STATEMENT OF BASIS

REGION III
ID #
MDD043375757

Electro Therm Inc.
Denton, Maryland

Facility/Unit Type:	**Appliance Industry**
Contaminants:	**Tetrachloroethene, 1,1,1-Trichloroethene, and 1,1-Dichloroethene**
Media:	**Soil, Groundwater and Vapor Intrusion**
Proposed Remedy:	**Monitored Natural Attenuation and compliance with and maintenance of groundwater use restrictions.**

I. INTRODUCTION

The United States Environmental Protection Agency (EPA) has prepared this Statement of Basis (SB) to solicit public comment on its proposed remedy for the Electro-Therm Inc. facility located between Route 404 and Meetinghouse Road in Denton, Maryland (Facility or Site), which is subject to EPA's Corrective Action program under the Solid Waste Disposal Act, as amended, commonly referred to as the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. Sections 6901 et seq.

EPA is providing a 30-day public comment period on this SB and may modify its proposed remedy based on comments received during this period. EPA will announce its selection of a final remedy for the Facility in a Final Decision and Response to Comments (Final Decision) after the comment period has ended.

Information on the Corrective Action program as well as a fact sheet for the Facility can be found by navigating to EPA Website.

The Administrative Record (AR) for the Facility contains all documents, on which EPA's proposed decision is based. See Section VIII for information on how you may review the AR.

II. FACILITY BACKGROUND

The subject Site is a 13.7-acre industrial property situated between Route 404 and Meetinghouse Road in Denton, Maryland. Historical land use prior to 1988 included the manufacture of heating elements by Electro-Therm Inc., which was owned by Canadian Corporate Management Company, Ltd. (CCMC). Federal Industries LTD. (FIL) acquired CCMC in June 1986. In 1995 Federal Industries changed its name to Russel Metals Inc.

The Facility houses one building which has been historically used to manufacture heating elements.

CCMC and the Maryland Department of the Environment (MDE) entered into Consent Order No. CO-88-094 (CO) under which CCMC is required to implement the Corrective Action Program (CAP) described in the August 19, 1987 "Corrective Action Program Electro-Therm Facility, Caroline County, Maryland."

Areas of Investigation

Facility Building	Chlorinated solvents were used in parts cleaning operations in the southwestern portion of the building and are the likely source of subsurface contamination beneath the Site. Vapor Intrusion (VI) was investigated in the building.
Groundwater	Historic investigations of ground water conducted in October 1986 at the Site indicate that the ground water in the uppermost aquifer on the western part of the Facility was contaminated with volatile organic compounds (VOCs), mainly chlorinated hydrocarbons. The principal priority pollutants in general order of concentration are 1,1, l-trichloroethane (TCA), 1,1- dichloroethane (DCA), 1, l-dichloroethylene (DCE), tetrachloroethylene (PCE), toluene, 1, 2-trans-dichloroethylene (1,2 DCE), methylene chloride (MC), chloroethane (CA), trichloroethylene (TCE), benzene, ethylbenzene, and 1,2- dichloroethane (1, 2 DCA). Chlorinated solvents used in parts cleaning operations in the southwestern portion of the building are the likely source of groundwater contamination beneath the Site. Pursuant to the CO, CCMC has been remediating groundwater contamination in the shallow water-bearing zone at the Site with a pump and treat system. The pump and treat system has been in operation since March 1988 as part of the CAP.

III. SUMMARY OF ENVIRONMENTAL INVESTIGATIONS

Area	Description
Facility Building	**Indoor Air Sampling 2007** The air above the concrete building slab that is situated over the zone of contaminated groundwater beneath the southwest corner of the building was sampled for the presence of VOCs on October 25 and 26, 2007. Benzene, tetrachloroethene, and trichloroethene were detected at concentrations above human health risk based screening levels (EPA Region 3 Risk-Based Concentrations [RBCs] for Ambient Air). MDE determined that the low levels of benzene detected in indoor air were not the result of vapor intrusion, given that benzene, at the time of sampling, had not been detected in groundwater beneath the Site for over 14 years. **Membrane Interface Probe (MIP) Investigation May 2010** In 2010, CCMC performed a MIP investigation to address remaining data gaps with respect to subsurface contamination at the Site. Until 2010, subsurface conditions beneath the building had not been characterized. The MIP investigation identified a compact "hot spot" of contamination in the unsaturated zone and the surficial aquifer beneath the east-central part of the building, and defined its lateral and vertical extent. The "hot spot" is approximately 100 feet long by 60 feet wide and 34 feet thick, extending to the top of the uppermost aquiclude. The soil sample with the highest concentration of VOCs contained 5.6 mg/kg of PCE (EPA SL for PCE in soil is 110 mg/kg industrial, 22 mg/kg for residential). The MIP investigation did not identify any sources of contamination outside the building nor beneath the former solvent processing area under the southwest corner of the building. The MIP investigation presented strong evidence that a shallow low-permeability zone composed of clay, believed to be part of the Chesapeake Group,

	underlies the entire Site at a depth of no greater than 34 feet below ground surface (bgs) at the Site (11 feet above mean sea level [msl]). Furthermore, historical groundwater sampling data indicate that the deep zone aquifer used for water supply at the Site has not been affected by shallow zone VOC contamination. Also the clay beneath the Site would prevent further downward migration of contaminants. The results of the MIP investigation used in conjunction with the confirmatory sample results show that a suspect source area is centered under the building. Thus, groundwater contamination is being pulled from the suspect source area beneath the building westward toward the pumping wells of the groundwater remediation system located west of the building. The results of the indoor air investigation indicate the following: Tetrachloroethene was detected in each of the four indoor air samples at concentrations ranging from 6.0 to 8.3 ug/m^3 at levels below the industrial Risk Based Concentration (RBC) of 9.4 ug/m3. The possibility exists that the VOCs detected are the result or partially the result of off-gassing beneath or from the concrete floor slab. General use of solvents over many years in manufacturing areas may have led to surficial permeation of the concrete by solvents. However, vapor intrusion from the subsurface is more likely to be the mode of vapor transport. **Indoor Air Sampling Report January 6, 2014** The air sampling conducted during November 2013 in the building did not detect any contaminants over EPA industrial risk based levels.
Facility Groundwater	**Corrective Action Plan (CAP)** Following installation and testing, a pump and treat system that included 30 wells equipped with eductor pumps, a treatment system that consisted of an air stripper tower (90 gallon-per-minute capacity), collection tanks, and a discharge line was placed in operation on March 18, 1988. Under the CAP, the pump and treat system was to be operated continuously except for automatic shutdowns caused by equipment malfunctions and scheduled shutdowns for equipment maintenance and repair. In late July 1988, a new, larger capacity (200 gallon-per-minute) air stripper tower was installed in an effort to accelerate the cleanup. As part of the CAP, monitoring wells were installed to periodically assess system performance in treating the groundwater contamination and controlling the groundwater contaminant plume. Currently, the pump and treat system has reached asymptotic levels. **Groundwater Sampling 2007** In June 2007, shallow zone groundwater sampling was performed. CCMC collected groundwater samples from the eight shallow water-bearing zone monitoring wells and three shallow zone eductor wells. The groundwater samples were tested for the presence of VOCs. Historical groundwater sampling data from June 1986 through this most recent groundwater sampling event (June 2007) were summarized in the June 2007 *Monitoring Well Sampling, Former Electro-Therm Facility, Denton, Maryland.* The June 2007 report concluded the following:

The data showed that the remediation effort had significantly reduced the size and concentration of the plume of VOC-contaminated groundwater. The area of significant persistent VOC contamination in groundwater appeared to be limited to beneath the southwestern corner of the building and in the adjoining area.

Further, the sample results from the June 2007 round of sampling as well as historical data indicated that the deep zone aquifer used for water supply at the Site had not been affected by shallow zone VOC contamination.

Four monitoring wells had groundwater sampling results above the Maximum Contaminant Limits (MCLs) promulgated at 40 C.F.R. Part 141 pursuant to Section 1412 of the Safe Drinking Water Act, 42 U.S.C. Section 300g-1 (MW-2, MW-4, EW-6, and EW-10). The levels of 1,1 -dichloroethene, tetrachloroethene, and 1,1,1 -trichloroethane detected in MW-2 during the recent sampling event were 24 ug/L, 21 ug/L, and 97 ug/L, respectively. MW-4 contained only three VOCs at levels above the MCL, namely tetrachloroethene at 190 ug/L, trichloroethene at 8 ug/L, and 1,1- dichloroethene at 15 ug/L. Tetrachloroethene and 1,1 -dichloroethene concentrations were, respectively, 39 ug/L and 32 ug/L in groundwater sampled from EW-6 and 24 ug/L and 21 ug/L in the groundwater sampled from EW-l0.

Groundwater Sampling 2011

In March 2011, CCMC performed groundwater sampling of the shallow water-bearing zone. Results from this sampling event identified limited areas of VOC contamination of the shallow water-bearing zone. The principal contaminants were 1,1,1-trichloroethane, trichloroethene, tetrachloroethene, 1,1-dichloroethene, and 1,1- dichloroethane. In some instances, these contaminant concentrations exceed existing MCLs, and Maryland Department of the Environment Cleanup Standards for Groundwater for Type I and II Aquifers (MDE Cleanup Standards). During the March 2011 sampling event, CCMC collected samples from eight monitoring wells (MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, and MW-8) and three eductor (extraction) wells (EW-2, EW-6, and EW-10) for analysis of VOC concentrations.

The groundwater sampling data from the March 2011 sampling event, in conjunction with historical groundwater sampling data, demonstrate the following:

1) Groundwater at the perimeter of the Site in the isolated remediation area northeast of the building is remediated. VOCs have not been detected in groundwater sampled from the two perimeter wells in this area since 1996, and VOCs have not been detected at concentrations above their respective MCLs since 1993.

2) Groundwater in the isolated remediation area at the northwest end of the Site no longer contains concentrations of VOCs above applicable MCLs.

3) Groundwater from upgradient wells remains uncontaminated.

4) The deep zone water supply aquifer for the Site has not been impacted by shallow zone VOC contamination.

The results of the most recent sampling event indicate that groundwater from seven of the 11 wells (MW-3, MW-5, MW-6, MW-7, MW-8, EW-2, and EW-6) contain levels of VOCs below applicable MCLs.

The most current sampling data indicate that groundwater from three of the 11 wells (MW-1, MW-2, and MW-4) contained tetrachloroethene, 1,1,1-trichloroethene, and 1,1-dichloroethene above respective MCLs as follows:

Increased concentrations of tetrachloroethene (at 38 µg/L, MCL 5 ug/l) were detected in groundwater from monitoring well MW-1 during the most recent sampling event.

The levels of 1,1-dichloroethene and tetrachloroethene detected in MW-2 during the recent sampling event were 23 µg/L (MCL 7 ug/l) and 32 µg/L (MCL 5 ug/l), respectively.

The latest groundwater sample from MW-4 contained only three VOCs at levels above the applicable MCLs: tetrachloroethene at 66 µg/L (MCL 5 ug/l), 1,1,1-trichloroethane at 220 µg/L (MCL 200 ug/l), and 1,1-dichloroethene at 20 µg/L (MCL 7 ug/l).

MW-1, 2, and 4 are all adjacent to the building.

Groundwater Sampling 2013

In October 2013, CCMC performed groundwater sampling of the shallow water-bearing zone at the Site. Results from this sampling event and previous investigations identified limited areas of VOC contamination of the shallow water-bearing zone.

The groundwater sampling data resulting from the October 2013 sampling event, in conjunction with historical groundwater sampling data, demonstrate the following:

1) Groundwater at the downgradient perimeter of the Site, along its north and northwest border, has not contained concentrations of regulated VOCs above either the MCLs or the MDE Cleanup Standards for the past two sampling rounds (March 2011 and October 2013).

2) The area and volume of VOC-contaminated groundwater adjacent to the southwestern corner of the building remains significantly reduced and contained.

3) Groundwater from upgradient wells remains uncontaminated.

4) The deep zone water supply aquifer for the Site historically has not been impacted by shallow zone VOC contamination.

In the March 1987, samples from MW-2, before remediation began, contained the following levels of VOCs above their respective MCLs: 1,1-dichloroethene, tetrachloroethene, 1,1,1-trichloroethane, and 1,1-dichloroethane were at 78 µg/L, 180 µg/L, 890 µg/L, and 110 µg/L, respectively. The levels of 1,1-dichloroethene, tetrachloroethene, 1,1,1-trichloroethane, and 1,1-dichloroethane detected in MW-2 during the 2013 sampling event were 11 µg/L, 31 µg/L, 61 µg/L, and 0.62 µg/L, respectively.

VOC concentrations in groundwater from MW-2 have been greatly reduced compared with previous levels beginning with the June 2007 sampling event. The most recent sampling data show that only 1,1-dichloroethene and tetrachloroethene remain at concentrations above their MCLs. The most recent VOC contaminant concentrations in MW-2 have been between nearly one and over two orders of magnitude lower than those of the September 2005 sampling event and earlier, back to the time of remediation system

	start-up in 1988. The March through September 1993 sampling events were historically the time of highest VOC contaminant concentrations, when levels of 1,1-dichloroethene, tetrachloroethene, and 1,1,1-trichloroethane, 1,1-dichloroethane were as high as 1,000 µg/L, 1,400 µg/L, 36,000 µg/L, and 130 µg/L, respectively. Data indicate that groundwater contaminants in the vicinity of MW-4 have been significantly reduced from preremediation system start-up levels (prior to March 1988). In March of 1987, the sample from MW-4 contained levels of 1,1-dichloroethene at 95 µg/L, trans-1,2-dichloroethene at 250 µg/L, tetrachloroethene at 1,000 µg/L, 1,1,1-trichloroethane at 310 µg/L, 1,2-dichloroethane at 6 µg/L, and trichloroethene at 70 µg/L. The latest groundwater sample from MW-4 contained only three VOCs at concentrations above the MCL, namely tetrachloroethene at 42 µg/L (MCL 5 µg/L), 1,1,1-trichloroethene at 220 µg/L (MCL 200 µg/L), and 1,1-dichloroethene at 18 µg/L (MCL 7 µg/L) . Sampling data from MW-8 indicates that pre-remediation levels of the contaminants benzene (5 µg/L), toluene (70 µg/L), 1,1,1-trichloroethane (3,400 µg/L), 1,1-dichloroethene (430 µg/L), 1,1-dichloroethane (470 µg/L), and tetrachloroethene (1,000 µg/L) have all been reduced significantly. The latest groundwater sample from MW-8 contained concentrations of only tetrachloroethene at 13 µg/L (MCL 5 µg/L) and 1,1-dichloroethene at 17 µg/L (MCL 7 µg/L).
Facility Soil	Soil concentrations were screened against EPA RBCs for residential and industrial soil screening levels (SLs). No constituents were detected in soil above their respective residential SLs.

Under the Government Performance and Results Act (GPRA), EPA has set national goals to address RCRA corrective action facilities. Under GPRA, EPA evaluates two key environmental clean-up indicators for each facility: (1) Current Human Exposures Under Control which the Facility met on May 22, 2002 and, (2) Migration of Contaminated Groundwater Under Control which the facility met on February 5, 2003. The environmental indicator determinations are available at http://www.epa.gov/reg3wcmd/ca/md.htm.

IV. CORRECTIVE ACTION OBJECTIVES

EPA's Corrective Action Objectives for the Facility are the following:

A. Soils

EPA's Corrective Action Objective for Facility soil is to meet EPA's residential RBCs for direct contact with soils and allow for unrestricted use. Facility soils do not contain concentrations of contaminants above EPA's RBCs for residential soils. Therefore, EPA's corrective action objective for soils has been met.

B. Groundwater

EPA's Corrective Action Objective for groundwater at the Facility is to meet drinking water standards established by the MCLs. Until such time that MCLs are met, EPA proposes to control exposure to the hazardous constituents remaining in the groundwater by requiring the compliance with and maintenance of groundwater use restrictions at the Facility.

V. PROPOSED REMEDY

The Facility has been operating a pump and treat system since 1988. During its operation, contaminant concentrations in groundwater have declined significantly, but levels of tetrachloroethene, 1,1,1-trichloroethene, and 1,1-dichloroethene are still slightly above drinking water standards in some onsite wells. EPA anticipates that these contaminant concentrations are now low enough that natural attenuation processes may be sufficient to ultimately achieve drinking water standards without further active treatment. Therefore, the proposed remedy for groundwater is to pump and treat the groundwater when the perimeter wells exceed the drinking water standards, in conjunction with monitored natural attenuation until drinking water standards are met throughout the plume.

Because some contaminants currently remain in the groundwater at the Facility at levels which exceed drinking water standards, EPA's proposed remedy also

requires the compliance with and maintenance of groundwater use restrictions that are enforceable against future land owners to prevent exposure to contaminants while levels remain above drinking water standards. The groundwater use restrictions shall include, but not be limited to, the following:

1. Groundwater at the Facility shall not be used for any purpose other than the operation, maintenance, and monitoring activities required by MDE and/or EPA, unless it is demonstrated to EPA, in consultation with MDE, that such use will not pose a threat to human health or the environment or adversely affect or interfere with the final remedy and EPA, in consultation with MDE, provides prior written approval for such use;

2. No new wells shall be installed on Facility property unless it is demonstrated to EPA, in consultation with MDE, that such wells are necessary to implement the final remedy and EPA provides prior written approval to install such wells;

3. A vapor intrusion control system, the design of which shall be approved in advance by EPA, shall be installed in each new structure constructed above the contaminated groundwater plume or within 100-foot around the perimeter of the contaminated groundwater plume, unless it is demonstrated to EPA that vapor intrusion does not pose a threat to human health and EPA provides prior written approval that no vapor intrusion control system is needed;

4. The existing building will be used for industrial use only unless a vapor intrusion control system is installed, with the specific engineering plans for the vapor intrusion control system to first be submitted to and approved by EPA and MDE prior to construction;

5. The Property shall not be used in a way that will adversely affect or interfere with the integrity and protectiveness of the final remedy including, but not limited to the groundwater wells; and

6. Owner shall allow the EPA, MDE, and/or their authorized agents and representatives, access to the Facility property to inspect and evaluate the continued effectiveness of the final remedy.

These restrictions will be implemented through an enforceable mechanism which shall consist of an order, environmental covenant and/or regulations and local ordinances, such as the State of Maryland Well Construction Regulations, Article Title 9, Subtitle 13, Annotated Code of Maryland; Code of Maryland Regulation (COMAR), Title 26, Subtitle 4, Chapter 4, COMAR 26.04.04. If an environmental covenant is implemented as part of the final remedy, it will be recorded in the chain of title for the Facility property and, once recorded, will be enforceable against future land owners.

C. Additional Requirements

In addition, CCMC shall provide EPA with a coordinate survey as well as a metes and bounds survey, of the Facility boundary. Mapping the extent of the land use restrictions will allow for presentation in a publicly accessible mapping program such as Google Earth or Google Maps.

VI. EVALUATION OF PROPOSED REMEDY

Threshold Criteria	Evaluation
1) Protect human health and the environment	The proposed remedy requires groundwater use restrictions to minimize the potential for human exposure to contamination and vapor intrusion controls for new construction, as necessary. In addition, the existing State of Maryland well construction regulations will aid in minimizing exposure to contaminated groundwater by restricting the installation of wells in contaminated water sources.

2) Achieve media cleanup objectives	The Facility has achieved the EPA's industrial and residential SLs for soils. Vapor intrusion does not pose a threat to human health in the exiting building as long as its use remains industrial. In addition, EPA's proposed remedy requires vapor intrusion control systems be installed in each new structure constructed above the contaminated groundwater plume or within 100-foot around the perimeter of the contaminated groundwater plume, unless it is demonstrated to EPA that vapor intrusion does not pose a threat to human health. The groundwater plume appears to be stable (not migrating) or declining over time. In addition, EPA's proposed remedy requires the implementation and maintenance of groundwater use restrictions to ensure that groundwater beneath Facility property is not used for any purpose except to conduct the operation, maintenance, and monitoring activities required by MDE and EPA.
3) Remediating the Source of Releases	There are no remaining large, discrete sources of waste from which constituents would be released to the environment. Groundwater is not used for potable purposes at the Facility.
Balancing/Evaluation Criteria	
5) Long-Term Effectiveness	EPA's proposed remedy requires the compliance with and maintenance of groundwater use restrictions at the Facility. The proposed restrictions which EPA anticipates will be implemented through an order and/or an environmental covenant to be recorded in the chain of title for the Facility property. This will maintain protection of human health and the environment over time by controlling exposure to the hazardous constituents remaining in groundwater and protecting the integrity of the remedy. In addition, a groundwater monitoring program already in place will continue until drinking water standards are met.
6) Reduction of Toxicity, Mobility, or Volume of the Hazardous Constituents	The reduction of toxicity, mobility and volume of hazardous constituents at the Facility has already been achieved, as demonstrated by the data of the groundwater monitoring showing that the plume appears to be stable (not migrating), and concentrations of constituents of potential concern (COPCs) are either stable or declining over time. In addition, a groundwater monitoring program already in place will continue until groundwater clean-up standards are met.
7) Short-Term Effectiveness	The proposed remedy does not involve any activity such as construction or excavation that poses any short-term risks to residents, workers or the environment. EPA anticipates that the land use and groundwater use restrictions will be fully implemented shortly after the issuance of the Final Decision and Response to Comments.

8) Implementability	EPA's proposed decision is readily implementable. EPA proposes to implement the institutional controls through an enforceable mechanism such as an order and/or an environmental covenant.
9) Cost	EPA's proposed remedy is cost effective. The costs associated with this proposed remedy are minimal. The costs for the continuation of groundwater monitoring are approximately $17,000 per year. Costs for the pump and treat system are approximately $70,000 per year. Recording an environmental covenant and /or issuing an order will be approximately $5,000.
10) Community Acceptance	EPA will evaluate the community's acceptance of the proposed remedy during the public comment period and will be described in the Final Decision and Response to Comments.
11) State/Support Agency Acceptance	MDE has reviewed and concurred with the proposed remedy for the Facility. Furthermore, EPA has solicited MDE input and involvement throughout the investigation process at the Facility.

VII. FINANCIAL ASSURANCE

EPA has evaluated whether financial assurance for corrective action is necessary to implement EPA's proposed remedy at the Facility. The costs to obtain orders or environmental covenants are minimal. Given that EPA's proposed remedy does not require any further engineering actions to remediate soil, groundwater or indoor air contamination at this time and given that the costs of implementing institutional controls and the continuation of groundwater monitoring at the Facility will be minimal, EPA is proposing that no financial assurance be required.

VIII. PUBLIC PARTICIPATION

Interested persons are invited to comment on EPA's proposed remedy. The public comment period will last 30 calendar days from the date that notice is published in a local newspaper. Comments may be submitted by mail, fax, e-mail, or phone to Mr. Leonard Hotham at the address listed below.

A public meeting will be held upon request. Requests for a public meeting should be made to Mr. Leonard Hotham at the address listed below. A meeting will not be scheduled unless one is requested.

The Administrative Record contains all the information considered by EPA for the proposed remedy at this Facility. The Administrative Record is available at the following location[s]:

U.S. EPA Region III
1650 Arch Street
Philadelphia, PA 19103
Contact: Mr. Leonard Hotham (3LC20)
Phone: (215) 814-5778
Fax: (215) 814 - 3113
Email: hotham.leonard@epa.gov

Attachments
Figure 1: Site Location Map

Date: 5.9.14

IX. INDEX TO ADMINISTRATIVE RECORD

MDE Consent Order No. CO-88-094 (CO) April 1993

Corrective Action Program Electro-Therm Facility, Caroline County, Maryland, August 19, 1987

Final RCRA Corrective Action Plan May 1994

Monitoring Well Sampling Former Electro Therm Facility Denton, MD, June 2007

Membrane Interface Probe Investigation, Former Electro Therm Facility Denton, MD May 2010

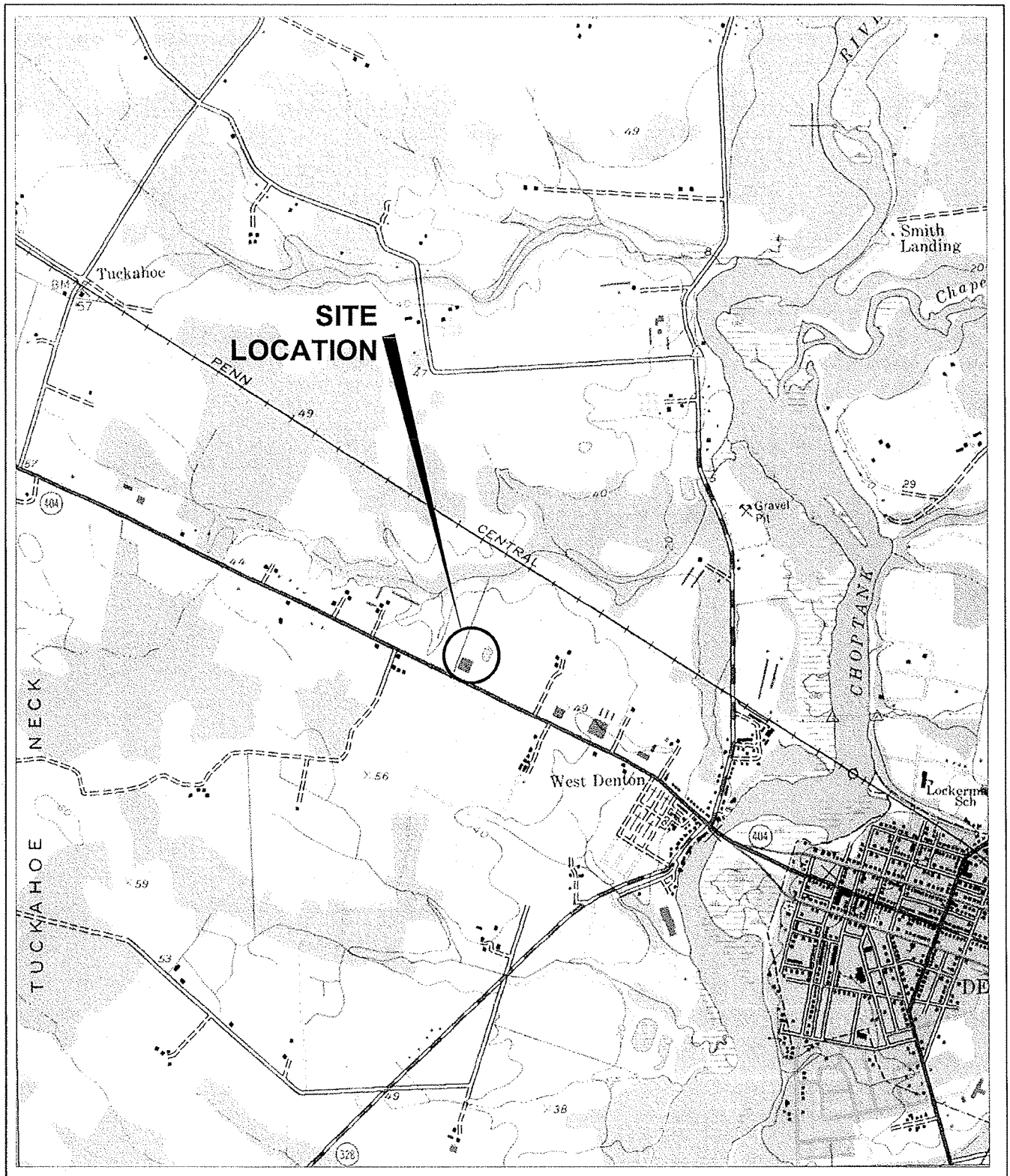
March 2011 Monitoring Well Sampling, Former Electro-Therm Facility Denton, Maryland

October 2013 Monitoring Well Sampling, Former Electro-Therm Facility Denton, Maryland

Indoor Air Sampling Report, November 2013

Corrective Measures Study For The Former Electro-Therm Facility In Denton, Maryland, March 2014

John A. Armstead, Director
Land and Chemicals Division
US EPA, Region III



MARYLAND
Quadrangle Location Map

0 2000 4000 Feet

SOURCE: U.S.G.S. TOPOGRAPHIC MAP (7.5 Minute)
DENTON, MD

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United States Environmental Protection Agency

FORMER ELECTRO-THERM, INC.

Denton, Maryland

FIGURE 1
SITE LOCATION MAP

TETRA TECH EC, INC.