"). The FE was conducted in accordance with the Delaware Regulations Governing Hazardous Substance Cleanup ("Regulations"). The FE included sampling of surface soil, subsurface soil, and groundwater at various locations throughout the facility. The FE was completed in January 1999. Subsequent surface soil sampling for arsenic was performed by Duffield Associates, Inc. ("Duffield"), and in combination with the FE data, deemed sufficient to constitute a Remedial Investigation ("RI"), which was combined with a Feasibility Study ("FS"), and finalized in May, 1999.

II PURPOSE

This Final Plan of Remedial Action ("Final Plan") is based on the FE by DNREC-SIRB and the RI/FS completed by Duffield, on behalf of J. Fred Robinson, and presents to the public the Department's final selection of any remedial activities to occur at the Newark Lumber Site, Newark, Delaware. This Final Plan is issued under the provisions of the Delaware HSCA, 7 Del. C. Chapter 91, and the Regulations.

The Department provided public notice and opportunity to comment on the Proposed Plan in accordance with HSCA and Section 12 of the Regulations. At the conclusion of the comment period, June 1, 1999, DNREC-SIRB reviewed and considered all of the comments received to the Proposed Plan. The comments received and the Department's responses are addressed in the attached document in "Departmental Response to Public Comments on the Proposed plan of Remedial Action". The Department issues this Final Plan of Remedial Action, which designates the selected procedures and stipulations concerning current and future activities. The Proposed Plan, the comments received from the public, the Department's responses to the comments, and the Final Plan of Remedial Action constitute the remedial decision record.

The contents of this Final Plan includes a description of the Site, the analytical results of the RI, and a discussion of the FS for the Site.

Site Description and History

The Newark Lumber Site is located along East Main Street in the center of the City of Newark as shown in Figure 1. It is bounded by East Main Street to the north, Chapel Street to the west, Delaware Avenue to the south and an abandoned railway to the east.

The Site (Figure 2) occupies two parcels totaling approximately 2.2 acres of commercial/industrial property in central Newark. Surrounding properties are commercial/industrial, with a Burger King to the south, and a Mobil gas station to the west. Properties within the vicinity of the Site are mixed commercial/industrial and residential.

The Site has operated as a lumber and coal storage yard since at least 1891, with the majority of the Site utilized for lumber storage since 1926, according to a Sanborn Fire Insurance Map and deed records search, as noted in a February, 1998, Phase I Environmental Site Assessment by TetraTech,

Inc. In addition to lumber, the Site stored farm supplies, fuel oil, and coal. A railroad spur was reported to have entered the Site in the past. At present, only one two-story building exists on-site, with six structures removed in October 1998.

Two documented petroleum spills have been noted at the facility. In March 1978, approximately 1,200 gallons of fuel oil was spilled in the south-central section of the Site. An unknown quantity of material was recovered and removed off-site. In May 1994, a smaller, 200 gallons of fuel oil was spilled on-site, which was collected and staged for bioremediation.

III INVESTIGATION RESULTS

In November 1998, a FE was conducted by DNREC-SIRB in accordance with the Regulations. The purpose of the investigation was to determine the presence or absence of contamination in surface soil, subsurface soil, and groundwater; and to assess the potential for impact to receptors. The scope of work included 49 surface and subsurface soil samples and groundwater samples from four on-site monitor wells.

Soil samples were screened by use of the DNREC Mobile Laboratory for metals, polynuclear aromatic hydrocarbons, ("PAHs") pesticides and polychlorinated biphenyls ("PCBs"). Confirmatory soil samples, and all groundwater samples were submitted for laboratory analysis at DNREC's Environmental Services Laboratory in Dover, in accordance with the DNREC Standard Operating Procedures for Chemical Analytical Programs procedures and methods.

Several contaminants of concern were identified in site soils, which exceeded DNREC Uniform Risk Standards ("URS"), including metals and petroleum compounds. Of those, arsenic, two PAH compounds-- benzo(a)pyrene, benzo(b)fluoranthene-- and petroleum hydrocarbons were identified as the most ubiquitous and problematic. Elevated concentrations of arsenic and the PAH's were generally limited to surface soils (i.e. less than 2 feet below surface), and found across the Site. However, highest concentrations were found in the southern portions of the property bordering Delaware Avenue. Petroleum hydrocarbons were limited to two areas, one of which is associated with the historical releases along the southern portion of the property. The second area borders Chapel Street and was only found at depths greater than 8 feet below surface.

Groundwater samples contained the solvent tetrachloroethylene ("PCE") and the pesticide dieldrin above drinking water standards. Very low levels of petroleum were also found in groundwater.

The Responsible Party ("RP") signed a Voluntary Cleanup Program ("VCP") allowing Duffield, the RP's consultant, to conduct a RI/FS at the Site.

Subsequent soil sampling was performed by Duffield in the spring of 1999 for purposes of further delineating arsenic concentrations in surface soil. All of these samples were submitted for laboratory analysis at STL-Envirotech in Edison, NJ. Additionally, a trench was excavated to identify the possible source of the petroleum release adjacent Chapel Street. The results of this trenching indicated an off-site source for the petroleum. A review of the DNREC-Underground Storage Tank Branch's files indicated that a PCE release had been documented upgradient of the Site, and thus the source was not associated with the Newark Lumber facility. Based upon groundwater flow gradients calculated for the Site, DNREC-SIRB has concluded that the source of the dieldrin is upgradient and off-site.

According to HSCA regulation 8.4(1) Remedial Action Objectives ("RAOs") must be established for all Plans of Remedial Action. The remedial action is evaluated utilizing both the Qualitative and Quantitative Objectives. The following considerations were taken into account in the development of the Qualitative and Quantitative Objectives:

- The Site will be developed into residential and commercial property;

The Qualitative Objectives for this site are:

- Removal of soils off-site which contain higher levels of contaminants of concern;
- Prevent human contact with soils containing lower-levels of contaminants of concern;
- Prevent exposure to contaminated groundwater.

Based on the qualitative objectives, the quantitative objectives that the DNREC-SIRB determined will meet the qualitative objectives include:

SOIL REMEDIATION

• C5 through C8 petroleum hydorcarbons	275 mg/kg
• C9 through C 18 petroleum hydrocarbons	7,200 mg/kg
• Arsenic	7.4 mg/kg
• benzo(a)pyrene	0.9 mg/kg

"HOT SPOTS"

• arsenic	41.9 mg/kg

Four remedial alternatives were evaluated to address the soil RAOs. The alternatives for soils are as follows:

Alternative 1: No action. The site would be developed without any DNREC-SIRB requirements to remedy any soil and groundwater.

Alternative 2: Excavation and removal for off-site disposal of highly-impacted, arsenic- and petroleum-laden soils above the quantitative RAO standards. Containment of the remaining, but lower-contaminated arsenic- and petroleum-impacted soil under layers of : 1) a demarcation geotextile, 2) 1.5 to 3 feet of clean soil, 3) 9-inch gravel subbase, and 4) 3.5 inch bituminous concrete. Placement of a deed restriction that prohibits excavation in the area of concern identified on a property map, without DNREC-SIRB approval.

Alternative 3: Excavation and removal for off-site disposal of highly-impacted, arsenic- and petroleum-laden soils above the quantitative RAO standards. Excavation and placement of the remaining, but lower-contaminated arsenic and petroleum-impacted soil under a building footprint. Placement of a deed restriction that prohibits excavation in the areas of concern identified on a property map, or demolition of the aforementioned building without DNREC-SIRB approval (i.e. under the building footprint). Some petroleum soils at concentrations

above RAO's may remain in the subsurface at depths greater than 4 ft. It has been determined during the RI/FS that the petroleum contained in the soil is substantially weathered, rather immobile, and therefore does not pose a threat to human health and the environment.

Alternative 4: Excavation and placement of all contaminated soils that exceed the quantitative RAO's under a building footprint.

The details of each soil remedial alternative are conveyed in the Duffield RI/FS Report for the Site. The groundwater contamination will be addressed as a separate operable unit. Since the source of groundwater contamination is from off-site sources, DNREC will have to conduct further investigation to determine the sources before arriving at an appropriate remedy.

IV FINAL PLAN OF REMEDIAL ACTION

Based upon the information and results of the investigation performed at the Newark Lumber facility in Newark, Delaware, the DNREC-SIRB Final Plan of Remedial Action is Alternative 3. Alternative 3 meets most of the criteria utilized in the evaluation of remedial alternatives that is conveyed in Subsection 8.5 of the Regulations and is the most cost effective remedy. Additional information regarding the evaluation of the remedial criteria is contained in the Duffield RI/FS Report for the Site.

V PUBLIC PARTICIPATION

The Department actively solicited public comments or suggestions on the Proposed Plan of Remedial Action and welcomed opportunities to answer questions. A Public meeting on the Proposed Plan was held at Newark High School on May 19, 1999 to present to the public the Department's Proposed Plan.

The comment period began on May 13, 1999 and ended at the close of business (4:30 p.m.) on June 1, 1999. Two (2) comment letters, containing numerous public comments, were received at the DNREC office prior to the close of the comment period. These comments were addressed in "Departmental Response to Public Comments on Proposed Plan of Remedial Action (DE-1140) and was completed on June 14, 1999 and are attached in Appendix A.

VI DECLARATION

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

William H. Hill 6-29-99

William H. Hill, Acting Director Date
Division of Air and Waste Management

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Figure 1: Site Location

0.02 0 0.02 0.04 Miles

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Figure 2: Facility Plan

Figure 3: Soil Sampling Locations

0.01 0 0.010.02 Miles

NEWARK LUMBER SITE

Departmental Response to Public Comments

on

Proposedl Plan of Remedial Action

DE-1140

June 1999

Delaware Department of Natural Resources and Environmental Control
Division of Air and Waste Management
Site Investigation and Restoration Branch

Department Responsiveness Summary for Public Comments

Copies of comment letters submitted by the public are attached herewith – Attachment #1. Relevant excerpts from the comment letters and the Department's responses are provided below. Please refer to Attachment #1 for a full text of the comment from each letter.

Comments from Gerald J. Kauffman, P.E., University of Delaware, dated May 20, 1999.

1) *"We are concerned about the high levels of petroleum and dieldrin which probably came from off-site sources. Continued monitoring and evaluation of these of-site sources in recommended."*

Departmental Response: The Delaware Department of Natural Resources and Environmental Control, Site Investigation and Restoration Branch ("DNREC-SIRB") is equally concerned about these contaminants in groundwater. DNREC-SIRB plans on conducting a more extensive groundwater investigation in the central Newark area to identify and address the plumes and potential sources of these, and other, groundwater contaminants which have been identified in the area.

2) *"Some of the existing groundwater monitoring wells on site should be left intact to monitor groundwater quality after remediation of the site."*

Departmental Response: Part of the Final Plan of Remedial Action for the Newark Lumber Site will be to retain these monitor wells for future groundwater sampling, or at a minimum, retain DNREC-SIRB's access and right to install new or replacement wells should the existing wells be abandoned or damaged due to remedial activities and/or construction at the Site.

3) *"The proposed excavation and capping of soils should not impede the adjacent Pomeroy Railroad right of way which has been identified for a possible greenway or bicycle corridor. We recommend that you coordinate with the DNREC Division of Parks and Recreation on this issue."*

Departmental Response: Neither the remedial activities nor the scheduled construction at the Newark Lumber Site are anticipated to impinge upon the abandoned railway property. At most, there might be temporary, periodic truck traffic and/or surveyors on the property during remediation and/or construction.

Comments from Jean S. White dated May 31, 1999.

4) *"I do wonder why, if the decision was made to put in four monitor wells to sam*ple *groundwater, one of these four was not in the southernmost part of the site."*

Departmental Response: Due to access restrictions (overhead powerlines), installation of a monitor well was not feasible at this location. Previous "wells" were temporary well points installed via geoprobe. Results from this method of groundwater sampling are not always the most accurate. Additionally, as wells on the DelChapel site are located only ~100 to 150 feet south of the Newark Lumber Site boundary, the dual-use of these wells represents an effective and cost-effective method of assessing whether contaminants from the Newark Lumber Site are migrating off-site.

5) *"Why was the practical quantitation limit (PQL) here 10 mg/liter, but in the Duffield report 0.25 mg/liter, when exactly the same laboratory, AccuQual Laboratories, Inc., did the DRO analyses both for Duffield Associates and for TetraTech? Is there a decimal point off or some other mistake in one of the reports?"*

Departmental Response: DNREC-SIRB can not explain the reported disparity between the two PQL's. However, it should be noted that present remedial decisions and activities at the Newark Lumber Site were not based upon either of these older investigations but the more recent Facility Evaluation and subsequent Remedial Investigation.

6) *"I think it would be prudent to briefly install one additional monitor well at the southernmost edge of the site mid-distance between east and west side, and take groundwater samples to be tested not only for TPH-DRO as was done before, but also for other organic compounds not tested here by either Duffield Associates or TetraTech, that may be carried down to the groundwater by the organic petroleum."*

Departmental Response: See response to comment #4 above.

7) *"...I wonder if some of the groundwater from the Newark Lumber site surfaces in the wetland area or the tributary that flows out of it. That is, could any of the contamination in the groundwater of the Newark Lumber site soon rise to the surface immediately south of the site?"*

Departmental Response: While groundwater flow is in the general direction of the referenced wetlands, three monitor wells installed across Delaware Avenue at the DelChapel Site in-between Newark Lumber Site and the wetlands did not detect petroleum contamination which may be attributable to the Newark Lumber Site. Thus, it is unlikely that groundwater contaminants from this facility would have reached the wetlands without being detected in these wells first.

8) *"Rather than rely on monitor wells put on the DelChapel site for that environmental assessment, I think it would be wise to test groundwater samples from a fifth monitor well at the southernmost boundary of the Newark Lumber site more broadly for all organics."*

Departmental Response: See response to comment #4 above.

9) *"It is not clear to me (1) how the 7200 mg/kg value was arrived at, and (2) how the number will be applied in practice. Does this mean that all soils above 7200 mg/kg will be removed from the site, except 4 ft below the surface? And, what level of petroleum-impacted soils will remain on the surface for people to come in contact with? Would (as implied on page 20 of the Remedial Investigation/Feasibility Study report of April/May 1998* [sic]*) soils containing petroleum less than 7500 mg/kg in the southernmost portion of the site also be removed? Would any petroleum-impacted soils lower than 4 ft. below the surface be removed"*

Departmental Response: The petroleum remedial action objective of 7200 mg/kg was derived as part of the risk assessment which was included within the Remedial Investigation/ Feasibility Study. Please refer to the RI/FS report.

10) "Does this mean that arsenic-containing soils above 41.9 mg/kg will be removed off-site for disposal, and soil between 7.4 mg/kg and 41.9 mg/kg will be put under the footprint of the building?"

Departmental Response: Yes

11) "What will be the arsenic levels on the final surface of the soil that future residents and passersby will come in contact with?" I note that the Unrestricted Use Uniform Risk-Based Remediation Standard (URS) for Human Health is 0.4 mg/kg, whereas the soil remediation quantitative objective for arsenic for this particular project is 7.4 mg/kg, 18-fold higher than the URS. Is 7.4 mg/kg arsenic considered "background", and is that a fair assumption?"

Departmental Response: The maximum concentration of arsenic which will remain on surface soils will be 7.4 mg/kg, the remediation standard for the site. Please note that several feet of clean fill will be brought into the site from a clean borrow source to bring to grade the areas which had been excavated. Arsenic concentrations in these soils will be naturally-occurring. In response to the second part of the query, yes, the referenced 7.4 mg/kg arsenic is the background value for arsenic. Remediation to naturally-occurring background values is one of the three methods provided for in the Delaware Remediation Standards Guidance (February, 1998), and in fact, is the most conservative of the three methods.

12) "...I am wondering the reason for the 7.4 mg/kg objective."

Departmental Response: The 7.4 mg/kg remedial action objective for arsenic was determined as part of the risk assessment which was included within the Remedial Investigation/ Feasibility Study, and represents the background value for arsenic. Please refer to the RI/FS report.

13) "*What calculations originally went into setting the Unrestricted Use URS for arsenic of 0.4 mg/kg?"*

Departmental Response: Please refer to the Delaware Remediation Standards Guidance (February, 1998).

14) *"After contaminated soils are removed from the site, or placed under the to-be-constructed building, will follow-up testing be done to see that the Remedial Action Objectives are met?"*

Departmental Response: Yes, confirmatory sampling will be conducted following excavation in order to confirm that the Remedial Action Objectives were met.

15) *"Since the "arm" of the Newark Lumber site does not go completely over to South Chapel Street (shown incorrectly in Figures 4 & 5) it might be good to revise the Figures or make a note that MW-3 and SB23 are not located immediately next to South Chapel Street, should results from these tests be used for something else in the future."*

Departmental Response: Following remedial activities, a surveyed, to-scale, as-built map will be drafted to document final site conditions following remediation.

16) *"The discovery of dieldrin's presence in the groundwater represents an intriguing puzzle: where did it originate, what did its source use it for, and how did the dieldrin get into the groundwater?"*

Departmental Response: Identification of the source and distribution of dieldrin in the various media (e.g. soil, groundwater) will be one of the objectives of the forthcoming Departmental groundwater investigation in the central Newark area.

17) *"Did dry cleaning businesses in the United States and in Newark use dieldrin for mothproofing? And in particular, did the now defunct dry cleaners just north of the Newark Lumber site do so? When the site* [i.e. the dry cleaners] *was investigated in the last (seven?) years, was the soil and groundwater tested for dieldrin?"*

Departmental Response: DNREC-SIRB is unaware of whether dieldrin was utilized in dry cleaning establishments, particularly the facility in question. Pesticides were not included in the analyses performed during previous investigations of the dry cleaning facility, but dieldrin will be targeted in forthcoming investigations.

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