



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

AUG 05 2009

Mr. Jack Butler
NC Division of Solid Waste Management
P.O. Box 27687
Raleigh, NC 27611-7687

Dear Mr. Butler:

We are pleased to provide a copy of the Action Memorandum for the Forshaw Chemical Site located in Charlotte, Mecklenburg County, North Carolina. If you have any questions or comments concerning this document, please contact the On-Scene Coordinator at the following address:

Stephen Ball
U.S. Environmental Protection Agency
ERRB
61 Forsyth Street
Atlanta, Georgia 30303

Sincerely,

A handwritten signature in black ink, appearing to read "A. SH", written over a large, stylized flourish.

A. Shane Hitchcock, Chief
Emergency Response & Removal Branch

Enclosure

cc: Debbie Jourdan
Dawn Taylor
Jim McGuire
Stephen Ball
Kerri Sanders
Kenneth Rhame
Timothy Neal



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ENFORCEMENT ACTION MEMORANDUM

SUBJECT: Request for Approval of an Enforcement Action Memorandum at the Forshaw Chemical Site, Charlotte, Mecklenburg County, North Carolina

FROM: Kenneth B. Rhame, On-Scene Coordinator *ASR*
Emergency Response & Removal Branch

THRU: Shane Hitchcock, Chief *ASR*
Emergency Response & Removal Branch

TO: Franklin E. Hill, Director
Superfund Division

I. PURPOSE

The purpose of this Enforcement Action Memorandum is to request and document approval of the proposed enforcement-lead time-critical removal action described herein for the Forshaw Chemical Site (the Site) located in Charlotte, Mecklenburg County, North Carolina. The release of hazardous substances at the Site poses a threat to public health and the environment pursuant to Section 104(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) that meets the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) section 300.415(b)(2) criteria for removal actions. This removal is anticipated to be enforcement lead pursuant to an Administrative Settlement Agreement and Order on Consent (Settlement Agreement).

There are no significant or precedent-setting issues associated with the Site, and the Site is not currently on the National Priority List (NPL).

II. SITE CONDITIONS AND BACKGROUND

A. Site Description

CERCLIS ID Number: NCN000409865
Site ID Number: A4PA
Type: Time Critical Removal

1. Removal Site Evaluation

Forshaw Chemicals, Inc. is a former Pentachlorophenol (PCP) formulation facility. The Site occupies an approximately 5.25-acre parcel of land and consists of two former PCP formulating buildings, an office building, and a warehouse. The Forshaw Chemical Site was discovered by the North Carolina Department of Environment and Natural Resources (NCDENR) Superfund Section during a Site Investigation (SI) sampling event at an abandoned Clorox Chemical Plant located next to the Forshaw Chemical Site in March 2005. Results from sampling conducted during the March 7 - 8, 2005 SI for Clorox Chemical indicated the presence of several metals, semi-volatile, and pesticide contaminants along the surface water pathway at the Forshaw Chemicals, Inc. Site. Dioxins were also present in sediments along the surface water pathway at two of the sampling locations, including the storm sewer discharge into Stewart Creek. Sampling conducted during the December 5 - 6, 2005 and January 25, 2006 Expanded Site Investigation (ESI) for Clorox Chemical confirmed the presence of several metals, semi-volatiles, pesticides, and dioxins on site soils, along the overland flow pathway, and in the surface water pathway.

Sampling conducted during the SI/ESI and the 2007 Removal Site Evaluation (RSE) indicated elevated concentrations of PCP above the removal action level. Analytical results indicated the presence of PCP in soil at concentrations up to 1,700 parts per million (ppm). Arsenic was detected in the storm water pathway at a concentration of 287 ppm.

Forshaw Distribution conducted its own assessment in July 2008 and found concentrations of PCP near a former PCP plant and truck loading area at concentrations ranging from 47.2 ppm to 3,070 ppm. Arsenic was found in subsurface soils (4 to 6 feet below surface) at 1,490 ppm. The source of this arsenic has not been determined, as the facility states that they have never stored or used arsenic on site. Total Dioxin 2,3,7,8-TCDD Equivalence was found as high as 19.18 parts per billion (ppb). These findings are documented in a September 10, 2008 report from Hart & Hickman. The industrial removal action level for PCP is 900 ppm. The industrial removal action level for arsenic is 160 ppm. The industrial removal action level for dioxin is 5 ppb.

The Forshaw Chemical Site is currently used as a pesticide distribution facility by Forshaw Distribution, Inc. Forshaw Chemicals, Inc. previously formulated PCP in various locations on the property from 1970 to 1986. Wood Protection Products, Inc. formulated PCP in various locations on the property from 1986 to approximately 2004. PCP is a chlorinated hydrocarbon insecticide and fungicide. It was primarily used to protect timber from fungal rot and wood-boring insects, but may have also been used as a general pre-emergence herbicide. It was available in blocks, flakes, granules, liquid concentrates, wettable powders,

or ready-to-use petroleum solutions. PCP has historically contained dioxins as a manufacturing by-product.

The assessment activities yielded the following areas of concern:

1. The Site has been documented as having elevated levels of dioxin and PCP on site with the potential to migrate off site southeast into Stewart Creek. All storm water that runs through the Forshaw Chemical property is routed through a junction box located on the east side of the property and piped directly into Stewart Creek, approximately 150 feet east of the storm water junction box. Stewart Creek, as well as the entire 15-mile surface water pathway for the site, is considered a fishery. Locals have been sighted fishing in the creek.
2. Across the street to the south east of Forshaw are a community park, an elementary school, and residential housing surrounding Stewart Creek.

In summary, CERCLA hazardous substances (dioxin and PCP) exist and continue to migrate from the Forshaw facility to Stewart Creek and are a threat to public health and the environment. This Site meets the criteria for a removal action as outlined in 300.415(b).

2. Physical Location

The Forshaw Chemicals, Inc. Site is located at 650 State Street, approximately one mile west/northwest of downtown Charlotte, Mecklenburg County, North Carolina. The geographic coordinates for the site are 35.2405° north latitude and 80.8702° west longitude. The Site is located in a mixed industrial/residential area. The Site is bounded on the south by State Street, to the east by Stewart Creek, and to the north/northeast and west by CSX railroad spurs and commercial properties. A municipal park and elementary school are located on the opposite bank of Stewart Creek, just downstream of the Site.

3. Site Characteristics

All source areas are located outside the 100-year floodplain. The two-year, 24-hour rainfall near the site averages 3.5 inches. The Site includes two former PCP manufacturing buildings (Buildings 1 and 2), an office building (Building 3), and a warehouse (Building 4). The Site is located on two parcels of land totaling approximately 5.25 acres in size and is in a mixed industrial/residential area. The southern border of the property is State Street, to the east by Stewart Creek, and to the north/northeast and west by CSX railroad spurs and commercial properties. A municipal park and elementary school is

located on the opposite bank of Stewart Creek, immediately southeast of the Site. Access to the majority of the site is restricted, as observed during the on-site/off-site reconnaissance and the sampling events conducted for Clorox Chemical, which is adjacent to Forshaw Chemicals and shares the same surface water pathway.

Overland flow from the Site drains in an easterly direction. Storm water runoff from Forshaw Chemicals is collected in the on-site storm water system and is piped directly into Stewart Creek, approximately 75 feet north of State Street. The 15-mile surface water pathway begins with Stewart Creek. Stewart Creek flows in a southerly direction for approximately 1.25 miles, where it enters Irwin Creek.

4. Release or threatened release into the environment of a hazardous substance or pollutant or contaminant.

During the March 2005 SI for Clorox Chemical, two surface soil samples were collected along the west side of the original PCP manufacturing building adjacent to the loading dock area. Analytical results indicated the presence of PCP at a concentration of 250,000 micrograms per kilogram ($\mu\text{g}/\text{kg}$). Further sampling on June 6, 2007 indicated elevated concentrations of PCP and dioxin compounds above the removal action level. Analytical results indicated the presence of PCP at concentrations up to 1,700 ppm. In addition, arsenic was detected in the storm water pathway at 287 ppm. Forshaw Distribution conducted its own assessment in July 2008 and found concentrations of PCP near a former PCP plant and truck loading area at concentrations ranging from 47.2 ppm to 3,070 ppm. Dioxin was found in the same area as the PCP, analytical results for Total Dioxin 2,3,7,8-TCDD Equivalence were found as high as 19.18 ppb. Arsenic was found in subsurface soils (4 to 6 feet below surface) at 1,490 ppm. The Industrial Removal Action Levels (RAL) for PCP is 900 ppm, arsenic is 160 ppm and dioxin is 5 ppb. The source of the arsenic has not been determined as Forshaw claims to have never stored or used arsenic on site.

PCP was detected in the surface water at an average concentration of 160 micrograms per liter ($\mu\text{g}/\text{L}$) and in the sediment at a concentration as high as 900 $\mu\text{g}/\text{kg}$. There is a release or threatened release into the environment of a hazardous substance via the storm water conveyance system that traverses portions of the Forshaw Site and discharges to Stewart Creek. All storm water that runs through the Forshaw Chemical property is piped directly into Stewart Creek, Stewart Creek, as well as the entire 15-mile surface water pathway for the Site, is considered a fishery.

On June 6, 2007, the U.S. Environmental Protection Agency (EPA) collected analytical samples from around the Forshaw Facility. Sample locations

focused on the potential pathways of contaminant release offsite. A site reconnaissance was performed to locate the storm water pipe system to help determine sample locations. Samples were brought to the laboratory and analyzed for dioxins, PCP, pesticides and arsenic. Analytical results from the sampling event were reviewed and validated. Results showed contaminants above the Region 9 industrial and residential standards for arsenic, and several dioxin compounds. These results indicated contamination potentially leaving the Site.

5. NPL Status

This Site is not currently on the NPL.

6. Maps, pictures, and other graphic representations

All removal file information, including maps and aerial photos of the Site, will be maintained by the On-Scene Coordinator (OSC) and released to the EPA record center for inclusion in the Site file.

B. Other Actions to Date

1. Previous Actions

Other than the activities presented in the previous sections of this action memorandum, no other government, or private actions have been taken to investigate or mitigate the threats documented at the Site.

2. Current Actions

EPA Region 4 and Forshaw are negotiating an Administrative Settlement Agreement and Order on Consent for the removal action.

C. State and Local Authorities Role

1. State and Local Actions to Date

In December 2006, NCDENR requested EPA Emergency Response and Removal Branch (ERRB) evaluate the Site for consideration of a removal action.

2. Potential for continued State/Local Response

The NCDENR has referred this Site to EPA because they do not have available funds to implement this action.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

A. Threats to Public Health or Welfare

PCP, arsenic and dioxin are hazardous substances as defined by section 101(14) of the CERCLA. CERCLA contaminants, if released from the Site, have the capability of presenting a potential hazard to the general public. The threats come primarily from human exposure to these hazardous substances in the water. Direct contact and ingestion of PCP and arsenic are the primary pathways of exposure.

Site conditions meet the requirements for initiating a Time-Critical Removal Action according to the criteria listed in Section 300.415 (b)(2) of the NCP:

Section 300.415 (b)(2)(i): "Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants." PCP, arsenic and dioxin has been released and continues to be discharged from the Forshaw Chemical Site via an outfall from the storm water conveyance system to Stewart Creek at levels above RALs. Due to the physical location of the Site, up-gradient from a public park and an elementary school, there is a potential for exposure to nearby human populations including sensitive human populations such as young children.

Section 300.415 (b)(2)(v): "Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released." It is not known what impacts that variable weather conditions such as flooding and drought may have on the concentrations currently being discharged to Stewart Creek from the storm water conveyance system (outfall). It is possible that the concentrations at the outfall could increase during drought conditions and that contaminants could spread to floodplain areas, such as the park or school yard during flood events.

Section 300.415 (b)(2)(vii): "The availability of other appropriate federal or state response mechanisms to respond to the release." There are no other appropriate federal or state response agencies to take responsibility for this Removal Action in a time-critical manner.

B. Threats to the Environment

Site conditions meet the requirements for initiating a time critical removal action according to criteria listed in Section 300.415 (b)(2) of the NCP:

Section 300.415 (b)(2)(i): "Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants." PCP, arsenic and dioxin has been released and continues to be discharged from the Forshaw Chemical Site via an outfall from the storm water conveyance system to Stewart

Creek at levels above RALs. Fishing has been observed in Stewart Creek near the outfall where contamination has been released from the Site. There is a potential for impacts to fish down-gradient of the facility's outfall and exposures resulting from fishing activities.

Section 300.415 (b)(2)(vii): "The availability of other appropriate federal or state response mechanisms to respond to the release." There are no other appropriate federal or state response mechanisms to take responsibility for this Removal Action in a time-critical manner.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of the hazardous substances from this Site, if not addressed by implementing the Removal Action selected in this Action Memorandum, may present an imminent and substantial endangerment to the public health or welfare or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Install a "seamless" storm water conveyance pipe to prevent contamination (PCP, arsenic and dioxin) from entering the storm water system and discharging to Stewart Creek.
2. Remove on-site source areas of PCP and dioxin contaminants (arsenic contamination present in subsurface soils below 2 feet does not pose an exposure threat thus will not be removed. The "seamless" storm water pipe will prevent the arsenic from migrating off-site or impacting Stewart Creek).
3. Properly characterize, treat, and/or dispose of PCP and dioxin-contaminated soils that exceeds cleanup goals.
4. Perform PCP and dioxin confirmation sampling and analysis to insure cleanup objectives have been met.

2. Contribution to remedial performance

The proposed removal action will address the threats discussed in Section III, which meet the NCP Section 300.415(b)(2) removal criteria. Although future action under the remedial program is unlikely, the removal action contemplated in this Action Memorandum would be consistent with any future remedial action.

3. Description of alternative technologies

No alternative technologies have been determined at this time.

4. Environmental Evaluation/ Cost Analysis (EE/CA)

Due to the time critical nature of this Removal Action, an EE/CA is not required.

5. Applicable or relevant and appropriate requirements (ARAR)

This cleanup is being conducted as a time-critical removal action. A letter was sent to NCDENR on March 17, 2008, asking the State to identify ARARs. On site removal activities conducted under CERCLA are required to attain ARARs to extent practicable considering the exigencies of the situation. All wastes transferred off-site will comply with U.S. EPA's Off-Site Rule (40 CFR 300.440). Identified federal and state ARARs will be complied with to the extent practicable.

6. Proposed Schedule

Response actions at the Site will begin upon approval of this Action Memorandum. The removal action is expected to be completed within 12 months.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

If action is significantly delayed or not taken, there will be a continued release of hazardous substances into the environment increasing the possibility of exposure to the public.

VII. OUTSTANDING POLICY ISSUES

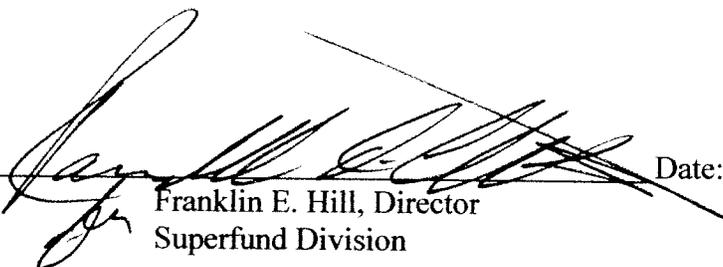
None

VIII. ENFORCEMENT

ERRB anticipates that this will be a potential responsible party (PRP)-lead response. The PRP for the Forshaw Chemicals, Inc. Site and EPA have concluded negotiations for the terms of the Administrative Settlement Agreement and Order on Consent for conducting this removal action. Should the PRP fail to implement the response, EPA may decide to issue a unilateral order or conduct a fund lead removal action.

IX. RECOMMENDATION

This decision document represents the selected removal action for the Forshaw Chemical Site located in Charlotte, Mecklenburg County, North Carolina. These response actions have been developed in accordance with CERCLA, as amended, and are not inconsistent with the NCP. This decision is based upon the Administrative Record for the Site. Conditions at the Site meet the NCP Section 300.415(b)(2) criteria for a removal action, and I recommend your approval of the proposed removal action.

Approval:  Date: 8/4/09
Franklin E. Hill, Director
Superfund Division

Disapproval: _____ Date: _____
Franklin E. Hill, Director
Superfund Division

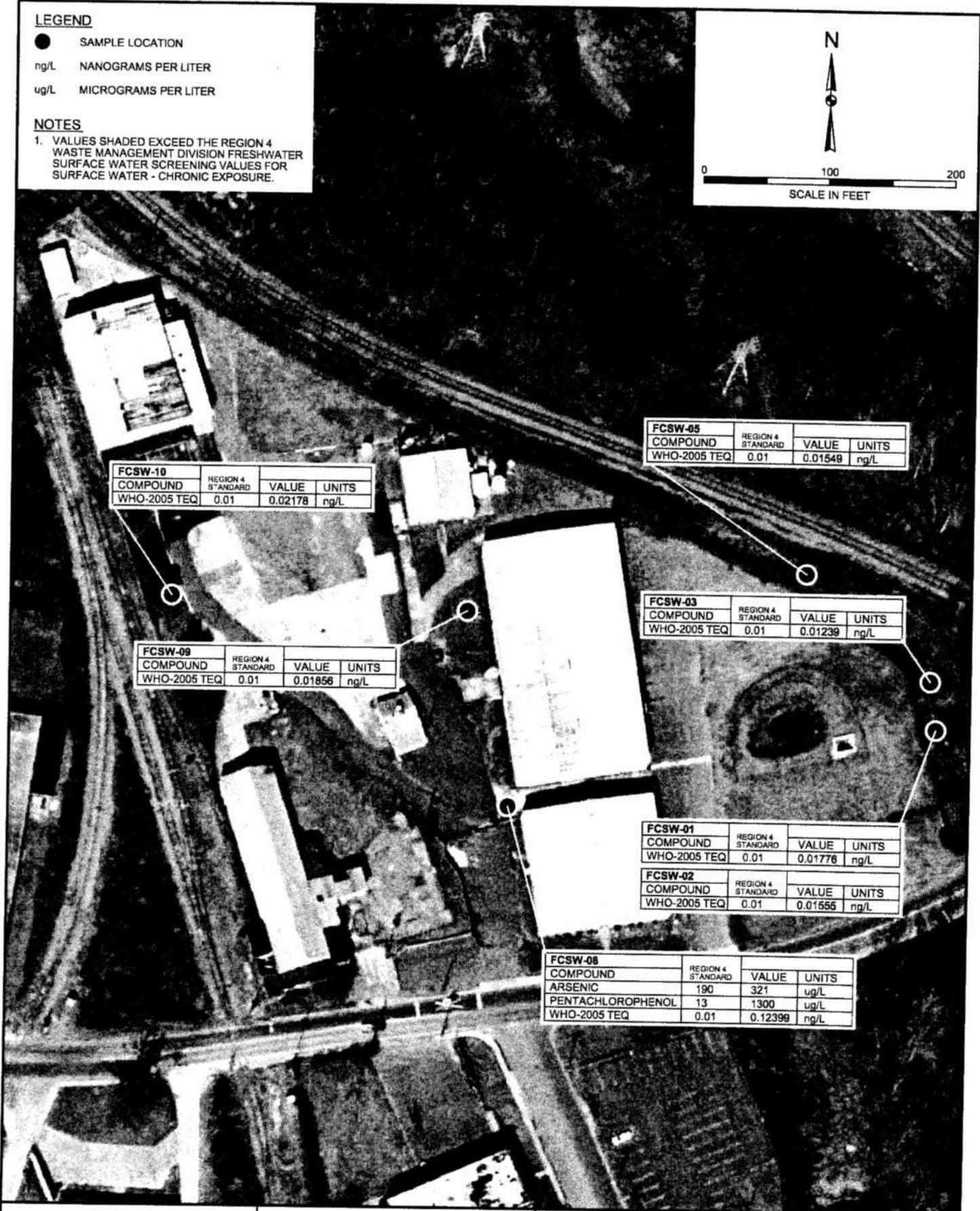
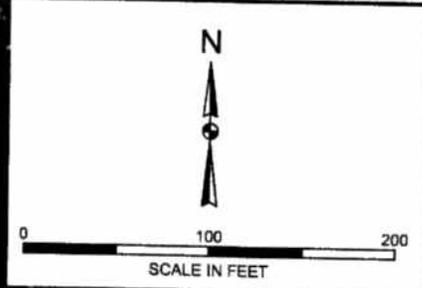
Site Photo

LEGEND

- SAMPLE LOCATION
- ng/L NANOGRAMS PER LITER
- ug/L MICROGRAMS PER LITER

NOTES

1. VALUES SHADED EXCEED THE REGION 4 WASTE MANAGEMENT DIVISION FRESHWATER SURFACE WATER SCREENING VALUES FOR SURFACE WATER - CHRONIC EXPOSURE.



FCSW-10			
COMPOUND	REGION 4 STANDARD	VALUE	UNITS
WHO-2005 TEQ	0.01	0.02178	ng/L

FCSW-05			
COMPOUND	REGION 4 STANDARD	VALUE	UNITS
WHO-2005 TEQ	0.01	0.01549	ng/L

FCSW-09			
COMPOUND	REGION 4 STANDARD	VALUE	UNITS
WHO-2005 TEQ	0.01	0.01856	ng/L

FCSW-03			
COMPOUND	REGION 4 STANDARD	VALUE	UNITS
WHO-2005 TEQ	0.01	0.01239	ng/L

FCSW-01			
COMPOUND	REGION 4 STANDARD	VALUE	UNITS
WHO-2005 TEQ	0.01	0.01776	ng/L

FCSW-02			
COMPOUND	REGION 4 STANDARD	VALUE	UNITS
WHO-2005 TEQ	0.01	0.01555	ng/L

FCSW-06			
COMPOUND	REGION 4 STANDARD	VALUE	UNITS
ARSENIC	190	321	ug/L
PENTACHLOROPHENOL	13	1300	ug/L
WHO-2005 TEQ	0.01	0.12399	ng/L

TN & Associates, Inc.
EPA Region 4 START
 in association with Shaw E&I and Aerostar

**FIGURE 2
 SURFACE WATER
 SAMPLES**

FORSHAW CHEMICALS, INC.
 CHARLOTTE, MECKLENBURG COUNTY, NC
 TDD NO. TNA-05-003-0038