FINAL PLAN OF REMEDIAL ACTION

701 A Street
(Delaware Humane Association)

701 A Street
Wilmington, Delaware

November 21, 2011
DNREC Project No. DE-1376

This Final Plan of Remedial Action (Final Plan) presents the Department of Natural Resources and Environmental Control's (DNREC) intention to address environmental contamination at the 701 A Street Site.

DNREC issued public notice of the Proposed Plan of Remedial Action (Proposed Plan) for the 701 A Street Site on October 19, 2011 and opened a 20-day public comment period that ended on November 7, 2011. The Proposed Plan is attached. The Department received written comments from the public regarding the Proposed Plan. The Department coordinated with the interested parties and prepared a response to these comments, which is included in Attachment A. The Proposed Plan has been adopted as the Final Plan.

DNREC requires the following remedial actions be performed on the 701 A Street Site:

1. Recording of an Environmental Covenant consistent with Delaware's Uniform Environmental Covenants Act (Title 7, Del. Code Chapter 79, Subtitle II) (UECA) on the property deed. The Covenant will: a) restrict the installation and use of groundwater wells for drinking water supply; b) identify the Site as located within a Groundwater Management Zone; and c) restrict property to non-residential use.

2. Development and implementation of a DNREC-approved Long Term Stewardship (LTS) Plan to ensure that the enacted protective measures are properly maintained including maintenance of the cap and landscaped areas.

3. Development and implementation of a Contaminated Materials Management Plan (CMMP) to ensure that contaminated materials are properly managed and/or disposed off-Site and worker health and safety is protected.

Approval:
This Final Plan meets the requirements of the Hazardous Substance Cleanup Act.

11.28.11

Marjorie A. Crofts, Director
Division of Waste and Hazardous Substances

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ATTACHMENT A
Response to the Public Comments on the Proposed Plan of Remedial Action
701 A Street Site (DE-1376)

Comments from the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service Office of Response and Restoration Assessment and Restoration Division were the only comments received for the Proposed Plan. The comment letter was received from NOAA on November 3, 2011. The following response has been sent to address the comments.

Comment #1: The Proposed Plan states that 701 A Street has been filled with slag and incinerator ash. The plan states that "arsenic, barium, cadmium, copper, lead, mercury, nickel, zinc, toluene, phenanthrene, benzo(a)anthracene, and benzo(a)pyrene are COCs in Site sediment. These findings are consistent with contaminants found in sediment along the Christina River. "It is unclear whether the investigations have determined that the 701 A Street Site is/was a source of contamination to the Christina River and if adverse ecological impacts are predicted based upon concentrations of these contaminants."

Response #1: The concentrations of contaminants in river sediment adjacent to 701 A Street were compared to contaminant concentrations in sediment from the Burns & McBride Site (105 South Market Street) which is located approximately 2,000 feet upstream of the 701 A Street Site. The sediment HSCA data for organics from each Site were compared and only phenanthrene (0.65 J mg/kg to 0.2 J mg/kg) was detected at a higher concentration in 701 A Street sediment.

The sediment screening data for metals from each Site were compared and mean concentrations were calculated. When the mean concentrations were compared, only barium, manganese, and vanadium were detected at a higher concentration in sediment at 701 A Street. Of these, only manganese was detected above URS concentration in groundwater, and only vanadium was considered a contaminant of concern in Site soil (only in the area of GP6 and GP10). Therefore, it appears that only manganese and vanadium from the Site could potentially be impacting the sediment. Arsenic, the main contaminant of concern in groundwater and soil, is found at a fairly low concentration in sediment, and the maximum detected value (15.0 mg/kg) is considerably less than the maximum detected at the Burns & McBride Site (28.2 mg/kg). Data collected during a baseline sediment assessment conducted by DNREC-SIRS in the summer of 1995 (Olinger, 1997) indicate that arsenic concentrations in sediment along the Christina River generally contain 9.45 mg/kg to 43.8 mg/kg arsenic. This study included eight stations ranging in distance from approximately 500 feet upstream of the Burns & McBride Site to nearly 3 miles upstream (near Newport). Based on this data, it does not appear that Site soil contamination is significantly impacting the Christina River sediment near 701 A Street.

Comment #2: Capping is proposed at the Site to prevent exposure to surface and subsurface soils. Access to sediment will be restricted with a secure fence to prevent human contact with the impacted sediment. Please provide more information as to whether adverse impacts to ecological receptors are predicted based upon exposure to impacted sediment. A secure fence will not reduce ecological exposures. Restoration and/or preservation of the riparian area along the Christina River should be considered to protect against migration of contaminants to aquatic areas and to aid in natural recovery/attenuation. NOAA recommends at a minimum a 50-100 ft. vegetated buffer be preserved along the Christina River at this Site. Further information should also be provided regarding contaminant levels in sediment adjacent to the Site relative to contamination found in the Christina

River as well as on-going efforts and best management practices designed to clean up, restore, and protect the Christina River. Establishment of functioning riparian buffers should be an important component.

Response #2: Removing existing sediment or stabilizing the shoreline in this section will not prevent impact to the sediment from upstream sources. Under the proposed remedy, the Site will be capped, which will eliminate the pathway for Site runoff to reach the River. Under current conditions, the Site is well vegetated and no erosion to the river was observed. Site Sediment and Stormwater plans are being prepared to address best management practices for managing Site runoff.

The Delaware Humane Association's (DHA) redevelopment plans include maintaining the existing fence line and mature vegetation that currently exists along the River bank. This is an approximately 50 foot area of vegetation. Additionally, the majority of the property will remain a vegetated, grassed open area as it is today.

As DHA is a non-profit funding, is not currently available to create Riverbank improvements. However, DHA would support any improvements to the River bank such as an extension of the Riverwalk or an improved riparian buffer.

PROPOSED PLAN OF REMEDIAL ACTION

701 A Street
(Delaware Humane Association)
Wilmington, Delaware
DNREC Project No. DE-1376

October 2011

Delaware Department of Natural Resources and Environmental Control
Division of Waste and Hazardous Substances
Site Investigation & Restoration Section
391 Lukens Drive
New Castle, Delaware 19720

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PROPOSED PLAN OF REMEDIAL ACTION

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(Delaware Humane Association)
Wilmington, Delaware
DNREC Project No. DE-1376

Approval:
This Proposed Plan meets the requirements of the Hazardous Substance Cleanup Act.

Approved by:

Marjorie A. Crofts, Director
Division of Waste and Hazardous Substances

10.12.11
Date

701 A Street

What is the 701 A Street Site?

The Site is the current location of the Delaware Humane Association (DHA). The Site is depicted in Figure 1. DHA entered into a Brownfields Development Agreement (BDA) with the Department of Natural Resources and Environmental Control (DNREC) – Site Investigation and Restoration Section (SIRS) to perform a Brownfield Investigation and address contamination determined to be present on the Site.

Tax Parcel Number: 26-050.00-039
Address: 701 A Street; Wilmington, Delaware
Nearest major intersection: A Street and South Heald Street
Area: 4.52 acres
Surrounding Property: The property is bound by the Christina River to the north and A Street to the south. The property is bordered to the east by an approximately 60 foot wide strip of vacant land, which separates the property from the Diamond Oil Site (DE-1129), a former salvage yard and leaking underground storage tank (LUST) site is located to the west of the property.
Zoning: 26W4 – Waterfront Residential/Commercial
Site Utilities: Electric, water, sewer.
Surface water: Christina River borders the Site to the north.
Topography: The Site has elevations which range from 4 to 7 feet and is predominantly covered by buildings, vegetation, and a blacktop-surfaced parking lot.
Groundwater: Groundwater was encountered at depths ranging from 4 to 6 feet below ground surface. The majority of the groundwater flows southwest, away from the Christina River. On the northern portion of the property, the groundwater may flow northward, toward the Christina River.

What happened at the 701 A Street Site?

The Site is located in an area of Wilmington that has been in continuous industrial use since the late 1700's. The Site was historically maintained primarily as wooded land until it was commercially developed by DHA after its purchase in 1966. Site investigations indicate that portions of the Site are filled with industrial fill (5 - 6 feet deep).

What is the environmental problem at the 701 A Street Site?

Environmental investigations determined the following constituents to be contaminants of concern (COCs) for unrestricted use in soil: Arsenic, benzo(a)pyrene, antimony, cadmium, lead, vanadium, and zinc. Arsenic is the only COC in Site groundwater. Arsenic, barium, cadmium, copper, lead, mercury, nickel, zinc, toluene, phenanthrene, benzo(a)anthracene, and benzo(a)pyrene are COCs in Site sediment.

The following environmental investigations were performed on the 701 A Street site:

- 2006: Action Environmental Services Corp. conducted a Phase I and Phase II Environmental Site Assessment. The investigations found that the Site had historically been

filled with slag and incinerator ash. Samples were screened by the DNREC-SIRS laboratory, but not sent to a commercial lab for confirmatory analysis. The metals, Arsenic, Barium, Cadmium, Chromium, Copper, Iron, Lead, Manganese, Mercury, Nickel, Thallium, and Vanadium were all found to exceed the unrestricted use URS. Polycyclic Aromatic Hydrocarbons (PAHs), Total Petroleum Hydrocarbons (TPH), Gasoline Range Organics (GRO), naphthalene, and "possibly" Polychlorinated Biphenyls (PCBs) were also detected in soils.

- 2007: BrightFields conducted a Site Inspection. The investigation identified a potential underground storage tank (UST), some subsurface oil contamination on the eastern side of the Site, metals and PAHs. The subsurface oil, metals and PAHs appear to be associated with historic fill and contamination from adjacent sites to the east. Upon further review, no actual evidence was discovered regarding the possible UST. It was attributed to the presence of concrete and backhoe refusal.

- 2008: BrightFields conducted a Brownfield Investigation (BFI). Arsenic, benzo(a)pyrene, antimony, cadmium, lead, vanadium, and zinc are COCs under unrestricted use in soil. Arsenic is the only COC in Site groundwater. Arsenic, barium, cadmium, copper, lead, mercury, nickel, zinc, toluene, phenanthrene, benzo(a)anthracene, and benzo(a)pyrene are COCs in Site sediment. These findings are consistent with contaminants found in sediment along the Christina River.

- 2009: BrightFields conducted a Supplemental Brownfield Investigation (BFI) to further evaluate the elevated metals area identified on the western portion of the property, the extent of the petroleum contamination on the eastern portion of the property, and to further examine the groundwater flow to assess why it is flowing away from the river, and if the groundwater is contributing dissolved arsenic to any off-site properties. The report concluded that the metals were generally consistent site-wide and the petroleum impact was limited. It also confirmed that groundwater flow is to the South. Data also showed elevated arsenic concentrations in groundwater on properties south of A Street and throughout the marsh area.

- 2011: BrightFields conducted an additional Supplemental Brownfield Investigation (BFI) to further delineate the extent of petroleum contamination on the western portion of the property, to update the site assessment with the supplemental data. No source of petroleum contamination was found on-site. Site petroleum contamination was attributed to offsite migration from the Diamond Oil Site (DE-1129) and nearby leaking underground storage tank (LUST) sites and historical fill. The revised risk assessment concluded that COCs in soil for a restricted use setting are arsenic, benzo(a) pyrene, lead, zinc and cadmium.

What does the owner want to do at the 701 A Street Site?

The proposed redevelopment plan for the Site includes demolishing the current buildings located on the Site and building a new 11,000 square foot facility to house DHA's animal shelter and administrative buildings with the surrounding land to be developed into dog runs, open space, and a parking lot.

What remedial actions are proposed at the 701 A Street Site?

DNREC's Proposed Plan includes capping the Site with at least one foot of clean fill or impervious material such as buildings, asphalt, or concrete. Capping is proposed at the Site to prevent exposure to surface and subsurface soils. Access to sediment will be restricted with a secure fence to prevent human contact with the impacted sediment. The City of Wilmington Groundwater Management Zone (GMZ) will be maintained through institutional controls.

DNREC requires the following remedial actions be performed on the 701 A Street Site:

1. Capping the Site with at least one foot of clean fill or impervious material such as buildings, asphalt, or concrete and restricting access to the site sediment with a secure fence.

2. Recording of an Environmental Covenant consistent with Delaware's Uniform Environmental Covenants Act (Title 7, Del. Code Chapter 79, Subtitle II) (UECA) on the property deed. The Covenant will a) restrict the installation and use of groundwater wells for drinking water supply, b) identify the Site as located within a Groundwater Management Zone and c) restrict property to non-residential use.

3. Development and implementation of a DNREC-approved Long Term Stewardship (LTS) Plan to ensure that the enacted protective measures are properly maintained including maintenance of the cap and landscaped areas.

4. Development and implementation of a Contaminated Materials Management Plan (CMMP) to ensure that contaminated materials are properly managed and/or disposed off site and worker health and safety is protected.

What long-term stewardship requirements are proposed for the 701 A Street Site?

The long-term stewardship requirements proposed for the 701 A Street Site require: continued adherence to the DNREC-approved LTS Plan and the Environmental Covenant recorded on the property deed.

DNREC will issue a Certification of Completion of Remedy (COCR) for the 701 A Street Site following the completion of the aforementioned remedial actions.

How can I find additional information and/or comment on the Proposed Plan?

The complete file on the Site, including the Environmental Site Assessment and the Brownfield Investigation report, is available at the DNREC office, 391 Lukens Drive in New Castle. Most documents are also found on:

http://www.nav.dnrec.delaware.gov/DEN3/

The 20-day public comment period begins on Wednesday, October 19, 2011, and ends at close of business (4:30 pm) on Monday, November 7, 2011. Please send written comments to the DNREC office or call Wendy March, Project Manager, at: 302-395-2600.

WAM:tlw; WAM11026.doc; DE 1376 II B8

Glossary of Terms
Used in this Proposed Plan

Contaminants of Concern (COC)	These are potentially harmful substances at concentrations above acceptable levels (e.g. metals and PAHs).
Certification of Completion of Remedy (COCR)	A formal determination by the Secretary of DNREC that remedial activities required by the Final Plan of Remedial Action have been completed.
Final Plan of Remedial Action	DNREC's adopted plan for cleaning up a hazardous site.
Hazardous Substance Cleanup Act (HSCA)	Delaware Code Title 7, Chapter 91. The law that enables DNREC to identify parties responsible for hazardous substances releases and requires cleanup with oversight of the Department.
Proposed Plan of Remedial Action	DNREC's initial plan for cleaning up a hazardous site, which is subject to public comment before being adopted as final.
Site Inspection (SI)	Environmental study of a site which includes the sampling of soils, groundwater, surface water, sediment and/or wastes on the property, as appropriate. This evaluation is performed on behalf of the United States Environmental Protection Agency (U.S. EPA).
Brownfield Investigation (BFI)	Thorough environmental study of a site which includes 1) sampling of site environmental media and/or wastes on the property and 2) conducting a preliminary risk assessment using the data collected to determine the risk posed to human health and the environment.
Risk	Likelihood or probability of injury, disease, or death.
Brownfield Development Agreement (BDA)	This legal agreement is between a potential developer of a Delaware-certified Brownfields Site and the DNREC. The developer agrees to investigate and cleanup a Brownfields property under the oversight of the Department in exchange for liability protection.
Uniform Environmental Covenant Act (UECA)	Deed restrictions on the site. These can include restrictions on soil intrusion, groundwater usage or usage of the site based on the extent of the cleanup.
Uniform Risk-Based Remediation Standards (URS)	A set of concentration criteria for various contaminants potentially present in site media that are developed for protection of human health and the environment

What is a *Proposed Plan?*

A Proposed Plan of Remedial Action (Proposed Plan) is a summary of how DNREC plans to clean up a contaminated site. A Final Plan of Remedial Action (Final Plan) is the adoption of the Proposed Plan after all comments made by the public, within the comment period of twenty days, have been considered and addressed by DNREC.

The Delaware State Legislature passed the Hazardous Substance Cleanup Act (HSCA) in 1990. The Legislature made sure that members of the public would be informed about environmental problems in their own neighborhoods and have a chance to express their opinion concerning the cleanup of those environmental problems before DNREC takes action.

After DNREC studies a site, it summarizes the problems there and proposes one or more possible solutions in a Proposed Plan. The Proposed Plan contains enough information to allow lay persons to understand the site. More detailed information can be found in the reports and documents approved by DNREC. All of the documents and reports created by DNREC or consultants during the course of the investigation of the site are available to the public at the offices of DNREC-SIRS or at DNREC's Delaware Environmental Navigator website:

http://www.nav.dnrec.delaware.gov/DEN3/

DNREC issues the Proposed Plan by advertising it in at least one newspaper in the county where the site is located. The legal notices for the Proposed Plans and the Final Plans usually run on Wednesdays or Sundays in the legal classified section of the News Journal and/or the Delaware State News. The public comment period begins on the day (Wednesday), or the day after (Sunday) the newspaper publishes the legal notice for the Proposed Plan.

DNREC frequently holds public meetings during the comment period. Those meetings are usually held during a weekday evening, at a location near the site. Citizens can request a public meeting if DNREC did not already schedule one.

The public may comment on the Proposed Plan by letter or email, or at the public meeting. DNREC considers all comments and questions from the public before the Proposed Plan is finalized and adopted as a Final Plan.

Figure 1: Site Location Map

Figure 2: Site Location Boundary Map

Figure 3: Eastern Portion of Site (Location of Proposed Construction)

Figure 4: View facing Christina River