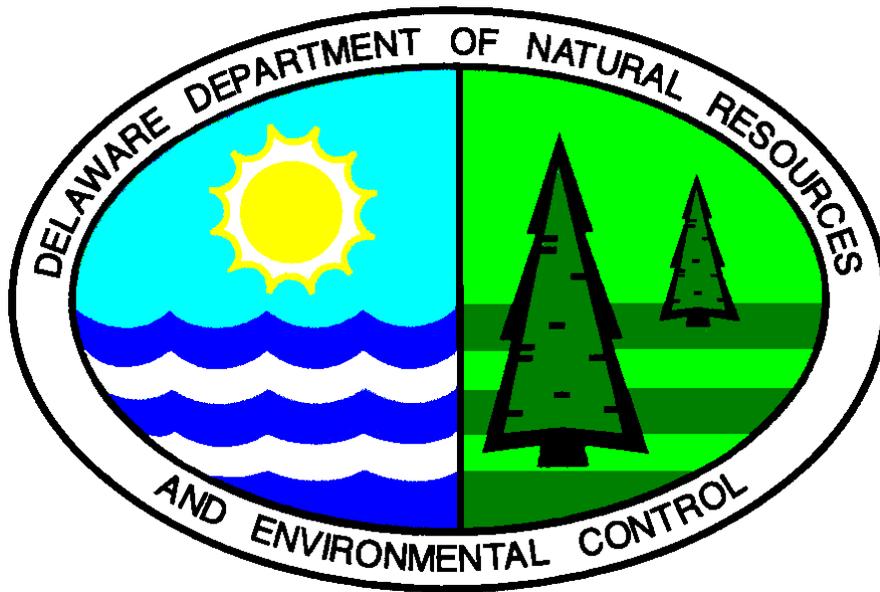


**SECOND REVISED  
FINAL PLAN OF REMEDIAL ACTION  
FOR THE  
NVF-NEWARK COMPANY SITE  
NEWARK, DELAWARE**



**September, 2000**

**DNREC Project DE-199  
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**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 April 1998, Environmental Alliance, Inc. (“Alliance”), on behalf of Commonwealth Management, Inc., conducted a Facility Evaluation (“FE”) and Focused Feasibility Study (“FFS”) of the National Vulcanized Fibers (“NVF”) Company facility in Newark, Delaware under the direction of the Hazardous Substance Cleanup Act (HSCA)-Voluntary Cleanup Program (VCP). The FE/FFS was conducted in accordance with the Delaware Regulations Governing Hazardous Substance Cleanup (“Regulations”) and the FE/FFS workplans previously approved by the Department of Natural Resources and Environmental Control, Site Investigation and Restoration Branch (“DNREC-SIRB”). The FE/FFS included the sampling of surface soil, subsurface soil, surface water, sediments, and groundwater at various locations throughout the facility. The FE was completed in December 1998 and the FFS was completed in March 1999. The Department has determined that the FE completed for this site meets the requirements established for performing a Remedial Investigation (RI) in the Regulations.

In May 1999, DNREC-SIRB issued a Final Plan of Remedial Action (“Final Plan”) for the site. In May 2000, DNREC-SIRB issued a Revised Final Plan of Remedial Action (“Revised Final Plan”) which incorporated a number of revisions to the Final Plan. In June 2000, Commonwealth Management, Inc. requested another change to the Revised Final Plan, and DNREC –SIRB issued the Second Revised Proposed Plan of Remedial Action in July 2000 incorporating the requested revision.

## **II PURPOSE**

This document is the Second Revised Final Plan of Remedial Action (“Second Revised Final Plan”) for the NVF-Newark Company 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 (“Regulations”).

The Final Plan also includes a comparison of the remedial alternatives with respect to but not limited to: current and potential land use, natural resource use, proximity of human populations, use of surrounding properties, specific environmental issues (soil and ground water), protection of public health, welfare, and the environment, and compliance with applicable laws and regulations.

DNREC-SIRB provided public notice and opportunity to comment on the Second Amended Proposed Plan in accordance with Section 12 of the HSCA Regulations. The Second Amended Proposed Plan, which designated the selected procedures and stipulations concerning current and future activities, the revised Proposed Plan, any comments received from the public, the Department’s responses to the comments, and all of the site documents forming the basis for the Second Amended Proposed and Final Plans will constitute the remedial decision record required for the Second Revised Final Plan.

### III SITE DESCRIPTION AND HISTORY

The NVF-Newark site is located in the northern portion of the City of Newark as shown in Figure 1. The site is bounded by Margaret and Race Streets and the White Clay Creek. The site (Figure 2) occupies approximately 20± acres, as reported by NVF. The Curtis Paper Mill is located approximately 0.1 miles to the northwest along Paper Mill Road. This property is upstream of the NVF facility along White Clay Creek. Properties to the south and northeast of the NVF facility are primarily residential. The land directly across White Clay Creek to the north appears to be agricultural and undeveloped. A commercial automobile sales lot is adjacent to the southeastern part of the NVF facility.

The site was used as a mill for fiber products since the late nineteenth century. The mill expanded and operated up to its closing in 1990. The facility was used for the production of waterleaf paper and vulcanized fiber products in the form of boards, sheet and tubes. Additionally, insulating fiber blocks were produced for the railroad industry. Cloth rags were the raw material used to create a pulp for these processes. Aluminum sulfate (alum) was used in the pulp digestion process to reduce the pH of the pulp to 3.0. Zinc chloride was used in the laminating process. Zinc chloride solutions were utilized in wooden vats to treat fiber products. Pigment and dyes were also used in the process. Other material used included fuel oil, hydraulic oils, and solvents (mineral spirits) for plant operations. The primary waste generated by the plant was zinc chloride sludge.

The plant is constructed in part with wood and soil floors which may have allowed spills of zinc chloride solutions to enter the soil. The cutting and grinding operations generated waste water and cellulose fibers. Process wastewater was pumped through an industrial waste force main to the county sewer system, while the dried cellulose fibers were placed in three on-site drying beds. Non-contact cooling water, used for the surface condensation (which concentrated zinc chloride sludge), was discharged into White Clay Creek. Surface water runoff from the exterior of the plant also discharged into White Clay Creek.

In February 1998, DNREC and Commonwealth Management, Inc., signed a VCP Agreement allowing Alliance, the consultant to Commonwealth Management, Inc., to conduct a FE at the site. The FE was conducted to determine the type and source of contamination and whether cleanup at the site was necessary.

In April 1998, Alliance conducted the FE at the NVF-Newark site in accordance with the Regulations and the FE/FFS workplan approved by DNREC-SIRB. The Department requested that the investigation determine the existence, or non-existence of contamination in site soils, groundwater, and surface water, and sediment of White Clay Creek adjacent to the northern portion of the site. The scope of work included 38 sampling locations for surface soil, 10 for surface water, 10 for sediment, 24 for subsurface soil, and 6 for groundwater (see Figure 3, 4 and 5). The samples were collected in accordance with procedures described in the approved FE Workplan and were screened by use of the DNREC Mobile Laboratory (DML). The DML screened solid matrix samples for metals, polynuclear aromatic hydrocarbons (carcinogenic), pesticides, and polychlorinated biphenyls (PCBs). Selected samples (i.e. no less than 10% of samples) were analyzed by Envirotech Research, Inc., a Delaware Certified HSCA laboratory, using Standard Operating Procedures for Chemical Analytical Programs (DNREC, 1997) procedures and methods.

As a result of the completion of the FE, contaminants of concern were identified in site soils and stream sediments that will require remedial actions. These include soils containing zinc and soils containing lead that leaches when subjected to Toxicity Characteristic Leaching Procedure (TCLP) extraction. The TCLP test mimics the conditions found in a municipal landfill, where materials are exposed to acidic leachates. In addition, soils surrounding several underground storage tanks (USTs) were found to be contaminated by Total Petroleum Hydrocarbons (TPHs) which will require remedial action. Finally, stream sediment, in a localized area of the White Clay Creek adjacent to the former production area (SED -5), was found to contain zinc at concentrations exceeding state Uniform Risk Standards (URS) for Protection of the Environment. Sediment sample SED-32A was not collected from White Clay Creek, but rather from a localized drainage area in the open tub area on the eastern portion of the site. Contaminants detected in this sampling location (SVOC's) will be addressed as per the zinc-contaminated soil.

According to Section 8.4(1) of the Regulations, remedial action objectives 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, and
- The site is located adjacent to the White Clay Creek.

Qualitative Objectives for this site are:

- Prevent human contact with contaminants of concern; and
- Eliminate ecologic receptor contact with elevated zinc concentrations in the sediments of the White Clay Creek.

Based on the Qualitative Objectives, the Quantitative Objectives that the DNREC-SIRB determined would meet the Qualitative Objectives include:

- Prevent human contact with soils contaminated with zinc over 5,000 mg/kg.
- Perform an in-situ stabilization treatment of the leachable lead containing soils located within the former Tub Building in order to eliminate potential future exposure to these soils that leach lead at a concentration in excess of 5 mg/l when subjected to TCLP extraction, and eliminate exposure to all additional lead containing soils in excess of 400 mg/kg, and
- Complete the removal of the associated UST and associated TPH contaminated soil removals to the satisfaction of the DNREC-Underground Storage Tank Branch and DNREC-SIRB. The DNREC-SIRB URS Cleanup Standard is 100 mg/kg for C-5 through C-8 aliphatic hydrocarbons, 1,000 mg/kg for C-9 through C-18 aliphatic hydrocarbons, and 2,500 mg/kg for C-19 through C-36 aliphatic hydrocarbons.

Based on this, DNREC issued a Final Plan which contained the following remedial alternative:

Excavation of zinc, and lead impacted soil above the quantitative RAO standards. Placement of zinc and lead (>400ppm, but <5mg/l TCLP) impacted soil under a building footprint. Placement of a deed restriction that prohibits excavation greater than a depth of 3 feet in areas of concern identified on a property map without DNREC-SIRB approval (i.e. under the building footprint). Removal of sediments from the White Clay Creek in exceedence of a zinc concentration of 410 mg/kg with either on-site storage and containment or off-site disposal. Excavation, removal and disposal of TCLP lead failing soil and soil contaminated by hydrocarbons in excess of the DNREC URS Standards listed as quantitative remedial action objectives.

Following the issuance of the Final Plan, Commonwealth Management, Inc. suggested that a number of revisions to the Final Plan would be appropriate. To justify this position, in October 1999 Commonwealth Management, Inc.'s consultant, RMT, Inc., conducted a treatability study (On-Site Stabilization of Lead Contaminated Soils Conducted 12/8/99) on soils exceeding the leachable lead remedial action objective ("RAO") of 5 mg/l. DNREC-SIRB's review of the results of this study indicated that on-site stabilization of leachable lead could be successfully performed.

In addition, during the original Feasibility Study for the site, zinc concentrations above the URS screening criteria were found in sediment samples collected from the White Clay Creek in the area immediately adjacent to the Fiber Mill buildings during the FE. The principal contaminant of concern at the NVF-Newark site is zinc. An assessment of the benthic organisms in the sediments (DNREC Rapid Bioassessment Project - RBP, December 1998) concluded that a mild toxicity condition existed in the sediments that contained zinc above the URS screening concentration. In the Final Plan, a cleanup standard of 410 mg/kg for zinc was established using the medium level effects (effects range-medium, ERM) developed by the National Oceanic and Atmospheric Administration (NOAA). This meant that the Final Plan would have required the removal of certain zinc-contaminated sediments from the White Clay Creek.

However, on September 15-16, 1999 a high water storm event (Hurricane Floyd) increased stream flow in White Clay Creek by a factor of at least 400, according to United States Geological Survey (USGA) provisional data. This flooding removed significant quantities of soil and sediment from the subject area and deposited additional sediment from upstream. This storm event created a need for additional data regarding zinc concentrations in the proposed sediment removal area.

The additional data collection occurred in October 1999. The results showed that the contaminated sediments above the 410 mg/kg standard were no longer present in this area of White Clay Creek. The results of this new sampling showed that the zinc concentrations ranged from 11.8 mg/kg to 166mg/kg. As a result of this resampling, DNREC determined that no sediments were required to be removed from this portion of White Clay Creek.

Therefore, DNREC-SIRB issued an Revised Proposed Plan of Remedial Action, dated January 2000, to incorporate the on-site stabilization of leachable lead containing soils, and to no longer require the removal of zinc contaminated sediments along the southern portion of White Clay Creek.

In addition, the TPH contaminated soil removal, which was required by the Final Plan, was completed by Alliance in July 1999. A UST Removal Report was submitted by Alliance to the DNREC-UST Branch in September 1999 and was subsequently approved by the DNREC-UST Branch. Therefore, based on this fact, DNREC also removed the Qualitative Objectives pertaining to the UST and TPH concerns from the Revised Proposed Plan.

Following a public hearing on the matter on March 28, 2000, a Revised Final Plan of Remedial Action was issued by the Department incorporating the revisions contained in the Revised Proposed Plan of Remedial Action.

In June 2000, Commonwealth Management, Inc requested another change to the Revised Final Plan. The Final Plan and the Revised Final Plan called for the construction of a building over the lead contaminated soil. This recent request, based on the treatment/stabilization of the lead contaminated soils, calls for a parking lot and/or building to be constructed over the area where the onsite stabilization of lead contaminated soils is to occur. DNREC has determined this change is appropriate because the treatment process proposed would render the contaminants immobile. Therefore, an impermeable cap is not necessary to protect the environment because the stabilized lead contaminants will not leach into the groundwater or surface water at the site. Furthermore, the requested parking lot, with the proper institutional controls in-place, will adequately protect public health by preventing direct human contact with the underlying soils.

#### **IV SECOND REVISED PROPOSED PLAN OF REMEDIAL ACTION**

DNREC-SIRB issued the Second Revised Proposed Plan of Remedial Action to incorporate changes requested by Commonwealth Management, Inc., the site developer, who requested a change in the use of the site to be a parking lot and/or building. Commonwealth proposed placing treated soils under a parking lot, separated by a marker fabric and topped by a minimum of 2 feet of clean fill and a layer of asphalt. A deed restriction would be placed on the property to prevent future land uses that could cause unacceptable exposure risks to the contaminated soil. In addition, an Operation and Maintenance Plan (O & M) would be developed to maintain the containment system

#### **V SECOND REVISED FINAL REMEDIAL ACTION PLAN**

Based upon the information and results of the investigation performed at the NVF-Newark Company site, the Department concludes that a remedial action is required to prevent continued contact with site soils. The Second Revised Proposed Plan is adopted as the Second Revised Final Plan of Remedial Action:

Due to comment received from the public and the DNREC-Division of Water Resources, the Operation and Maintenance plan for the NVF – Newark Company site shall include the following activities in addition to those specified in the maintenance of the institutional controls (capping and deed restriction):

- Completion of a second Bioassessment of the White Clay Creek adjacent to the former NVF-Newark by the DNREC-Division of Water Resources in Fall 2000.

- Completion of monthly sampling of the White Clay Creek surface water (upstream and downstream) for total zinc, dissolved zinc and hardness by the responsible parties for a period of not less than 2 years as required by DNREC-Division of Water Resources.

If the second Bioassessment and/or the surface water sampling of the White Clay Creek reveals elevated levels of zinc or that a mild toxic condition continues to exist the Creek, further assessment activities will be necessary.

## **V PUBLIC PARTICIPATION**

The Department actively solicited public comments or suggestions on the Second Revised Proposed Plan of Remedial Action and welcomed opportunities to answer questions. Several comments were received. A copy of the “Department Response to Public Comments on the Revised Proposed Plan of Remedial Action”, August 2000 is available at the DNREC-SIRB office, 391 Lukens Drive, New Castle, Delaware, 19720.

The public comment period for this Second Revised Proposed Plan of Remedial Action began on July 23, 2000 and ended following a public hearing on August 15, 2000. The public hearing for Second Revised Proposed Plan was held on August 15, 2000 at 6:30 p.m., at the Girls, Inc. building located in Newark, Delaware.

Secretary’ Order No. , 2000-A-50 was issued on October 5, 2000 adopting the Second Revised Proposed Plan of Remedial Action for the NVF-Newark Company site as the Final Plan of Remedial Action.

## **DECLARATION**

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

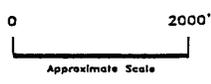
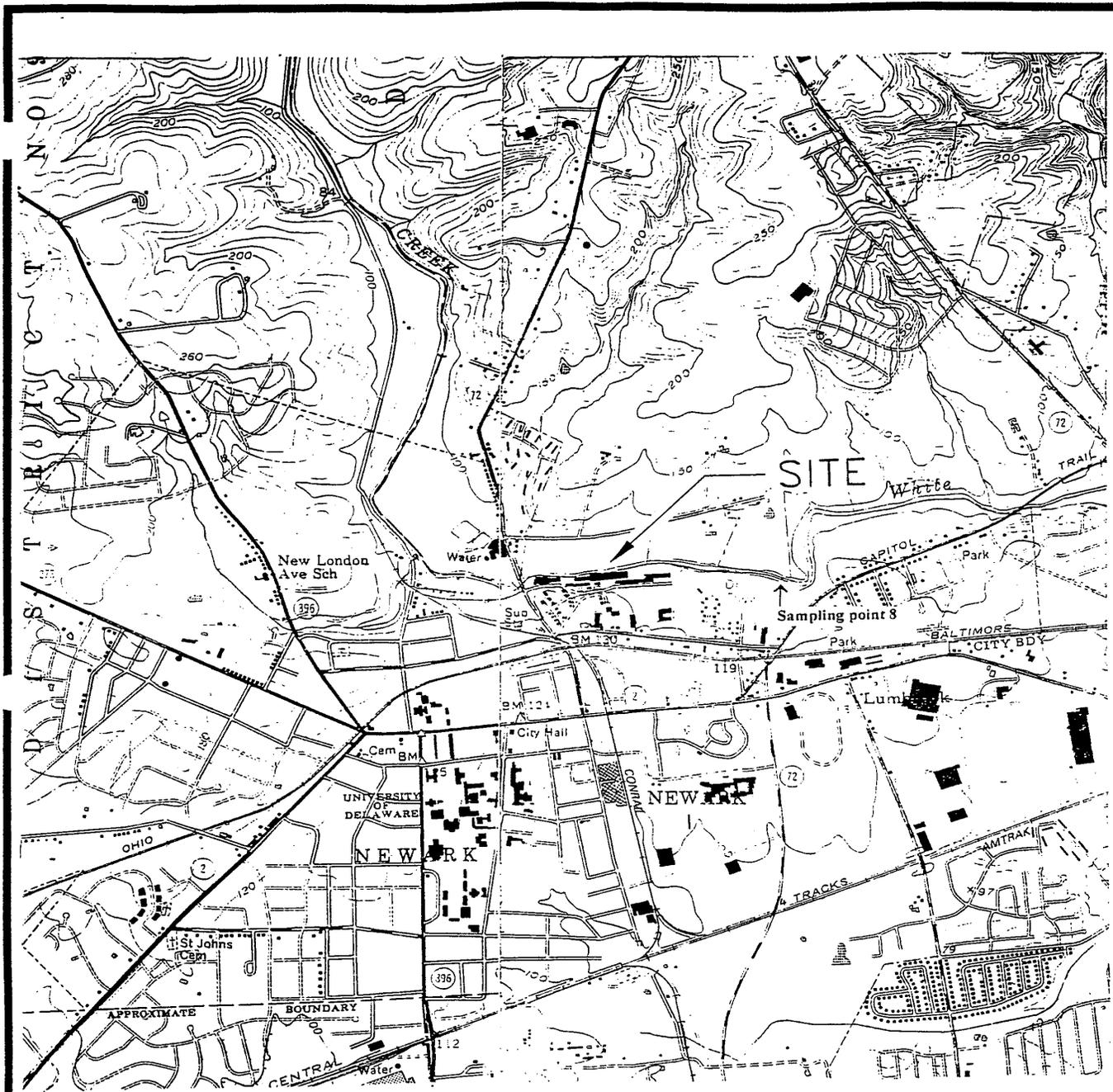
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Denise Ferguson-Southard  
Director, Division of Air and Waste Management

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DATE

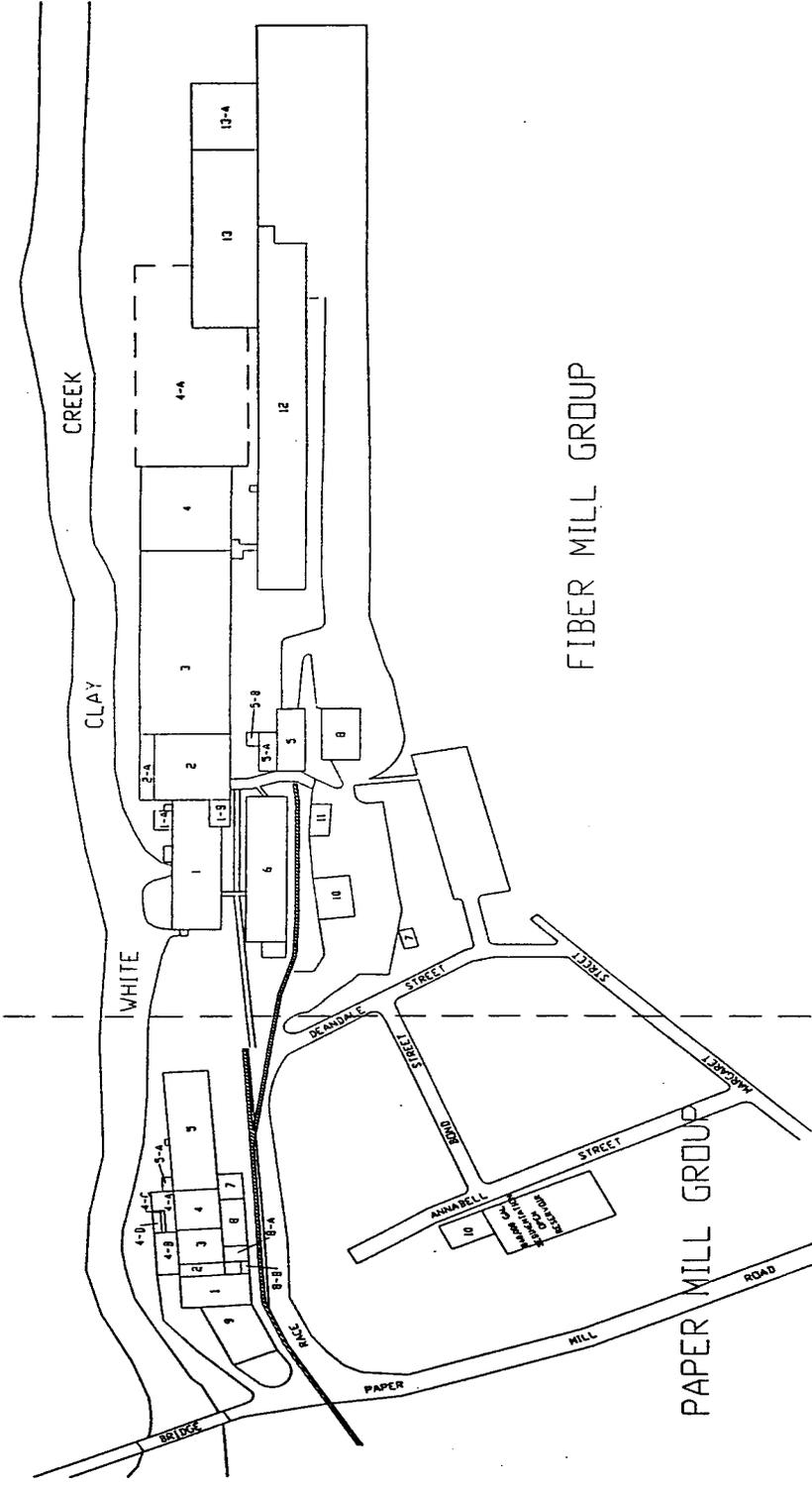
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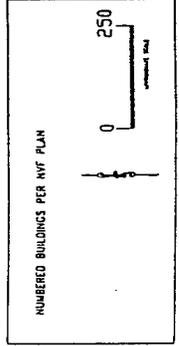
Source: USGS Newark, DE Quadrangle

Date: 2/9/98 By: RK Checked by: AR <i>[Signature]</i>	 <b>Environmental Alliance, Inc.</b> 1812 Newport Gap Pike Wilmington, DE 19808  <b>FIGURE 1</b> <b>SITE LOCATION MAP</b> <b>NVE NEWARK FACILITY</b> <b>COMMONWEALTH GROUP, INC.</b> <b>NEW CASTLE, DELAWARE</b>
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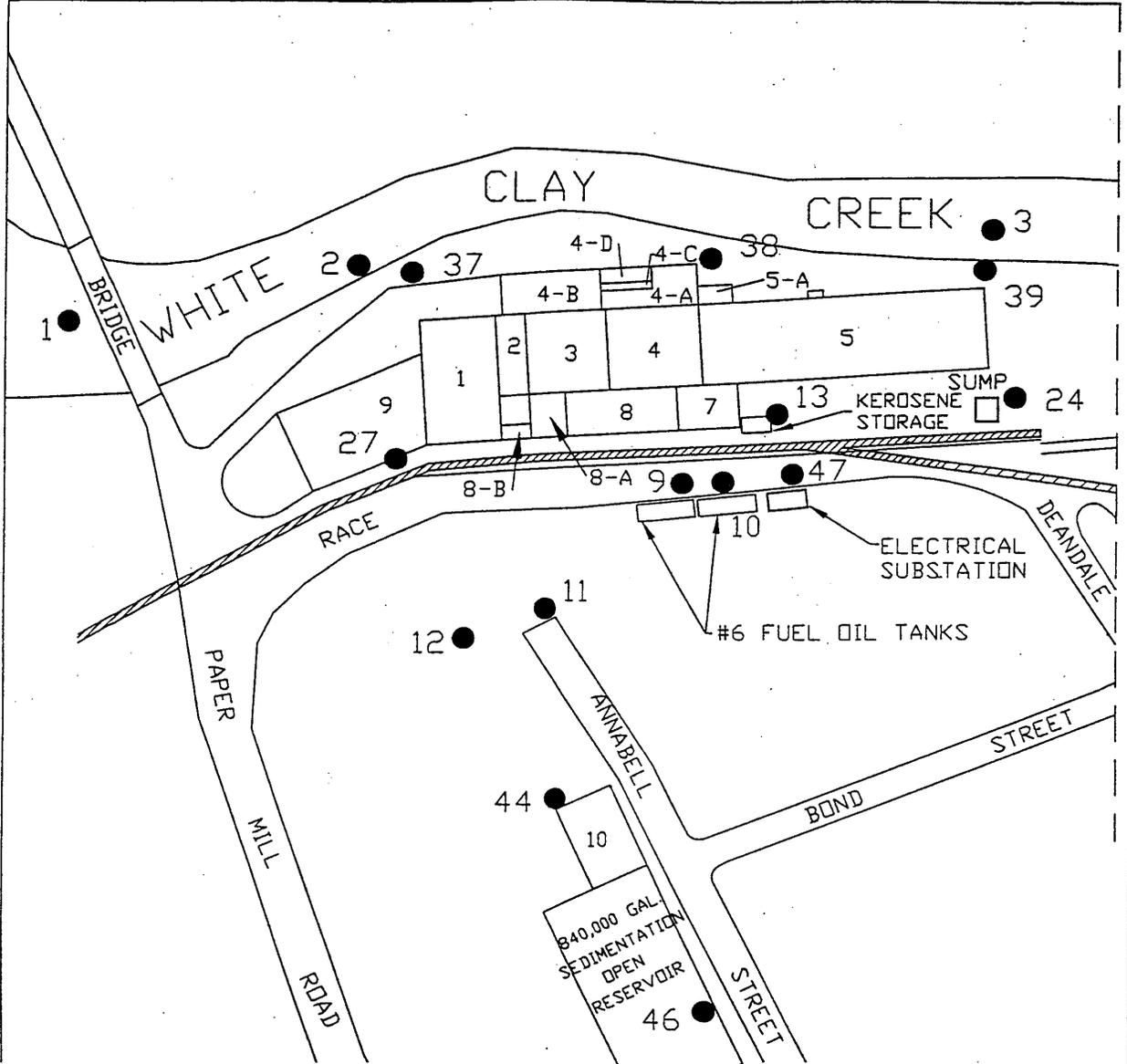
ASMA/11/19/98 USE ONLY



KEY:



REVISION DATE: 8/25/98	Environmental Alliance, Inc. 1812 Newport Gap Pike Wilmington, DE 19808
DESIGNED BY: RAC	FIGURE 2 FACILITY PLAN NYF-NEWARK FACILITY EVALUATION FOR COMMONWEALTH GROUP, INC.
DRAWN BY: AW	
CHECKED BY:	



KEY:

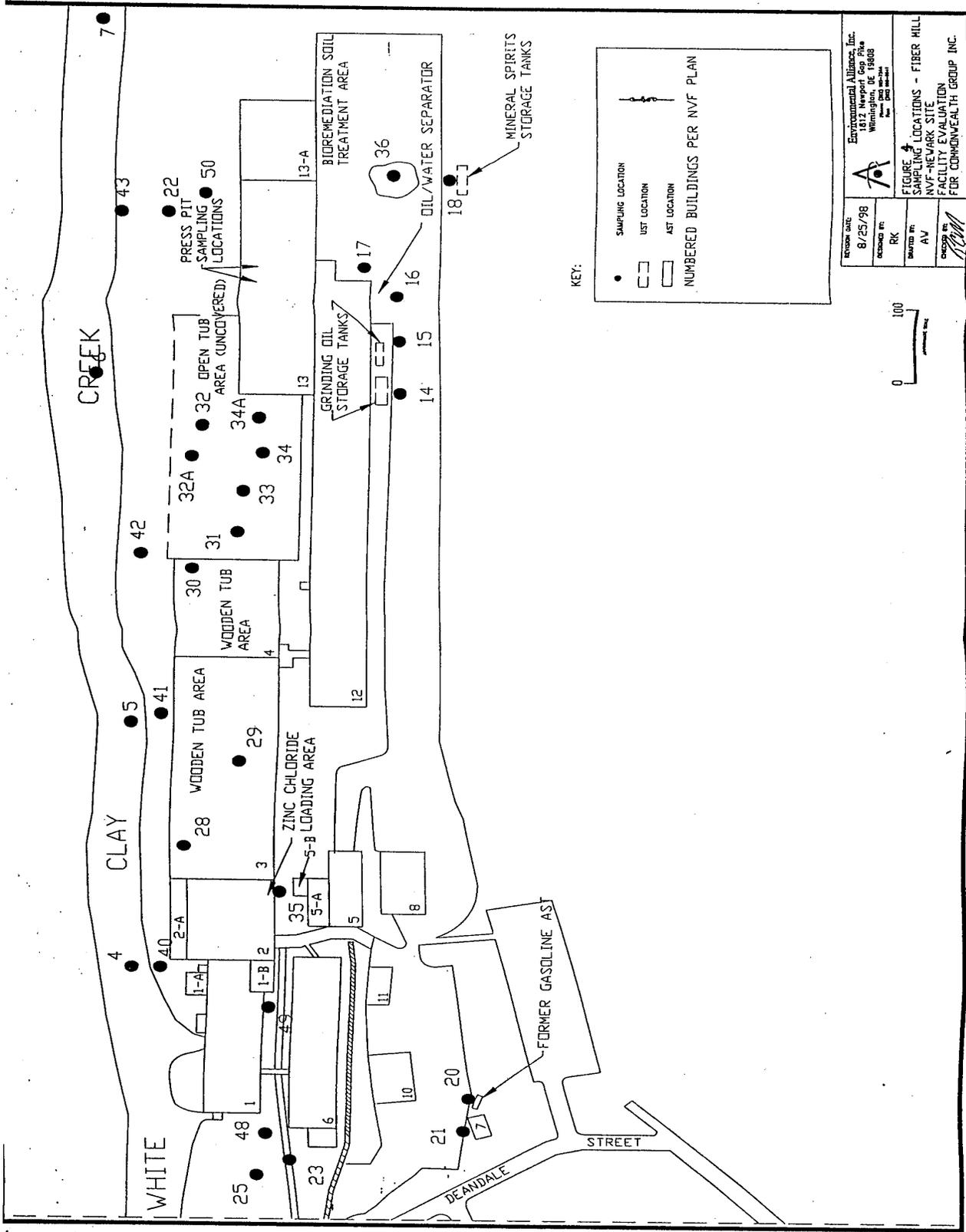
SAMPLING LOCATION  
 BLDG LOCATION  
 NUMBERED BUILDINGS PER NVF PLAN

0 100  
APPROXIMATE SCALE

REVISION DATE:  
**6/23/98**  
 DESIGNED BY:  
**RK**  
 DRAFTED BY:  
**AW**  
 CHECKED BY:  
*PCM*

**Environmental Alliance, Inc.**  
 1812 Newport Gap Pike  
 Wilmington, DE 19808  
Phone (302) 985-7344  
 Fax (302) 985-0841

**FIGURE 3**  
**SAMPLING LOCATIONS PAPER MILL**  
**GROUP**  
**NVF-NEWARK SITE**  
**FACILITY EVALUATION**  
**FOR COMMONWEALTH GROUP INC.**



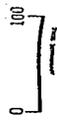
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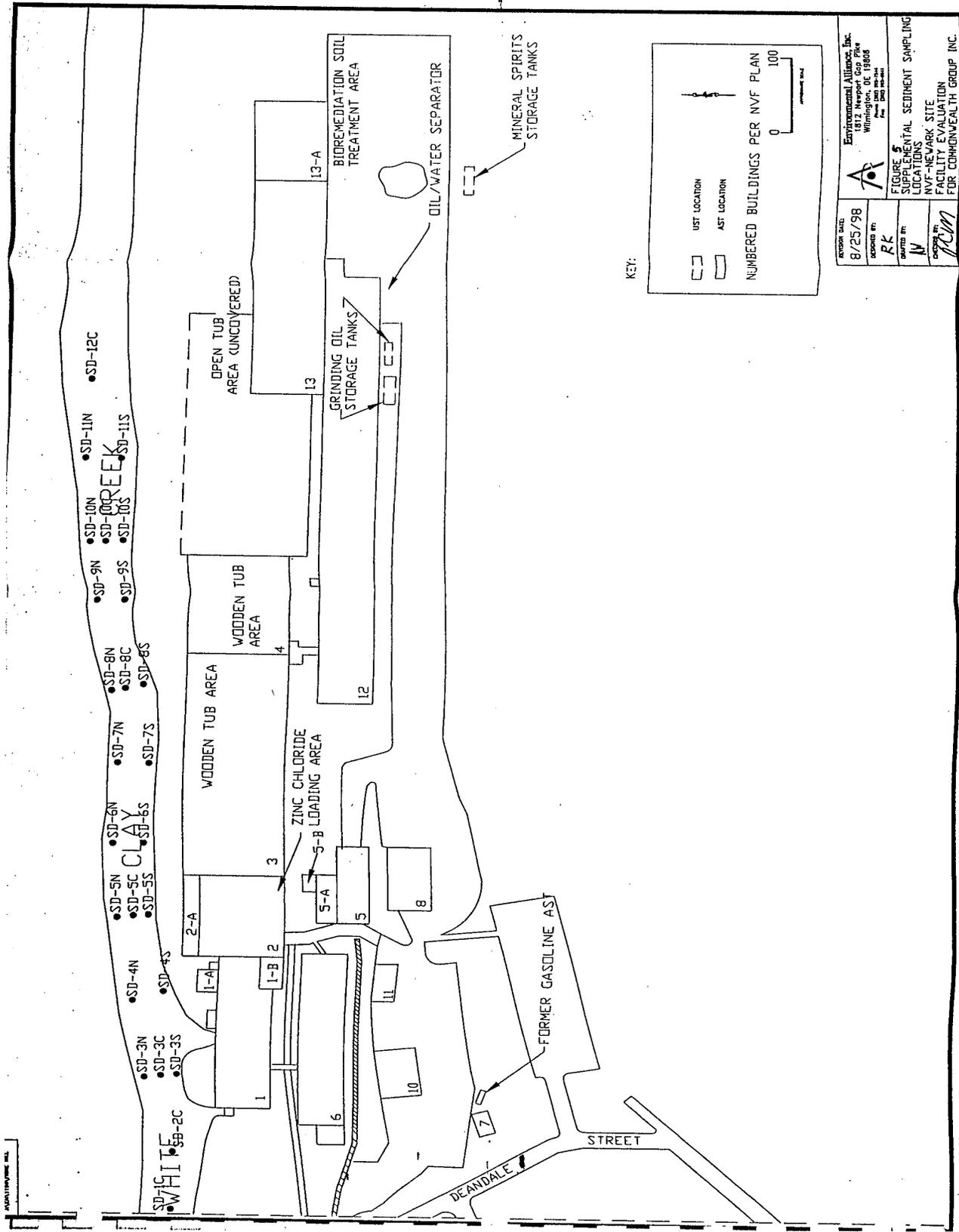
- SAMPLING LOCATION
- TEST LOCATION
- AST LOCATION
- NUMBERED BUILDINGS PER NVF PLAN

REPORT DATE	8/25/98
REVISION	RK
DESIGNED BY	AV
CHECKED BY	<i>[Signature]</i>

Environmental Alliance, Inc.  
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Wilmington, DE 19808  
Tel: 302-438-1111  
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FIGURE 5  
SAMPLING LOCATIONS - FIBER HILL  
NVF-HEVARK SITE  
FACILITY EVALUATION  
FOR COMMONWEALTH GROUP INC.





REPORT DATE: 8/25/98  
 DRAWN BY: RK  
 CHECKED BY: JW  
 DESIGNED BY: JCM

Environmental Alliance, Inc.  
 1312 Newport Court  
 Wilmington, DE 19808  
 Phone: 302-439-1100  
 Fax: 302-439-1101

FIGURE 6  
 SUPPLEMENTAL SEDIMENT SAMPLING  
 LOCATIONS  
 NVF-NEWARK SITE  
 FACILITY EVALUATION  
 FOR COMMONWEALTH GROUP, INC.

Figure 6: News Journal Legal Notice