



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 Chestnut Building
Philadelphia, Pennsylvania 19107-4431

November 7, 1997

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. George Fisette
Bayer Corporation
100 Bayer Road
Pittsburgh, PA 15205-9741

Re: Bayer Corporation, Damascus, Virginia
Statement of Basis

Dear Mr. Fisette:

Enclosed is a copy of the Statement of Basis for your facility. The Statement of Basis contains EPA's preliminary selection of no further action for the Bayer Facility.

The public will have an opportunity to comment on the preliminary selection discussed in the Statement of Basis from November 19, 1997 to December 19, 1997. A public meeting is tentatively being scheduled for December 4, 1997. I will contact you as soon as this date is final.

If you have any questions, please feel free to contact me at 215-566-3433.

Sincerely,

A handwritten signature in cursive script that reads "Estena A. McGhee".

Estena A. McGhee, Project Manager
RCRA General Operations Branch

Enclosure

cc: Robert Greaves (3HW90)
Betty Ann Quinn (3HW70)
Cheryl Jamieson (3RC33)
Khon Nguyen (VADEQ)

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION III

STATEMENT OF BASIS

BAYER INCORPORATED
DAMASCUS
WASHINGTON COUNTY, VIRGINIA

AR000050

U.S. EPA, REGION III
STATEMENT OF BASIS
BAYER INCORPORATED
DAMASCUS, VIRGINIA

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**STATEMENT OF BASIS
BAYER INCORPORATED
DAMASCUS, VIRGINIA**

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STATEMENT OF BASIS FOR PROPOSED CORRECTIVE MEASURES
UNDER RCRA SECTION 3008(h)

BAYER INCORPORATED
DAMASCUS, VIRGINIA

I. Introduction

This Statement of Basis(SB)describes and summarizes information gathered during the Resource Conservation and Recovery Act (**RCRA**)¹ Facility Investigation (RFI), describes the Interim Measures (IMs) conducted at the Bayer Corporation ("Bayer" or "the Facility") located in Damascus, Washington County, Virginia, and explains why no further action is necessary. The RFI and IMs were conducted pursuant to an Administrative Consent Order ("AOC"), entered into by EPA and Bayer² on March 30, 1989, Docket Number RCRA-III-016-CA, pursuant to Section 3008(h) of RCRA, as amended, 42 U.S.C. Section 6928(h).

In accordance with the AOC, Bayer completed the tasks described in the EPA-approved RFI Workplan. The purpose of the RFI was to determine fully the nature and extent of any releases of hazardous waste and/or hazardous constituents at and/or from the Bayer Facility. The IMs conducted at the Facility addressed lead and polyaromatic hydrocarbons (**PAHs**) which were determined to be the contaminants of concern found during the RFI. On April 8, 1997, Bayer completed and submitted a Corrective Measures Study ("CMS") for EPA's approval, as required by the Order. The CMS concluded that no further action was necessary based on actions taken by Bayer under IMs which are described more fully below.

To gain a more comprehensive understanding of the RCRA activities that have been conducted at Bayer, EPA encourages the public to review the RFI Workplan, the RFI Final Report, the two Interim Measures Workplans, the two Interim Measures Reports, the

¹ Words and abbreviations set forth in **bold** type are further defined in the Glossary attached hereto.

² The AOC was issued to Mobay Corporation. On January 1, 1992, the facility's name was changed to Miles Incorporated. In April 1995, the facility's name was changed to Bayer Corporation ("Bayer"). This document will refer to the facility under its current name of Bayer.

AR000053

Corrective Measures Study and other documents, which are found in the Administrative Record for this matter. The Administrative Record is located at the **Damascus Branch-Washington County Public Library**.

EPA is issuing this SB consistent with the public participation provisions of RCRA. EPA will make a final decision after information submitted during a public comment period has been considered.

EPA may modify the proposed corrective measures alternative or select other alternatives based on new information and/or public comments. Therefore, the public is encouraged to review and comment on the proposed decision presented in this document and/or any additional options not previously identified and/or studied. The public may participate in the remedy selection process by reviewing the documents contained in the Administrative Record and submitting written comments to EPA during the public comment period.

II. Proposed Remedy

EPA is proposing no further action at the Facility because the contaminants of concern were remediated during the IMS study phase.

III. Facility Background

Bayer is located in Damascus, Virginia, adjacent to the Beaverdam Creek, approximately one-half mile south of the Damascus town center and approximately 12 miles southeast of Abingdon, Virginia. The Virginia-Tennessee state line is one-half mile south of the plant. Bayer occupies 53 acres. (See Attachment 1) The manufacturing facilities associated with the former textile dye plant occupied approximately 6 acres at the northern end of the property. These six acres are known as the Northern Process Area.

Prior to 1918, a wood processing plant was operated in the center of the Southern Non-Process Area. The plant covered approximately 10 acres. Aerial photographs show that the wood processing plant continued operation through 1935. A 1953 aerial photograph shows that the plant had been demolished and lumber was stored in its place.

Beginning in 1918, various companies operated a textile dye plant at the Facility. Beaver Chemical Works owned the Facility from 1918 to 1929. American Cyanamid owned the Facility from

1929 to 1981. Mobay owned the Facility from 1981 until it closed in 1986. The textile dye plant (TDP) was primarily used for the production of textile dyes. In 1986, Bayer closed the textile dye plant and began to demolish and remove the plant structures.

The TDP had three primary production operations. These operations produced dry-powder and aqueous solution sulfur dyes, alizarine dyes and solvent-soluble dyes. The production area consisted of 18 buildings used for dye manufacturing.

Past activities which may have impacted the environment include land disposal activities, use of surface impoundments for wastewater treatment, and chemical use, storage, and transport associated with manufacturing operations.

IV. Previous Investigations

In August 1986, prior to the demolition of the TDP, Bayer conducted several geophysical surveys to locate potential waste/drum burial areas. The locations of the geophysical survey areas (GSAs) are shown in Attachment 2. The geophysical measurements revealed the possibility of buried drums in several areas of the plant. Significant magnetic anomalies were found at the former drum storage area. A small number of drums were located and removed during a 1992 Interim Measure discussed below.

In October 1986, Bayer discovered some discolored soil during the excavation of building foundations associated with plant demolition. Upon discovery of the discolored soil, Bayer conducted a preliminary assessment to determine the extent of soil contamination. Test pits were dug around the site to determine the extent and character of the discoloration. Soil and groundwater samples were collected from the test pits for chemical analysis. A total of 30 test pits were excavated (see Attachment 3). Twenty-six soil and groundwater samples were collected and analyzed. Sample results for Total Organic Compounds (TOCs) ranged from 280-2440 mg/l in soil and 4-510 mg/l in groundwater. Areas of elevated TOC correlate with areas of contamination suspected to be present based on locations of former building facilities and product and production processes. Further results are given in the June 20, 1989 RFI Work Plan.

V. Summary of the RCRA Facility Investigation

Pursuant to the AOC, as part of the RFI, Bayer investigated nine former **solid waste management units ("SWMUs")** and an old settling pond for releases of hazardous waste and hazardous

constituents, and evaluated site-specific conditions and characteristics that could affect potential contaminant migration. The nine SWMUs identified in the RFI and investigated were the RCRA container storage area, the former thiosulfate lagoon, the former organics lagoon, the former sulfur pile, the former effluent lagoon, the former drum storage area, the closed landfill site, the former thiosulfate treatment system, and the suspected drum disposal area.

The Northern Process Area includes the RCRA container storage area, former thiosulfate lagoon, former organics lagoon, former sulfur pile, former effluent lagoon, former thiosulfate treatment system and suspected drum disposal area. This includes all the area within the fence at the north end of the property. Additionally, several stained soil areas are included within the Northern Process Area. Dye manufacturing took place in this area of the property.

The Non-Process Area or Southern Property Area includes the former drum storage area, the closed landfill site and all the area within the southern portion of the property further defined as the Southern Grid Area.

See Attachment 4 for the locations of the investigated areas of the RFI.

A. Description of Units

Northern Process Area

1. RCRA Container Storage Area

The RCRA container storage area was an interim status facility located within the warehouse at the southern end of the site. This area was an area 50 feet by 50 feet where materials contaminated were stored prior to disposal.

2. Thiosulfate Lagoon

The thiosulfate lagoon was utilized in wastewater treatment systems at this site for disposal of aqueous waste. The thiosulfate lagoon received water from the thiosulfate process and stored it prior to discharge to Beaverdam Creek. (NPDES permit No. VA00010740). The thiosulfate wastewater resulted from the production of various sulfur dyes. The thiosulfate lagoon was approximately 200 feet long by 40 feet wide with a capacity of 200,000 gallons. The lagoon was constructed by lining an excavation with 8 inches of compacted clay.

3. Former Organics Lagoon

The second wastewater impoundment at the Facility was the organics lagoon. The organics lagoon was located immediately adjacent to the thiosulfate lagoon. This lagoon received all process wastewaters generated at the Facility with the exception of the thiosulfate wastewaters. This lagoon provided for equalization of wastewaters prior to discharge to the local publicly-owned treatment works (POTW). This unit was constructed by excavation and lining the excavation with clay and with an ethylene propylene diene monomer (EPDM) liner. The lagoon was approximately 200 feet long by 40 feet wide with a capacity of 200,000 gallons.

4. Former Sulfur Pile

The sulfur pile was a pile of sulfur reclaimed from the thiosulfate wastewater treatment process. This sulfur was held in storage on this pile until it could be recycled back into the manufacturing process. A typical pile capacity was 6 to 8 tons of sulfur.

5. Former Effluent Lagoon

The former effluent lagoon predated the thiosulfate and organic lagoons and was physically located at the same location as the thiosulfate and organics lagoon. The effluent lagoon was washed out during a flood on October 2, 1977. The lagoon, prior to this occurrence, was used to equalize process wastewaters before discharging to the Beaverdam Creek. This lagoon was closed in late 1977 by removing the flood debris, sludge, and contaminated soils not swept away by the flood. These materials were disposed of onsite at the landfill located on the southern portion of the property (see paragraph on "closed landfill site").

6. Former Thiosulfate Treatment System

The thiosulfate treatment system was located immediately adjacent to the organic lagoon. The purpose of the thiosulfate treatment system was to treat the wastewaters containing thiosulfate generated during the manufacture of sulfur dyes.

7. Suspected Drum Disposal Area

The Suspected Drum Disposal Area was behind the retaining wall along Beaverdam Creek, somewhere between Beaverdam Creek gauging station and the former pump house location.

8. Old Settling Pond

The old settling pond was installed in early 1940, and was designed to control the flow of chlorophenols to the regular waste equalization pond. At the start of the RFI investigation,

some blue coloring was present on the ground. The pond was closed and backfilled prior to 1974.

Southern Property (Non-Process) Area

9. Former Drum Storage Area

The former drum storage area was located south of the Northern Process Area. It evolved as an area where empty drums were stockpiled prior to either disposal or sale to drum reconditioners. In the late 1970's Bayer made an effort to remove all the drums from this area, and the practice of storing empty drums here ceased.

10. Closed Landfill Site

The closed landfill site is located 700 feet south of the textile dye plant and northeast of the former wood products facility. The purpose of the landfill was for the disposal of the flood debris, sludge, and contaminated soil from the closure of the former effluent lagoon. This landfill measures approximately 165 feet long by 50 feet wide by 5 feet deep. It is lined with 6 inches of compacted clay. A clay cap was placed on the landfill after the waste materials were placed in it.

Based on the findings of the RFI, EPA determined that the major sources of soil contamination at the Facility include lead and PAHs.

B. Summary of RFI Sampling Activities

The RFI activities included soil, surface water and groundwater investigations. Specific activities conducted included: (1) collecting 98 surface soil samples to assess the extent of PAH and lead contamination; (2) excavating 59 test pits for collecting samples and making test pit logs during excavation; (3) installing and sampling 21 monitoring wells to assess impact of site activities on groundwater (see Attachment 5); (4) completing 6 soil borings to assess the impact of site activities on subsurface soils; (5) sampling surface waters and sediments from Beaverdam Creek to assess the impact of the site on the creek; (6) stream gauging to determine discharge of Beaverdam Creek; (7) reviewing existing records and aerial photographs to evaluate historic site activities and (8) performing a risk assessment to identify and define possible existing and future health risks and potential environmental impacts associated with exposure to chemical constituents present in various media at the Facility.

The RFI investigation divided the Site into the following seven areas: the Northern Process Area, Black Stained Area, Old Settling Pond, Suspected Drum Disposal Area, Drum Storage Area, Flood Debris Landfill and Southern Grid Area. This allowed the combining of former SWMUs described above as part of the Northern Process Area. Attachment 4 shows the locations of these seven areas.

1. Groundwater Investigation

The groundwater investigation conducted during the RFI at the Facility included the collection of four rounds of groundwater samples. A total of 65 groundwater samples were collected from 21 monitoring wells (20 on-site and one off-site). Well locations are shown on Attachment 5. Groundwater samples were also collected from two test pits. (See Attachment 6).

As part of the RFI, seven monitoring wells were installed in the Southern part of the Facility also known as the Non-Process Area. One off-site well was installed **downgradient** of the Facility on the opposite bank of Beaverdam Creek. Thirteen monitoring wells were installed in the Northern Process Area. These wells include nine shallow wells and four deep (bedrock) wells. The last round of sampling for these wells was conducted in March, 1992. Sampling analysis from the wells in the Non-Process Area showed no detections of organic compounds. Sampling analysis from the wells in the Northern Process Area showed some minor detections of a few organic constituents. EPA determined that the groundwater monitoring results from both areas did not pose an unacceptable risk because EPAs **Risk Based Concentration (RBCs)** levels were not exceeded. (A more detailed discussion of EPA's risk analysis can be found in Section VII-Summary of Facility Risks)."

Since EPA determined that there was no unacceptable risk for groundwater, the 21 monitoring wells were closed in February, 1997 at the conclusion of the Interim Measures.

2. Soil Investigation

Soil samples were collected from the Northern and Southern Process Areas during the RFI. A detailed discussion of the RFI investigation of these areas follows:

Northern Process Area

EPA conducted soil investigation addressing all SWMUs (identified in Section V above) within the Northern Process Area. Seventy-eight soil samples were collected from depths ranging

from zero to eight feet below ground surface. These samples included fifty-one surface soil samples, six sub-surface soil samples from nine soil borings and twenty-one sub-surface test pit samples. Contaminants of concern above RBCs that were found in soil samples included lead at concentrations ranging from 293-1170 parts per million (ppm), and PAH (di-n-butylphthalate) at a concentration of 4.16 ppm.

The most significant areas of soil contamination are listed below:

Black Stained Area

An area of black stained soil was observed in subsurface soils during work in the Northern Process Area. The areal extent of the black material can be seen in Attachment 4. Fifteen samples were collected to characterize the black material. Attachment 6 shows the location of the black material in the Northern Process Area. The material extended from the ground surface to approximately 10 feet below ground surface. Although the material could not be definitively identified, based on historical disposal practices and sample analyses, EPA determined that this material would be consistent with results expected from sulfur-based dye products. Based on the sample analyses, EPA further determined that there were no hazardous constituents of concern above RBCs which could cause a threat to human health or the environment.

Old Settling Pond

Two samples were collected from the former location of the Old Settling Pond. These samples were collected to characterize a colored material in the former location of the Old Settling Pond. Excavation of test pits in the area of the Old Settling Pond revealed a blue-gray band of material at a uniform depth of 1.5 feet below ground surface. The blue-gray material was evident throughout the limits of the excavations in a band approximately 0.5 feet thick. Based on historical disposal practices, this material would be consistent with the production of sulfur based dyes. Based on sample analyses of this material, EPA determined that there were no hazardous constituents of concern above RBCs that could pose a threat to human health or the environment.

Suspected Drum Disposal Area

In August 1986, based on discussions with a former employee, Bayer suspected that an area in the vicinity of the retaining wall along the western perimeter of the Northern Process Area was a former drum disposal area. Excavation of test pits in this area (See Attachment 7 for location of test pits) revealed metal

pipng and pipe fittings underground at this location. Evidence of buried drums was not discovered during excavation of these test pits. All piping materials were disposed of in a solid waste landfill. Since no evidence of visual contamination was noted, EPA determined that no further action was needed in this area.

Drum Storage Area

Forty-one soil samples were taken in the Drum Storage Area. To determine if buried waste was present, fourteen test pits were excavated. (See Attachment 8 for location of test pits) A small number of drums were discovered and removed as an Interim Measure during 1992. The drums, drum fragments and discolored soils were placed into five 55-gallon drums and one composite sample was collected from the drums. Based on sample results, the material was disposed of off-site at a solid waste landfill. In addition to sampling the composited drum material, soil samples were collected in the vicinity of the excavated drums. Based on sample results, EPA determined no hazardous constituents above RBCs were present that could pose a threat to human health or the environment.

Flood Debris Landfill

Five samples were collected to investigate the flood debris landfill. Four test pits were excavated to assess the potential of contaminants migrating from the closed landfill and to delineate the boundaries of the landfill. Attachment 9 presents the location of the landfill. Delineation of the landfill limits was accomplished by hand augering and observing the occurrence of the clay cap. The survey of the flood debris landfill showed that the landfill is approximately 100 feet long by 50 feet wide at the south end and 40 feet wide at the north end. The closed landfill was estimated to be 6 feet deep with a volume of approximately 1,000 cubic yards.

Sample analysis revealed that the major contaminant of concern was lead. Contaminants other than lead were found at levels that EPA determined would not pose a threat to human health or the environment. All lead-contaminated material was removed under an IM approved by EPA. Upon completion of the IM, EPA determined that no hazardous constituents remained above RBCs that could pose a threat to human health or the environment. Further discussion of EPA's criteria for lead removal is found in Section VII.

Southern Property (Non-Process) Area

The Southern Property Area is a wooded area south of the Northern Process Area. It was suspected to be contaminated with

PAHs and lead as a result of previous logging and wood processing activities that occurred in the early 1900's. One hundred thirty-one soil samples were collected to characterize this area. Attachment 10 shows the location of these samples. The samples showed elevated concentrations of PAHs and lead. In order to determine the lateral extent of contamination, a grid system was established in this area. Continued investigation of the southern area showed a possible correlation between PAHs and the railroad spur that exists in the area. The elevated lead concentrations correspond to the former location of the wood products facility. Further discussion of EPA's criteria for lead removal is found in Section VII.

3. Surface Water and Stream Sediment Investigation

To assess the impact of site activities on Beaverdam Creek and surface water located south of the Northern Process Area, surface water and sediment samples were collected both on-site and in Beaverdam Creek.

Surface water and sediment sampling results have shown low levels of contaminants which were further studied in EPA's risk assessment. Based on the risk assessment, EPA determined that no hazardous constituents above RBCs were present that could pose a threat to human health or the environment.

4. Drinking Water-Wells in the Vicinity of Facility

EPA has determined that no further action is needed for groundwater. Baseline risks are within acceptable limits for a residential scenario where groundwater is the primary source of drinking water. Additionally, public water is readily available to all residents in the vicinity of the Facility. Groundwater is not used as a drinking water source for residential areas.

C. Ecological Assessment and Investigation

An Ecological Assessment (EA) was conducted by Bayer to evaluate the potential for adverse impacts to non-domesticated plants and animals from the Facility. An aquatic survey was conducted in Beaverdam Creek including a habitat assessment, benthic macroinvertebrate biosurvey, and fish biosurvey. Bioassays using fish (*Ceriodaphnia dubia*) exposed to water from the Creek were also performed, along with a vegetation survey across the Facility.

The surveys of fish and macroinvertebrate communities conducted by Bayer did not find any differences among the 3

stations in Beaverdam Creek. The bioassay (a method to determine toxicity to fish) also did not indicate any adverse effect on the water sample collected from the stream station below the Site(SS-2). Although, the vegetation survey detected differences among plant communities, these studies did not indicate any impacts that could be attributed to chemical releases from the Facility.

The EA results indicate that no unacceptable ecological risks exist from the Facility. As a result, no actions to improve the ecological environment at the Facility are necessary.

VI. Interim Measures

On January 23, 1996, Bayer submitted a IM Workplan for EPA's approval. EPA issued approval of the IM Workplan to allow Bayer to proceed with the work described below on May 30, 1996.

From June 4, 1996 through February 22, 1997, an Interim Measure (IM) was conducted to excavate soil with lead concentrations that exceeded residential clean-up levels. EPA determined that a residential clean-up level was appropriate in light of future land use of the Facility. Elevated PAHs in areas listed above were also excavated during the excavation of lead contaminated soil.

Six of the lead exceedance locations were in the wooded Southern Non-Process Area, and one lead exceedance location was in the Northern Process Area (Flood Debris Landfill). (See Attachment 11 for locations). Pre- and post-excavation sampling was performed on the soils to confirm that the full lateral and vertical extent of lead contamination was identified and that the contaminated soil was properly removed. Statistical analyses were performed to verify that the remaining soils in both the Northern and Southern Areas met EPA residential clean-up levels. EPA determined that the clean-up levels were achieved when all samples taken averaged less than 400 ppm of lead (based on the **95% upper confidence limit** calculation in four quadrants) and no one sample exceeded 1,000 ppm.

A. Summary of Interim Measure Remediation

1. Northern Process Area-Stained Soil

Work conducted during the IMs included excavation of soil from three areas in the Northern Process Area.

Based on the RFI, the largest colored soil area was estimated to require a 270 foot by 30 foot excavation. During the IMs, removal continued until no visible colored soils or

debris remained. The debris consisted of steel drum fragments, wood, and metallic debris. Since surface soils in this area showed elevated levels of lead, confirmatory sampling was done at both the perimeter and the base of the excavation to ensure the remaining soils met the cleanup criteria established for lead. The final excavation was larger than originally estimated because the colored soil and debris extended further south and west than originally expected. The final excavation was approximately 320 feet by 90 feet. See Attachment 12.

A total of 20 grab samples were collected at spacially distributed intervals at this area from a depth of zero to 12 inches below ground surface. The grab samples were composited into one sample and analyzed. Based on the results of the analysis, 4,022 tons of soil and debris were classified as non-hazardous waste and were taken to a solid waste landfill for disposal.

Confirmatory sampling was performed in this area after soil was excavated. A 2-foot buffer zone was tilled on the four perimeter sides of the excavated area. None of the 35 samples collected contained lead concentrations above the clean-up criterion of 1000 ppm of lead. The results of the confirmatory sampling are illustrated in Attachment 12. The area was backfilled with off-site borrow material from a source that was analyzed and found to be free of contamination.

Two smaller (10 feet by 10 feet) areas, which were previously observed to have colored soil, were remediated. Removal of these areas continued until all visible colored soil was removed. The final limits of excavation consisted of a 25-foot by 220-foot area as shown in Attachment 13. During the excavation, six grab samples at spacially distributed intervals were collected from a depth of zero to 12 inches below ground surface. These samples were composited into one sample for analysis. Based on this analysis, the soil from the two small colored soil areas were characterized as non-hazardous. The soil was removed and disposed of at a solid waste landfill.

The limits of excavation for these areas were based on visual observation of colored soils. Confirmatory sampling was not required for these areas since previous sampling showed that there were no contaminants of concern in the remaining colored areas.

2. Flood Debris Landfill

The contents of the Flood Debris Landfill (which also contained surface soils with elevated lead concentrations) were

removed. Before the IMs, the landfill was originally thought to occupy an area 40 feet by 100 feet, and was estimated to contain material 6 feet deep. During the IMs, the landfill was found to contain soils stained with black and blue dyes and miscellaneous wood and metallic debris. The final limits of the Flood Debris Landfill excavation were 50 feet by 170 feet with an average depth of 4 feet. See Attachment 14.

Removal of the landfill contents continued until the following two criteria were met: 1) visual observation confirmed that no further waste material remained buried, 2) surface soils with elevated lead concentrations above EPA's lead removal criteria (see Section VII of this SB) were removed.

The Flood Debris Landfill was sampled prior to removal activities. A total of 6 grab samples were taken at spacially distributed intervals approximately two feet below the ground surface. These samples were composited into one sample for analysis. Based on the sample results the material from the Flood Debris Landfill was classified as non-hazardous waste, and approximately 2325 tons were removed and disposed of at a solid waste landfill.

Confirmatory sampling was conducted after the contents of the Flood Debris Landfill were excavated. A 2-foot buffer zone was tilled on the four perimeter sides of the excavated area. A total of seven confirmatory samples were collected from surface soils within the two-foot buffer zone. The bottom of the excavation was tilled to a depth of 6 inches and eight base samples were collected. None of the 15 samples collected contained lead concentrations above the clean-up criterion of 1000 ppm of lead. The results of the confirmatory sampling are illustrated in Attachment 14. The Flood Debris Landfill was backfilled with off-Site borrow material from a source that was analyzed and found to be free of contamination.

4. Warehouse Building

The warehouse building which was the only remaining permanent structure was also demolished during IMs.

VII. Summary of Facility Risks

Prior to any remediation conducted pursuant to the IMs, a Baseline Risk Assessment was conducted for identified contaminants of concern, to evaluate the potential of adverse effects on human health and the environment. Contaminants of concern are listed below:

	Northern Process Area	Southern Non- Process Area	Area 3	Beaverdam Creek Sediment	Beaverdam Creek Surface Water	Groundwater
Arsenic	x	x	x	x		
Antimony		x				
Cadmium	x					
Lead	x	x	x			x
Nickel						x
Benzo(a) anthracene (PAH)	x	x	x			
Benzo(a) pyrene (PAH)	x	x	x			
Benzo(b) fluoroanthene (PAH)	x	x	x			
Benzo(a,h) anthracene (PAH)		x				
Dioxin (as 2,3,7,8-TCDD equivalent)	x		x			x
t-1,4-dichloro-2-butene			x	x		
op-toluidine			x			
Anthracenedione			x			
2-chloroanthracenedione			x			
PCB-1248			x			
p-isopropyltoluene				x		
n-propylbenzene				x		
bis(2-ethylhexyl)phthalate					x	
7,12-dimethylbenz(a) anthracene (PAH)					x	
Carbon disulfide						x
chlorobenzene						x

Exposure pathways of surface soils and groundwater were identified based on current and future use scenarios. For each contaminant of concern, receptor, exposure pathway, non-cancer hazard indices and theoretical excess lifetime cancer risks were calculated. Attachment 15 indicates the samples incorporated into the Baseline Risk Assessment. Health risk calculations are summarized in Attachment 16 through 18. The summed hazard index for non-carcinogenic effects of chemicals should be less than 1. An excess lifetime cancer risk of 10^{-6} indicates that an individual has one in a million chance of developing cancer as a result of site-related exposure to a carcinogen over a 70 year lifetime. The need for remediation at a site is indicated when total excess cancer risks exceed the range $1E-04$ to $1E-06$.

PAHs

Potential adverse effects on human health from PAHs evident in soils present at the Facility were analyzed as part of the Baseline Risk Assessment. As a result, IMs were conducted which resulted in the removal of a large quantity of surface soils containing PAHs above RBCs. As a result of the IMs taken at the Facility, EPA has determined that no hazardous constituents remain at the Facility which are above RBCs that could pose a threat to human health or the environment.

Lead

Potential adverse effects on human health from lead evident in soils present at the Facility were analyzed as part of the Baseline Risk Assessment. As a result, IMs were conducted at the Facility which resulted in the removal of a large quantity of surface soils containing lead above RBCs.

The unacceptable risk for lead in soils was due to samples from some surface soils in the Flood Debris Landfill and the stained soils in the Northern Process Area. The 1996 IMs were designed to address unacceptable lead levels. EPA required that all soils known to contain lead concentrations greater than 1,000 ppm be removed and disposed of during the 1996 IMs at the Facility. In addition, a post excavation risk assessment was conducted to ensure that the 95% UCL of lead concentrations in soils remaining at the Facility were less than 400 ppm. As a result of the IMs, EPA has determined that no hazardous constituents remain at the Facility above RBCs that could pose a threat to human health or the environment.

VIII. Scope of Corrective Action

The Interim Measures conducted by Bayer addressed the lead and PAH contamination in soils at the Facility. Therefore, EPA has determined that no further action is needed.

IX. Public Participation

On November 19, 1997, EPA placed an announcement in the Washington County News to notify the public of EPA's determination that no further action is necessary and the location of the Administrative Record. Copies of this Statement of Basis will be mailed to anyone who requests a copy. The Administrative Record, including this Statement of Basis, is available for review during business hours at the following locations:

U.S. Environmental Protection Agency
Region III
841 Chestnut Building
Philadelphia, Pennsylvania 19107
Telephone Number: (215) 566-3433
Attn: Mrs. Estena A. McGhee (3HW90)

and

Damascus Branch-Washington County Public Library
East Laurel Avenue
Damascus, Virginia 24236
Telephone Number: 540-475-3820

EPA is requesting input from the public on the EPA's determination that no further action at this Facility is necessary. The public comment period will last thirty (30) calendar days beginning November 19, 1997 and ending December 19, 1997. Comments on, or questions regarding, EPA's tentative decision may be submitted to:

Mrs. Estena A. McGhee (3HW90)
U.S. EPA, Region III
841 Chestnut Building
Philadelphia, PA 19107
(215) 566-3433
FAX (215) 566-3113

During the thirty (30) day public comment period, EPA will hold a public meeting on EPA's determination that no further action is necessary. If sufficient public interest indicates that a meeting would be valuable for distributing information and communicating ideas. After evaluation of the public's comments, EPA will prepare a Final Decision Document and Response to Comments which identifies the selected remedy. The Response to Comments will address all significant written comments and any notable oral comments generated if a public meeting is held. This Final Decision Document and Response to Comments will be made available to the public. If, on the basis of such comments or other relevant information, significant changes are proposed to be made to EPA's determination that no further action is necessary, EPA may seek additional public comments.

Upon consideration of public comments, EPA will make a final decision in accordance with RCRA Section 3008(h), U.S.C. §6928(h).

11/7/97
Date


Abe Ferdas, Acting Director
Hazardous Waste Management Division

GLOSSARY

Ceriodaphnia dubia - a freshwater macroinvertebrate used in the determination of aquatic toxicity.

Downgradient - an area that is same in direction to groundwater flow which has been affected by contaminants of concern from the Facility.

PAHs - Polyaromatic hydrocarbons, a class of compounds consisting of substituted and unsubstituted polycyclic aromatic rings formed by the incomplete combustion of organic materials.

RBCs - Risk Based Concentrations.

RCRA - Resource Conservation and Recovery Act, which was enacted in 1976 and amended in 1984, and directed EPA to develop and implement a program to protect human health and the environment from improper hazardous waste management practices. The program is designed to control the management of hazardous waste from its generation to its disposal.

Solid Waste Management Unit (SWMU) - includes any unit used for the collection, source separation, storage, transportation, transfer, processing, treatment or disposal of solid waste, including hazardous wastes, whether such facility is associated with facilities generating such wastes or otherwise.

Surface Impoundment - a depression or diked area (e.g., pond, pit, or lagoon) used for storage, treatment, or disposal.

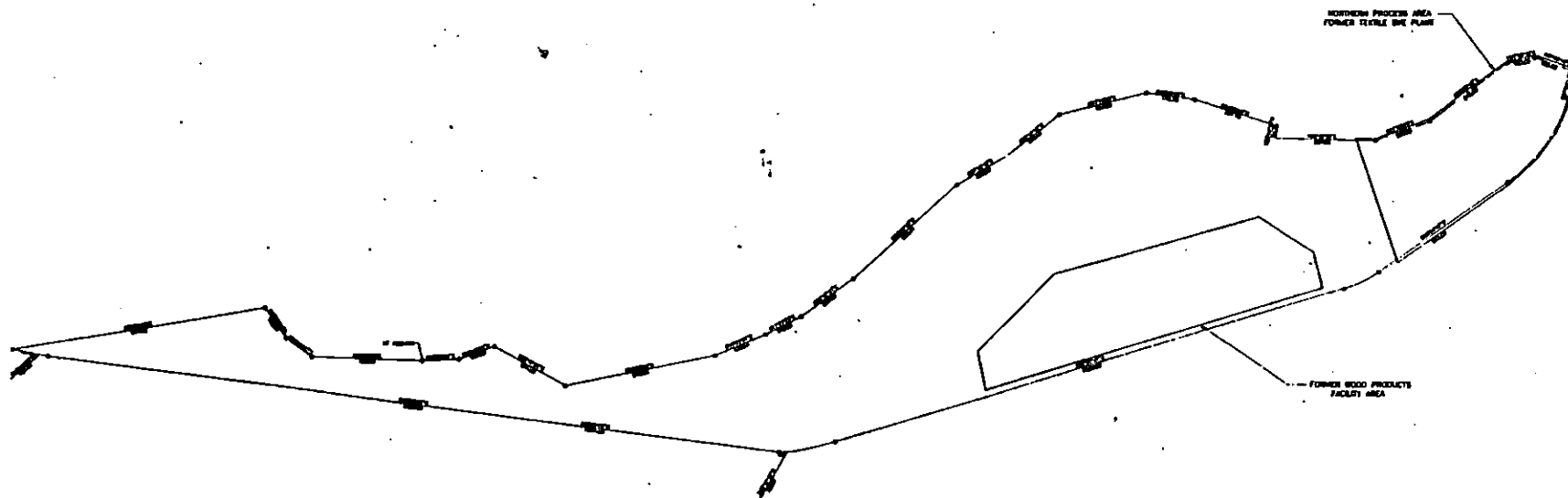
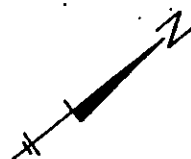
95% UCL - 95% upper confidence limit, a value that, when calculated repeatedly for randomly drawn subsets of site data, equals or exceeds the true mean 95 percent of the time.

ug/dL - microgram per deciliter.

1E-06 - Potential for one person in a population of one million people to contract cancer.

PLOT SCALE: 1"=100'

DATE	11/10/10
BY	ICF KAISER ENGINEERS
CHECKED BY	
APPROVED BY	

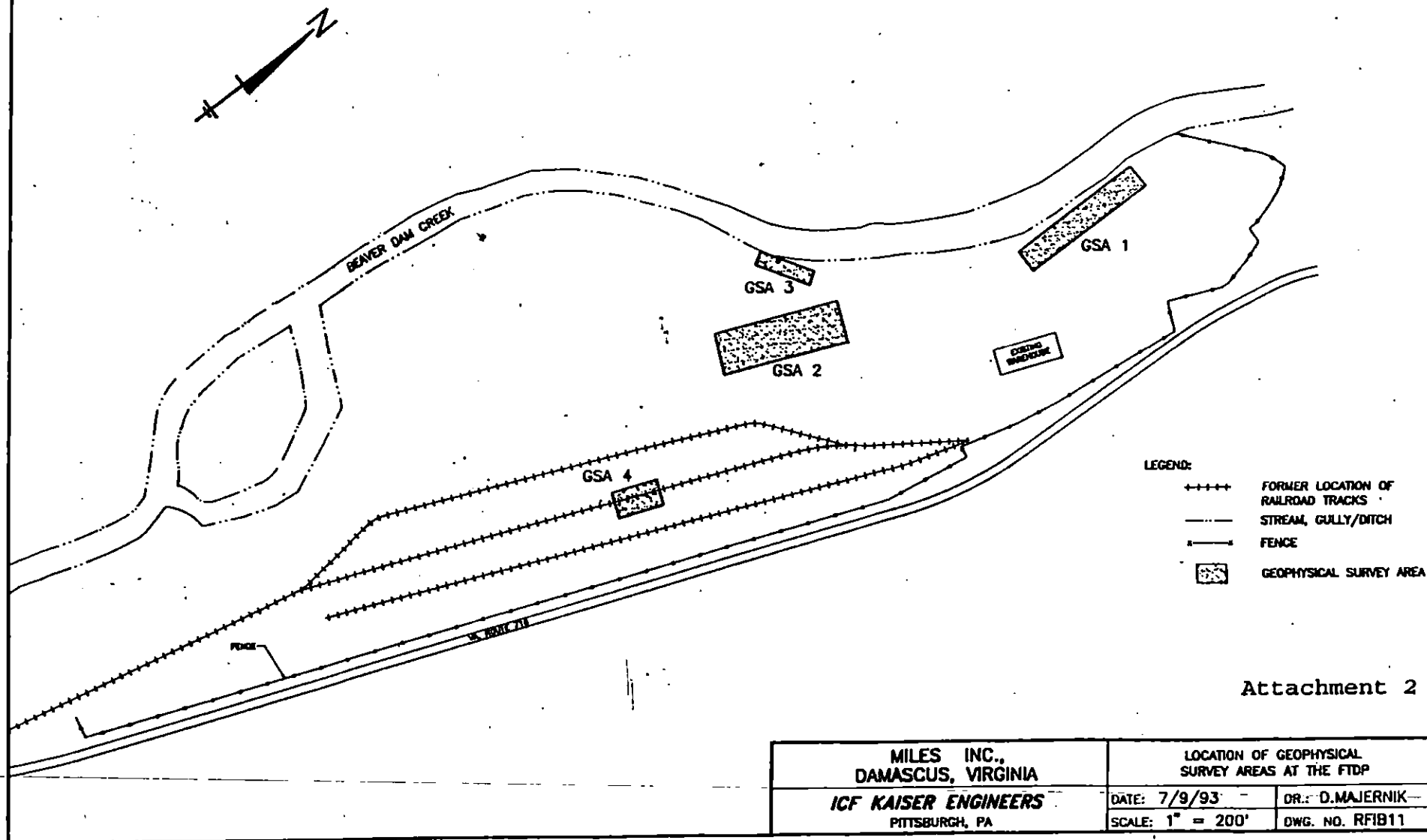


AR000070



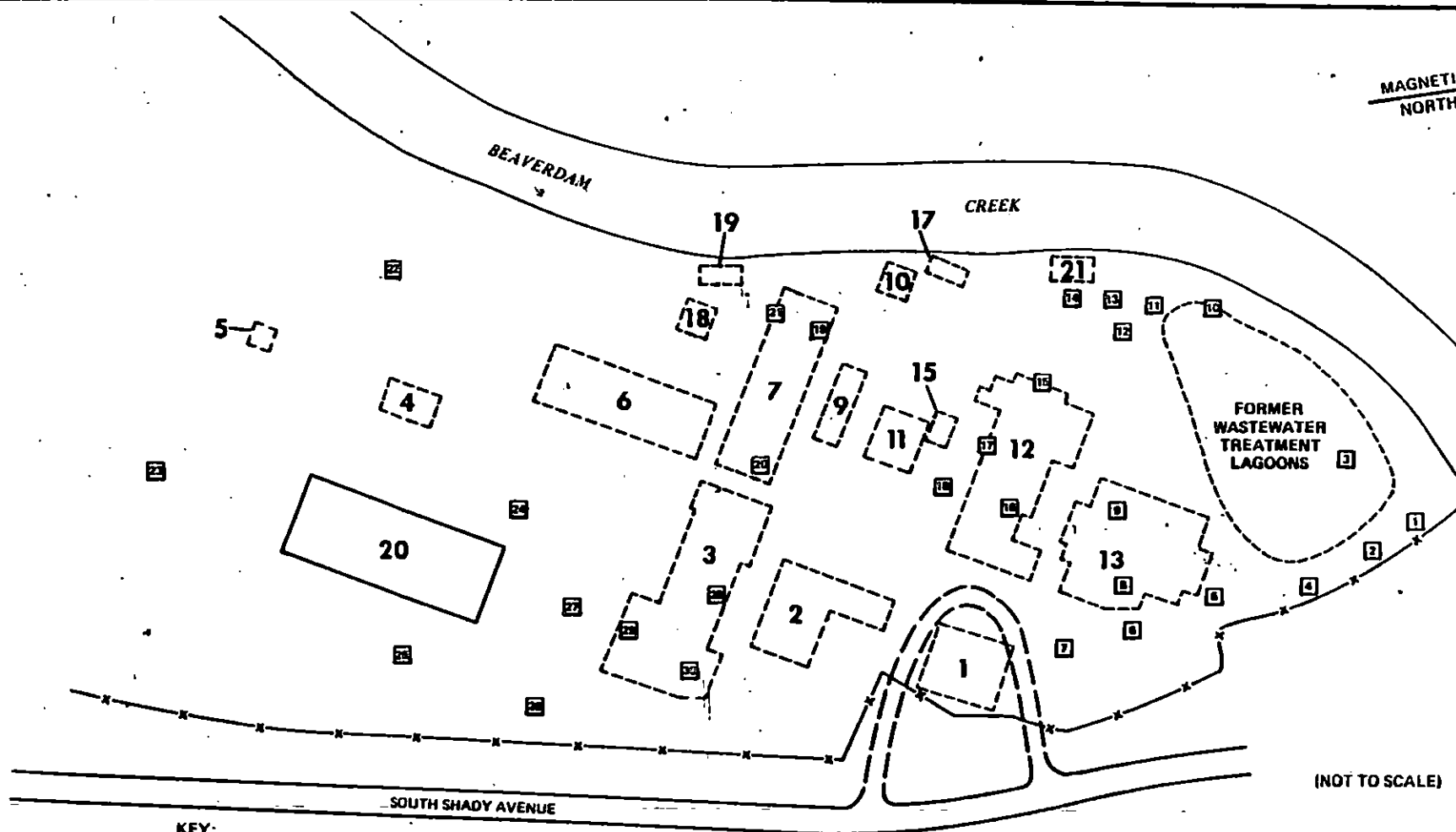
Attachment 1

ICF KAISER ENGINEERS	
SCALE: 1" = 100'	APPROVED BY: [Signature]
DATE: NOV. 10, 2010	CHECKED BY: [Signature]
PROPERTY BOUNDARY MAP FTDP, DAMASCUS, VIRGINIA	
SHEET NUMBER [Blank]	BOUNDARY



AR000071

MAGNETIC
NORTH



KEY:

- Previous Sampling Location/
Test Pit (by others)
- 7 Former Plant Building Facility Location and Identification Number
- 20 Existing Plant Building Facility
- X— Fence

Attachment 3

**MILES INC.,
DAMASCUS, VIRGINIA**

ICF KAISER ENGINEERS
PITTSBURGH, PA

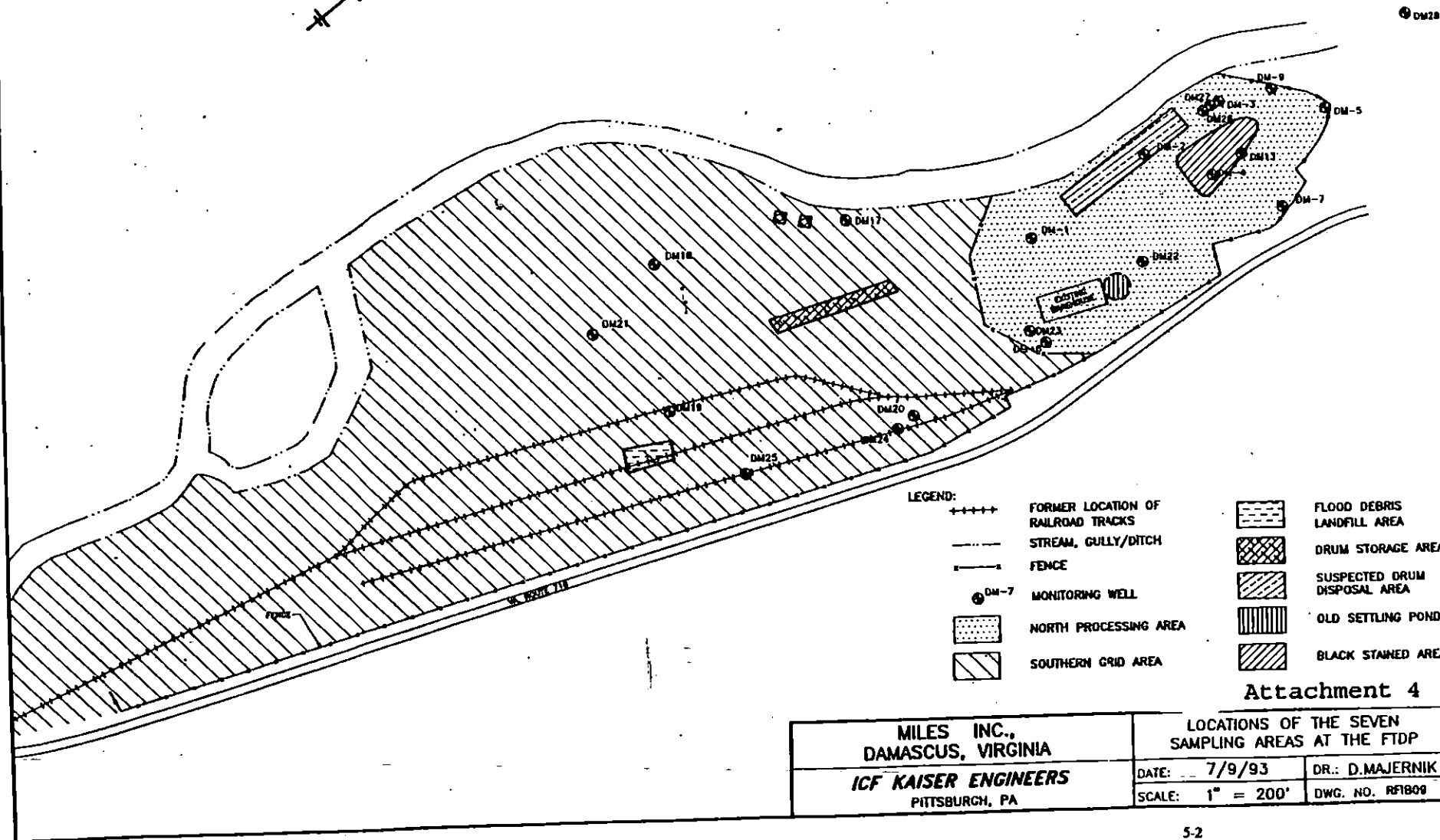
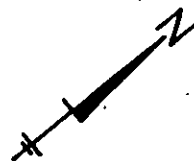
**TEST PIT LOCATIONS SAMPLED DURING
THE VOLUNTARY SITE ASSESSMENT
CONDUCTED BY MILES**

DATE: 7/9/93

DR.: D.MAJERNIK

SCALE: NOT TO SCALE

DWG NO

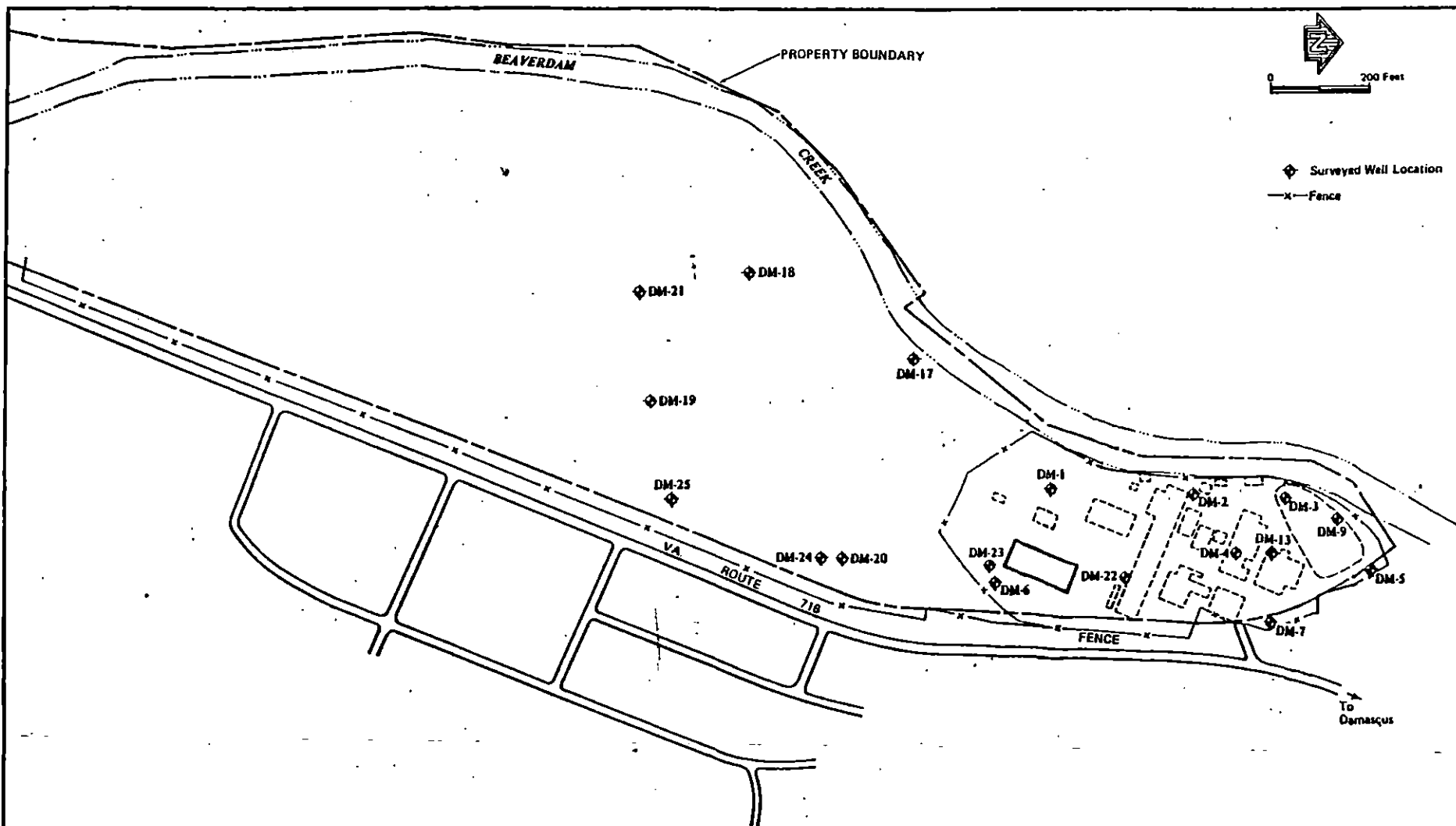


- LEGEND:
- +++++ FORMER LOCATION OF RAILROAD TRACKS
 - STREAM, GULLY/DITCH
 - FENCE
 - DM-7 MONITORING WELL
 - NORTH PROCESSING AREA
 - SOUTHERN GRID AREA
 - FLOOD DEBRIS LANDFILL AREA
 - DRUM STORAGE AREA
 - SUSPECTED DRUM DISPOSAL AREA
 - OLD SETTLING POND
 - BLACK STAINED AREA

Attachment 4

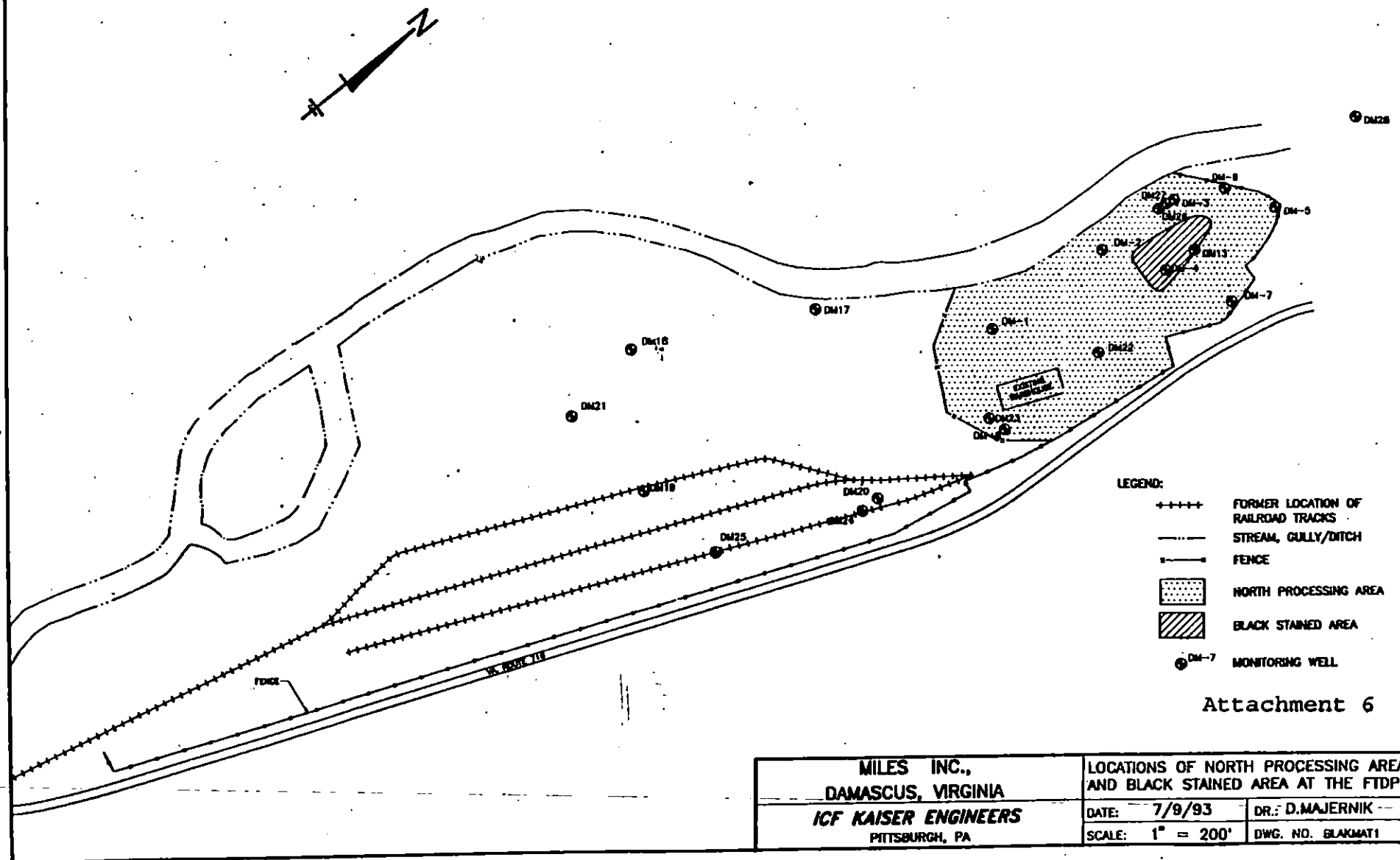
MILES INC., DAMASCUS, VIRGINIA ICF KAISER ENGINEERS PITTSBURGH, PA	LOCATIONS OF THE SEVEN SAMPLING AREAS AT THE FTDP	
	DATE: 7/9/93	DR.: D.MAJERNIK
	SCALE: 1" = 200'	DWG. NO. RF1809

AR000074



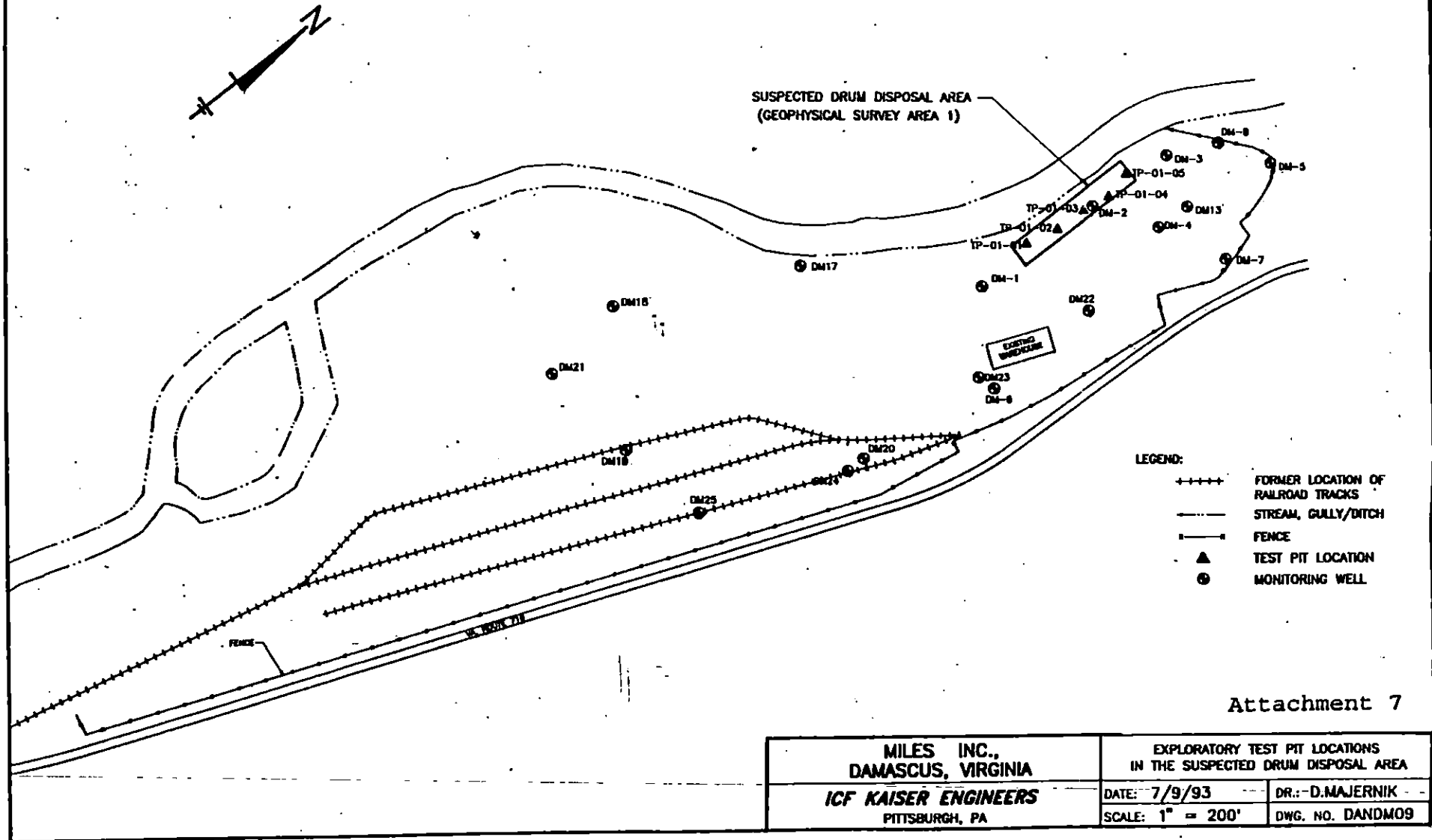
Attachment 5

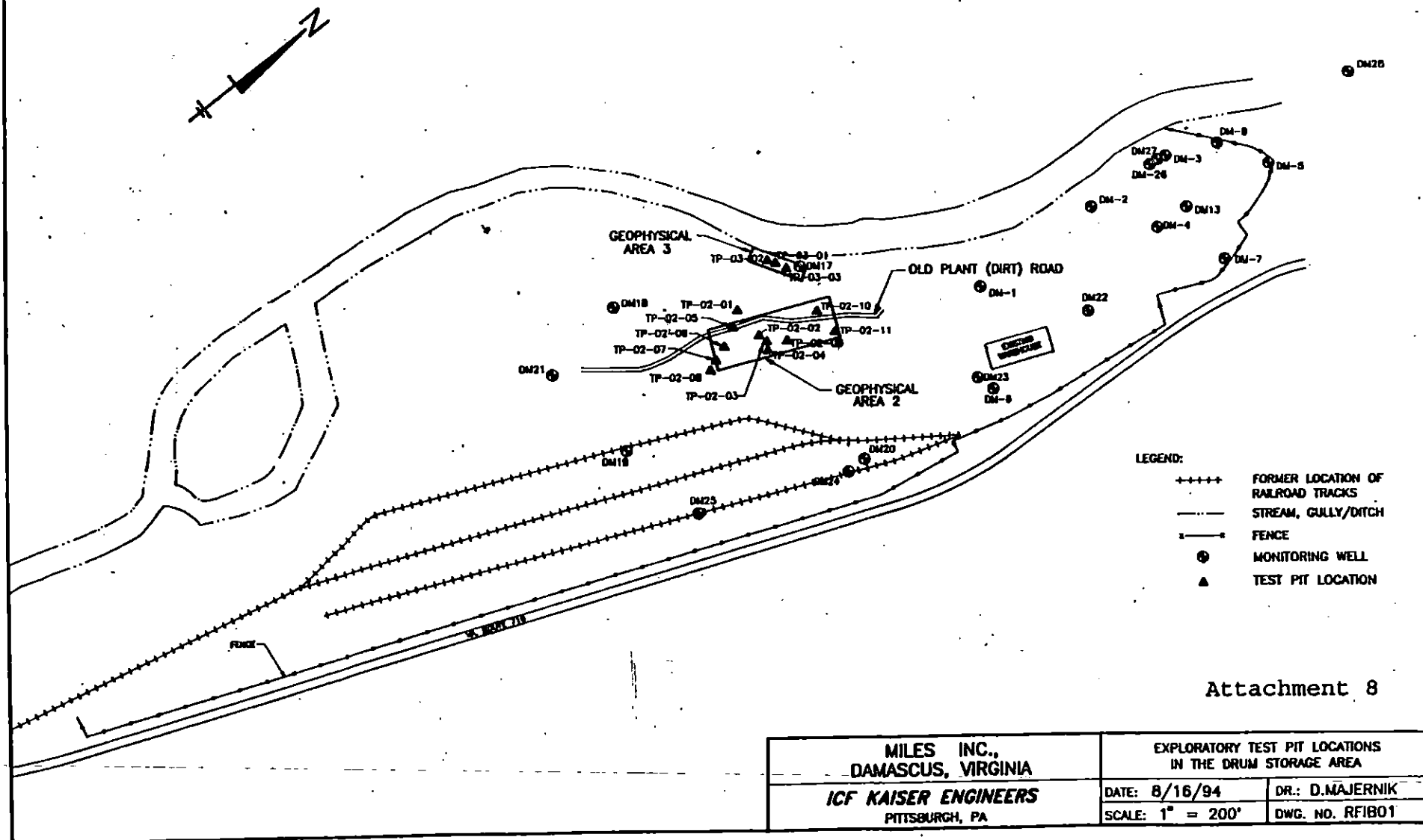
MILES INC., DAMASCUS, VIRGINIA		MONITORING WELL LOCATIONS AT THE FTDP	
ICF KAISER ENGINEERS PITTSBURGH, PA		DATE: 9/29/93	DR.:
		SCALE: 1" = 200'	DWG. NO.

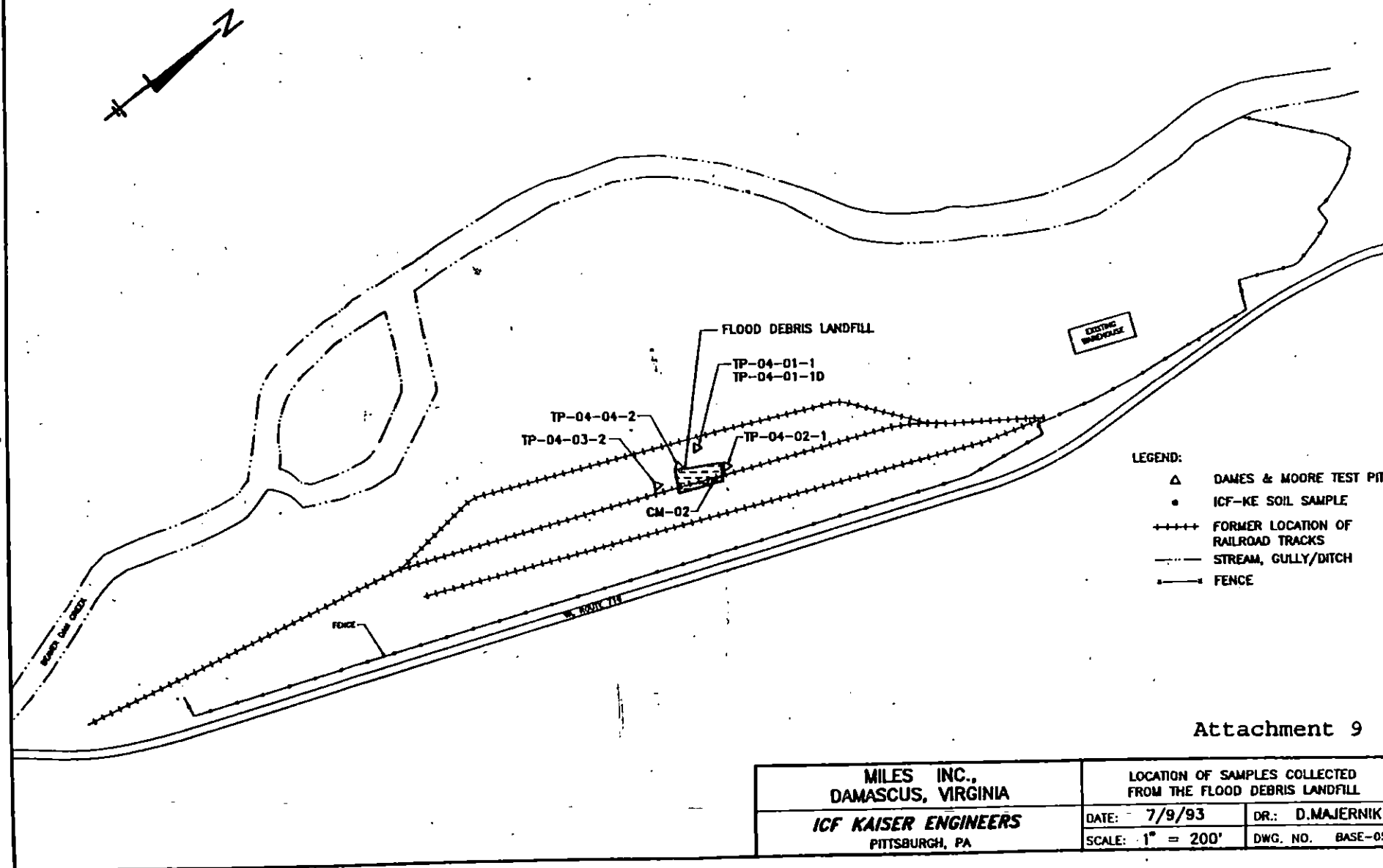


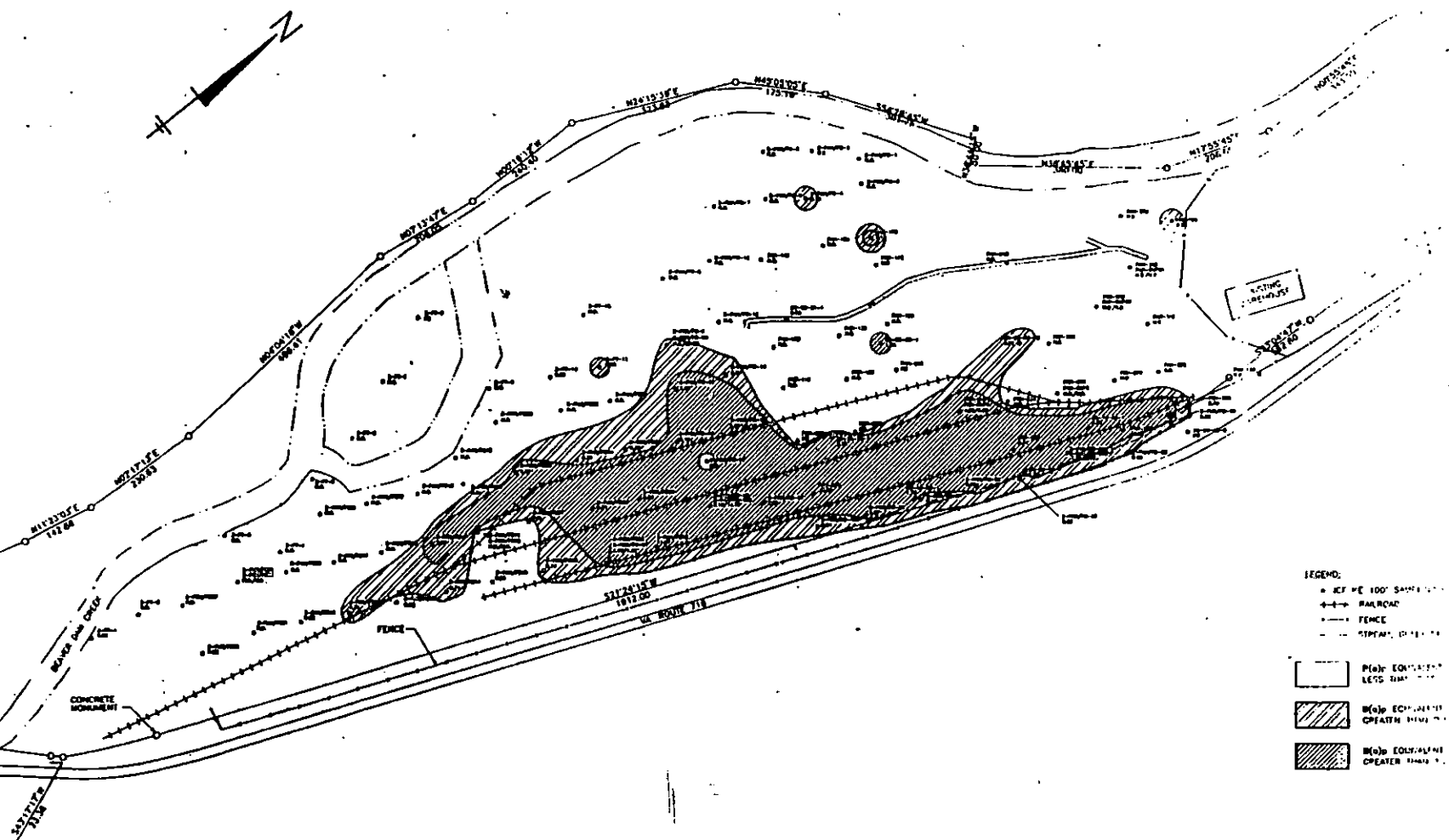
Attachment 6

MILES INC., DAMASCUS, VIRGINIA ICF KAISER ENGINEERS PITTSBURGH, PA	LOCATIONS OF NORTH PROCESSING AREA AND BLACK STAINED AREA AT THE FTDP.	
	DATE: 7/9/93	DR.: D.MAJERNIK
	SCALE: 1" = 200'	DWG. NO. BLAKMAT1












LEGEND:

- SET ME 100' SOUTHERLY
- ◄◄→ RAILROAD
- FENCE
- - - STREAM (2) 100' SOUTHERLY

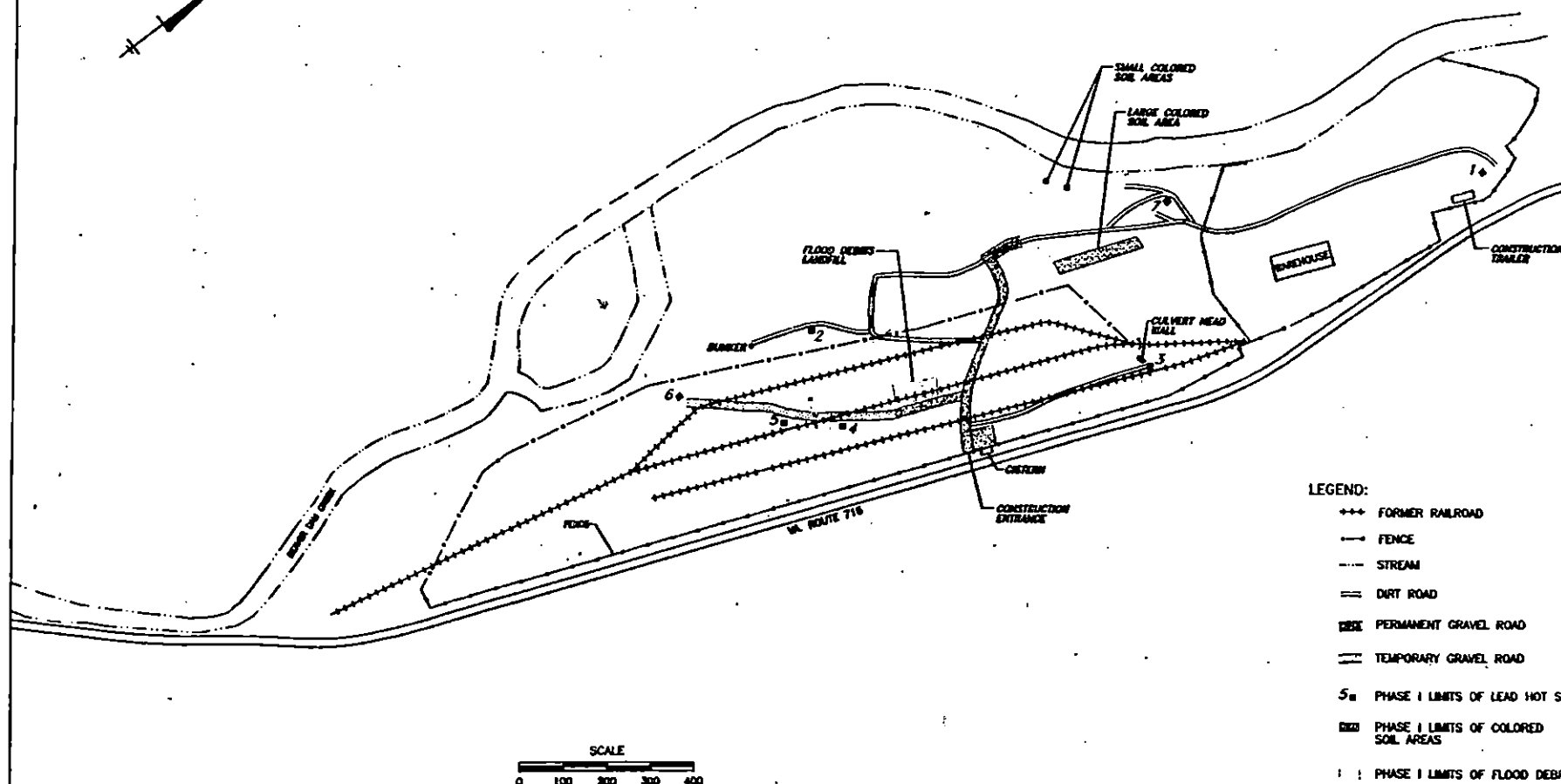
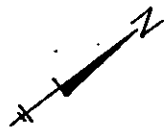
 Please EQUIPMENT
LESS TIME

 Please EQUIPMENT
GREATER TIME

 Please EQUIPMENT
GREATER TIME

Age Group	Total (%)	Male (%)	Female (%)	Unknown (%)
18-24	15	15	15	15
25-34	25	25	25	25
35-44	30	30	30	30
45-54	20	20	20	20
55-64	10	10	10	10
65+	10	10	10	10

ICF KAISER ENGINEERS
SCALE 1" = 100' DATE: SEPT. 20, 1994
MILES INC.
BENZO(a)PYRENE EQUIVALENTS



- LEGEND:**
- +++ FORMER RAILROAD
 - FENCE
 - STREAM
 - == DIRT ROAD
 - ===== PERMANENT GRAVEL ROAD
 - ===== TEMPORARY GRAVEL ROAD
 - 5# PHASE I LIMITS OF LEAD HOT SPOTS
 - 6# PHASE I LIMITS OF COLORED SOIL AREAS
 - 1# PHASE I LIMITS OF FLOOD DEBRIS LANDFILL

Attachment 11

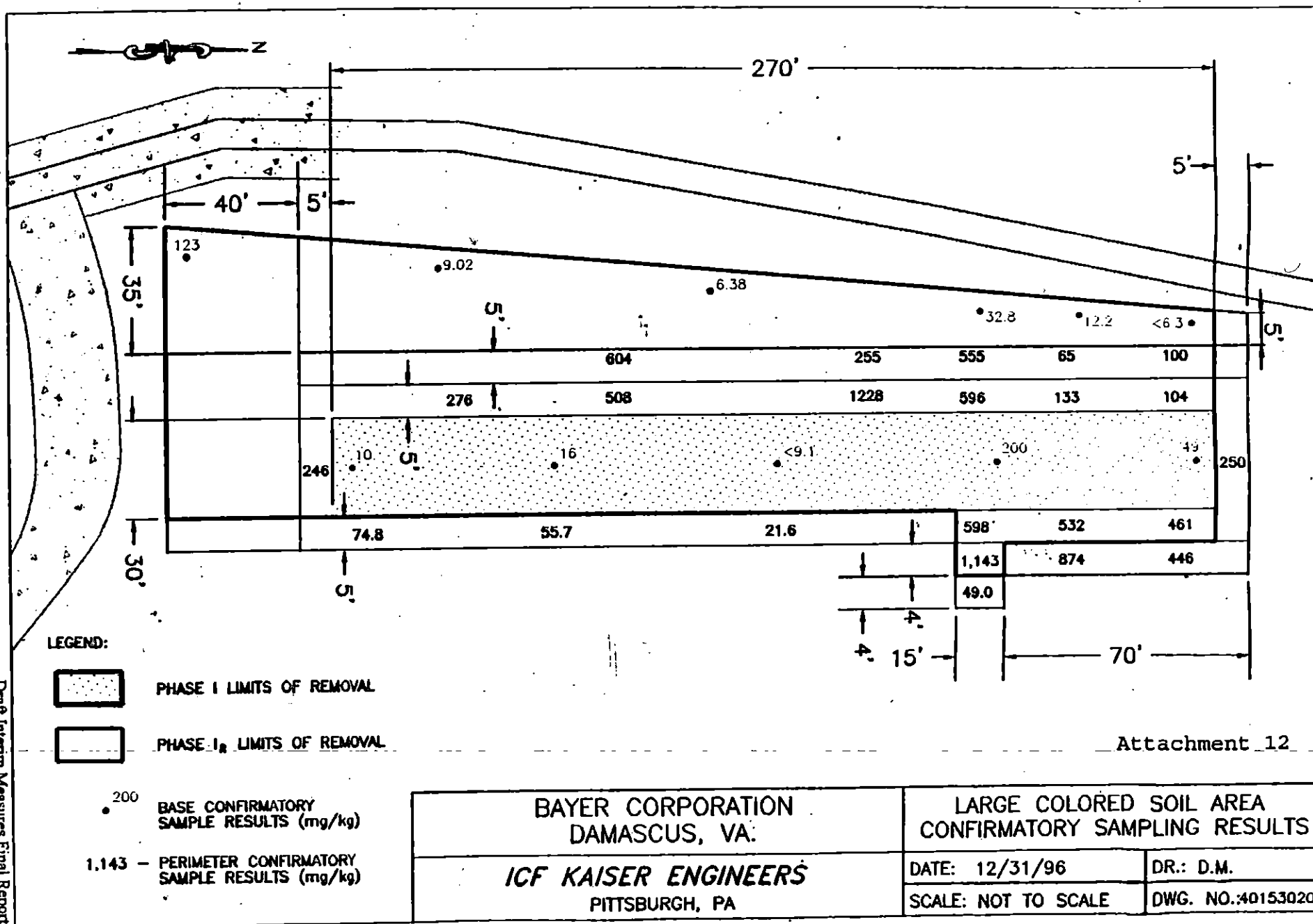
BAYER CORPORATION DAMASCUS, VA.		ORIGINAL LIMITS OF REMOVAL AREAS	
ICF KAISER ENGINEERS PITTSBURGH, PA		DATE: 2/12/97	DR.: D.M.
Bayer Corporation Damascus, Virginia 92186-291-S		SCALE: 1" = 250'	DWG. NO. 2015TMP4
		Draft Interim Measures Final Report Revision: 0 February 17, 1997	

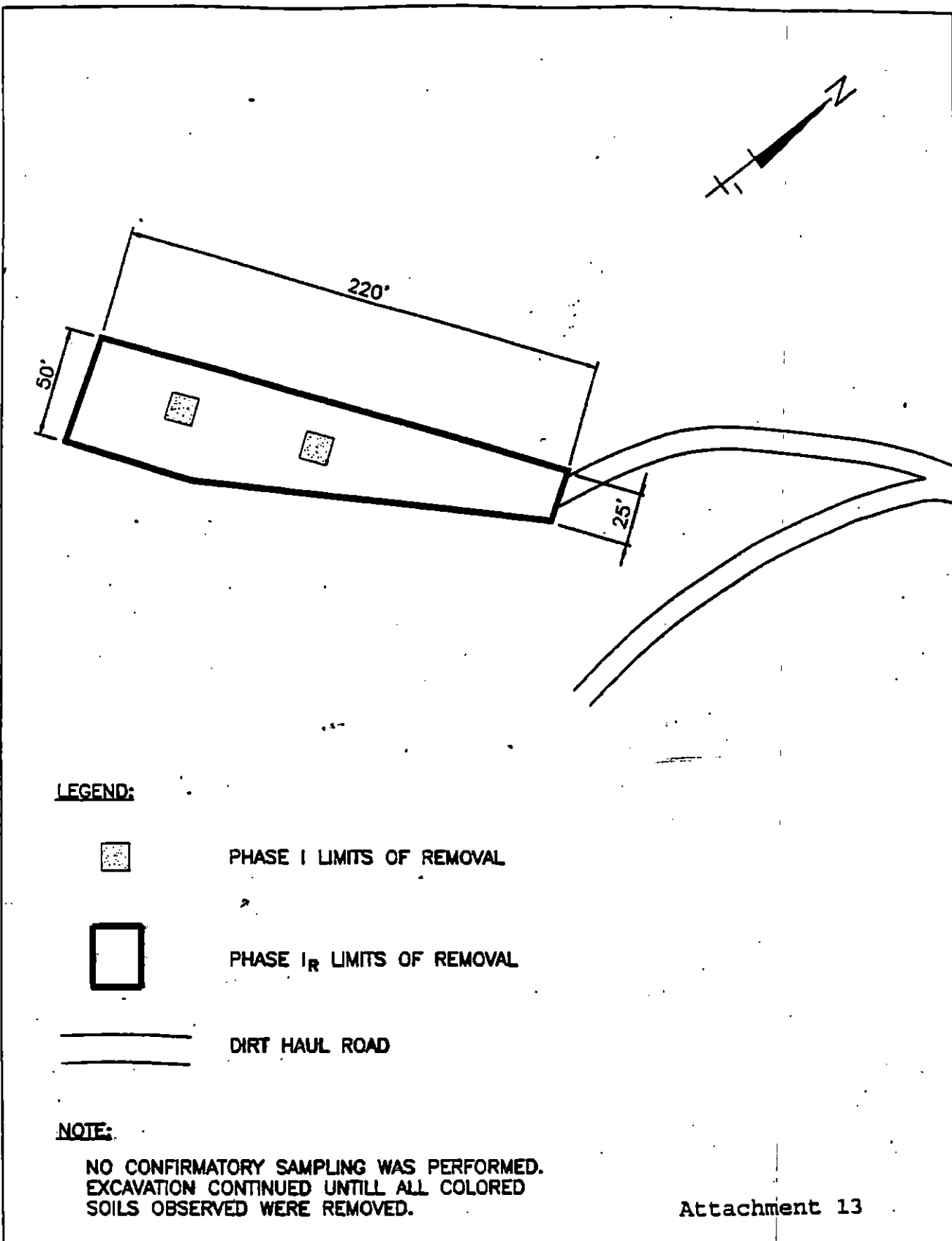
AR000080

FD-302 (Rev. 11-27-70)

Draft Interim Measures Final Report

February 17, 1997



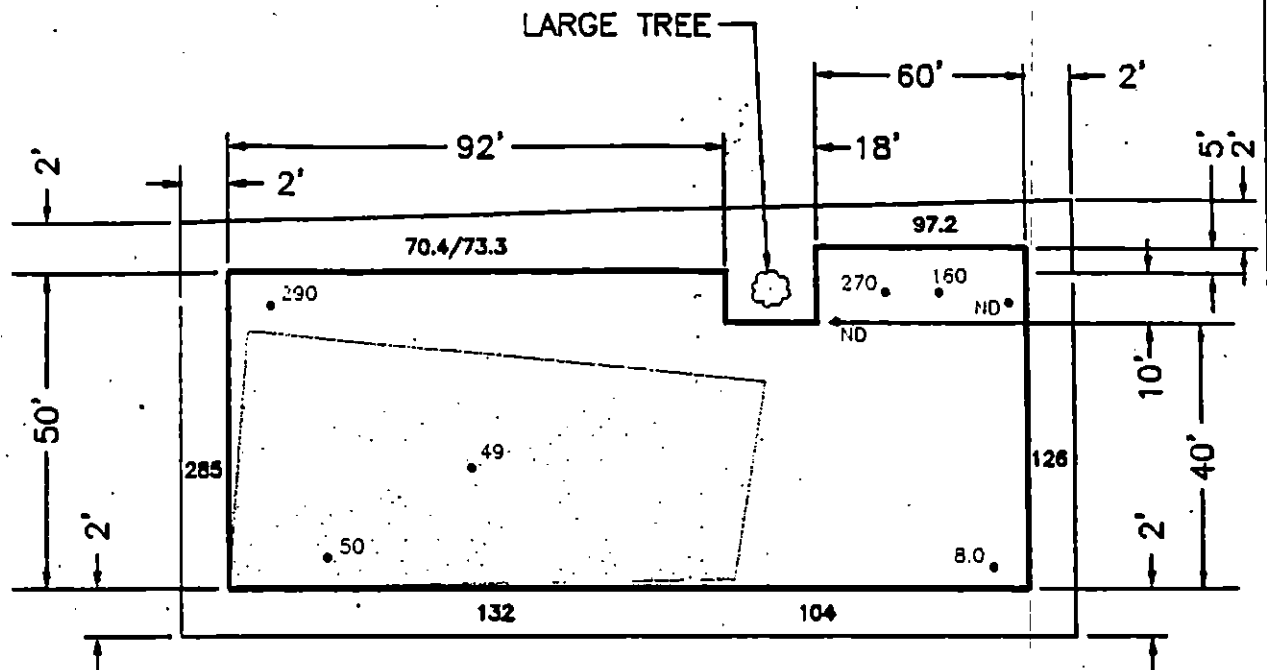


BAYER CORPORATION DAMASCUS, VA.	SMALL COLORED SOIL AREAS LIMITS OF REMOVAL	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 12/24/96	DR.: D.M.
	SCALE: 1"=50'	DWG. NO.: 40153021

Bayer Corporation
Damascus, Virginia
92186-291-S

4-27 AR000082

Draft Interim Measures Final Report
Revision: 0
February 17, 1997



LEGEND:



PHASE I LIMITS OF REMOVAL



PHASE I_R LIMITS OF REMOVAL

49

- BASE CONFIRMATORY SAMPLE RESULTS (mg/kg)

104

- PERIMETER CONFIRMATORY SAMPLE RESULTS (mg/kg)

Attachment 14

BAYER CORPORATION DAMASCUS, VA.	PHASE I FLOOD DEBRIS LANDFILL CONFIRMATORY SAMPLING RESULTS	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 12/24/96	DR.: D.M.
	SCALE: NOT TO SCALE	DWG. NO.: 40153019

Bayer Corporation
Damascus, Virginia
92186-291-S

4-25 AR000083

Draft Interim Measures Final Report
Revision: 0
February 17, 1997

Attachment 15

SAMPLES INCORPORATED INTO THE BASELINE RISK ASSESSMENT

MEDIUM	SAMPLE TYPE	RFI SAMPLING ROUND*				
		1		3	4	
AREA 1 SOILS	Surface Soil Samples	SO-05-01-1	SO-20-12-1		CR 01	CR 11
		SO-05-02-1	SO-20-15-1		CR 02	CR 12
		SO-10-06-1	SO-20-16-1		CR 03	CR 13
		SO-10-06-1D	SO-30-04-1		CR 04	CR 14
		SO-10-07-1	*SO-30-13-1		CR 05	CR 15
		SO-10-07-1D	SO-30-22-1		CR 06	2-PAH/PB 27
		SO-20-01-1	SO-50-01-0		CR 07	3-PB-1
		SO-20-02-1	SO-50-02-0		CR 08	3-PB-2
		SO-20-03-1	SO-50-03-0		CR 09	3-PB-3
		SO-20-05-1	SO-50-04-0		CR 09D	3-PB-D
		SO-20-08-1	SO-50-05-0		CR 10	
		SO-20-09-1	SO-50-06-0			
		SO-20-10-1	SO-50-07-0			
		SO-20-10-1D	SO-99-11-0			
		SO-20-11-1	SO-99-12-0			
	Test Pit Sub-surface Soil samples	SO-01-01-3	SO-20-03-4	OSP 01S	TPA 01S SOIL	DX-03 ¹
		SO-01-02-2	SO-20-05-4	PAH 01S	TPB 02S ¹	DX-04 ¹
		SO-01-03-2	SO-20-08-4	PAH 02S	TPC 03S ¹	DX-05 ¹
		SO-01-04-7	SO-20-09-4	PAH 03S	TPC 03SD ¹	DX-07S
		SO-01-05-4	SO-20-15-4	PAH 05S	TPD 04S ¹	DX-08 ¹
		SO-10-07-3D	SO-30-04-4	PAH 06S		DX-09 ¹
		SO-20-01-4	SO-30-13-4			DX-09D ¹
		SO-20-02-4				DX-13 ¹
	Soil Borings	SO-10-07-3	SO-20-12-2			
		SO-20-10-3	SO-20-16-3			
		SO-20-11-3	SO-30-22-2			
	Subsurface Colored Material					CM-01

- * No Round 2 or Round 5 samples were taken in this area.
- ¹ Samples analyzed for dioxins only.

44

AR000085

Draft Corrective Measures Study
Revision: 1
April 7, 1997

MEDIUM	SAMPLE TYPE	RFI SAMPLING ROUND*							
		1		3		4		5	
AREA 2 SOILS	Surface Soil Samples	SO-10-20-1	PAH 07S	PAH 22S	CR 16	2-PAH/PB-11	3-PAH/PB-28	3-PAH/PB-51	
		SO-10-25-1	PAH 08S	PAH 23S	CR 17	2-PAH/PB-12	3-PAH/PB-29	3-PAH/PB-52	
		SO-20-14-1	PAH 09S	PAH 24S	CR 18	2-PAH/PB-13	3-PAH/PB-30	3-PAH/PB-53	
		SO-20-17-1	PAH 10S	PAH DUP2	CR 19	2-PAH/PB-14	3-PAH/PB-31	3-PAH/PB-54	
		SO-20-18-1	PAH 11S	PAH 25S	CR 20	2-PAH/PB-15	3-PAH/PB-32	3-PAH/PB-55	
		SO-20-19-1	PAH 12S	PAH 26S	CR 21	2-PAH/PB-16	3-PAH/PB-33	3-PAH/PB-56	
		SO-20-21-1	PAH 13S	PAH 27S	CR 22	2-PAH/PB-17	3-PAH/PB-34	3-PAH/PB-57	
		SO-60-01-0	PAH 14S	PAH 28S	2-PAH/PB-1	2-PAH/PB-18	3-PAH/PB-35	3-PAH/PB-58	
		SO-60-02-0	PAH 15S	PAH DUPS3	2-PAH/PB-2	2-PAH/PB-18D	3-PAH/PB-36	3-PAH/PB-D1	
		SO-60-03-0	PAH 16S	PAH 29S	2-PAH/PB-3	2-PAH/PB-19	3-PAH/PB-37	3-PAH/PB-D2	
		SO-60-04-0	PAH 17S	PAH 30S	2-PAH/PB-4	2-PAH/PB-20	3-PAH/PB-38	3-PAH/PB-D3	
		SO-99-13-0	PAH 18S	PAH 31S	2-PAH/PB-5	2-PAH/PB-21	3-PAH/PB-39	3-PT-1	
			PAH 19S	PAH 32S	2-PAH/PB-6	2-PAH/PB-22	3-PAH/PB-40	3-PT-2	
			PAH 20S	PAH DUPS4	2-PAH/PB-7	2-PAH/PB-23	3-PAH/PB-41	3-PT-3	
			PAH 21S	PAH 33S	2-PAH/PB-8	2-PAH/PB-24	3-PAH/PB-42	3-PT-4	
			PAH DUP1	PAH 34S	2-PAH/PB-9	2-PAH/PB-24D	3-PAH/PB-43	3-PT-5	
					2-PAH/PB-9D	2-PAH/PB-25	3-PAH/PB-44	3-PT-6	
					2-PAH/PB-10	2-PAH/PB-26	3-PAH/PB-45	3-PT-7	
							3-PAH/PB-46	3-PT-8	
						3-PAH/PB-47	3-PT-9		
						3-PAH/PB-48	3-PT-10		
					3-PAH/PB-49	3-PT-11			
					3-PAH/PB-50	3-PT-12			
	Test Pit Sub- surface Soil Samples	SO-10-25-4	SO-20-18-4						
		SO-20-17-4	SO-20-19-4						
	Soil Borings	SO-20-14-4							

• No Round 2 samples were taken in this area.