FINAL

CORRECTIVE ACTION PLAN – PART B
UNDERGROUND STORAGE TANKS 36 & 37
FACILITY ID # 9-089016
BUILDING 1510
FORT STEWART, GEORGIA

Prepared for:
U.S. Army Corps of Engineers
Savannah District
Under Contract Number DACA21-95-D-022
Delivery Order No. 0055

Prepared by:
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September 2000

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List of Abbreviations and Acronyms

ACE	Anderson Columbia Environmental, Inc.
ACL	alternate concentration limit
AMSL	above mean sea level
ATL	alternate threshold level
AT123D	Analytical Transient 1-, 2-, 3- Dimensional
BGS	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CAP	Corrective Action Plan
COPC	contaminant of potential concern
DAF	dilution attenuation factor
DPW	Directorate of Public Works
DRO	diesel-range organics
FSMR	Fort Stewart Military Reservation
GA EPD	Georgia Environmental Protection Division
GRO	gasoline-range organics
GUST	Georgia Underground Storage Tank
ISC	Initial Site Characterization
IWQS	In-stream Water Quality Standard
MCL	maximum contaminant level
PAH	polynuclear aromatic hydrocarbon
PVC	polyvinyl chloride
SAIC	Science Applications International Corporation
SI	Site Investigation
STL	soil threshold level
TPH	total petroleum hydrocarbons
USACE	U.S. Army Corps of Engineers
UST	underground storage tank
USTMP	Underground Storage Tank Management Program
VOC	volatile organic compound

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I. CORRECTIVE ACTION PLAN CERTIFICATION - PART B

(Form and certification follow this page)

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Georgia Department of Natural Resources
Environmental Protection Division
Land Protection Branch
Underground Storage Tank Management Program
4244 International Parkway, Suite 104
Atlanta, Georgia 30354
Phone (404) 362-2687
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CORRECTIVE ACTION PLAN
PART B

Facility Name: Building 1510, USTs 36 & 37 Site

Street Address: McFarland Avenue and W. 8th Street

City: Fort Stewart **County:** Liberty

Facility ID #: 9-089016

Submitted by UST Owner/Operator:
Name: Thomas C. Fry/Environmental Branch
Company: US Army/HQ 3d Inf. Div (Mech)
Address: Directorate of Public Works, Bldg 1137
1550 Frank Cochran
City: Fort Stewart State: GA
Zip Code: 31314-4927

Prepared by:
Name: Patricia Stoll
Company: Science Applications International Corp.
Address: P.O. Box 2502
City: Oak Ridge State: TN
Zip Code: 37831

I. PLAN CERTIFICATION

A. UST Owner/Operator

I hereby certify that the information contained in this plan and in all the attachments is true, accurate, and complete, and the plan satisfies all criteria and requirements of Rule 391-3-15-.09 of the Georgia Rules for Underground Storage Tank Management.

Name: Thomas C. Fry

Signature: Thomas C. Fry Date: 09/28/00

B. Professional Engineer or Professional Geologist

Name: Patricia Stoll

Signature: Patricia R Stoll

Date: 9/20/00

GEORGIA REGISTERED 22851 PROFESSIONAL ENGINEER P. A. STOLL

9/20/00

Georgia Stamp or Seal

Check all boxes below that apply. Attach supporting documentation, i.e., narrative, figures, tables, maps, boring/well logs, etc., for all items checked. Supporting documentation should be three-hole punched and prepared in conformity with the guidance document "Underground Storage Tank (UST) Release: Corrective Action Plan – Part B (CAP-B) Content", GUST-7B.

II. SITE INVESTIGATION REPORT

A. Horizontal and Vertical Extent of Contamination:

- ☒ Soil (Section II.A.1)
- ☒ Groundwater (Section II.A.2)
- ☐ Free Product
- ☐ Surface Water

B. Local and Site Hydrogeology

- ☒ Documentation of Local Groundwater Conditions (Section II.B.1)
- ☒ Stratigraphic Boring Logs (Section II.B.2)
- ☒ Stratigraphic Cross Sections (Section II.B.3)
- ☒ Referenced or Documented Calculations of Relevant Aquifer Parameters (Section II.B.4)
- ☒ Direction of Groundwater Flow (Section II.B.5)
  - ☒ Table of Monitoring Well Data (Table 4)
  - ☒ Potentiometric Map (Figures 16 and 17)
  - ☒ Flow Net Superimposed on a Base Map (Figure 18)

III. REMEDIAL ACTION PLAN:

A. Corrective Action Completed or In-Progress:

- ☐ Recovery/Removal of Free-Product (Non-aqueous Phase Hydrocarbons)
- ☐ Remediation/Treatment of Contaminated Backfill Material & Native Soils
- ☒ Other (specify) Not Applicable

B. Objective of Corrective Action:

- ☐ Remove Free Product That Exceeds One-Eighth Inch
- ☐ Remediate Groundwater Contamination That Exceeds:
  - ☐ Maximum Contaminant Levels (MCLs)

    OR

  - ☐ In-stream Water Quality Standards

B. Objective of Corrective Action (continued):

☐ Remediate Soil Contamination That Exceeds:

☐ Threshold Values Listed in Table A

OR

☐ Threshold Values Listed in Table B

OR

☐ Alternate Threshold Levels (ATLs)

☒ Provide Risk Based Corrective Action (Reference CAP B App. VI) (Section III.B.4)

☐ Remediate Soil and/or Groundwater Contamination That Exceeds Alternate Concentration Limits (ACLs) and Monitor Residual Contaminants

OR

☐ Monitor Soil and/or Groundwater Contamination That Exceeds Levels in Rule -.09 (3) But Is Less Than ACLs

OR

☒ No Further Action Required - Soil and/or Groundwater Contamination is Below Levels in Rule -.09 (3)

C. Design Operation of Corrective Action Systems

☐ Soil ☐ Groundwater ☐ Free Product ☐ Surface Water ☒ Not Applicable

D. Implementation (Section III.D)

Includes, as a minimum, the following:

- Milestone schedule for site remediation
- Inspection and preventive maintenance schedule for all specialized remediation equipment
- Monitoring/sampling and reporting plan for measuring interim progress and project completion
- Plan to decommission equipment/wells and close site

IV. PUBLIC NOTICE

☐ Certified Letters to Adjacent, and Potentially Affected Property Owners and Local Officials

☒ Legal Notice in Newspaper, as approved by EPD (Section III.E)

☐ Other EPD-approved Method (specify)_____

V. **CLAIM FOR REIMBURSEMENT:** (For GUST Trust Fund sites only)

- ☐ GUST Trust Fund Application (GUST-36), must be attached if applicable
- ☐ Cost Proposal
  - ☐ Non-Reimbursable Costs

    OR
  - ☐ Reimbursable Costs
    - ☐ Total Project Costs
      - ☐ Costs incurred to date, per GUST-92
      - ☐ Estimated costs to complete corrective action, per GUST-92
    - ☐ Invoices and Proofs-of-Payment for Costs Incurred to Date
- ☐ Proposed Schedule For Reimbursement
  - ☐ Lump Sum Payment Upon Completion Of Corrective Action

    OR
  - ☐ Interim Payments With Final Payment Upon Completion
- ☒ Not Applicable

II. SITE INVESTIGATION REPORT

This represents the Site Investigation (SI) Report for the former Underground Storage Tanks (USTs) 36 & 37, Facility ID# 9-089016, located near Building 1510 at Fort Stewart, Georgia. This Corrective Action Plan (CAP)-Part B report follows the guidance published by Georgia Environmental Protection Division (GA EPD) in February 1995; however, the organization of the appendices for this report mirrors that of the appendices listed in the CAP-Part A template issued by GA EPD in May 1998. Report figures and tables are located in Appendices I and II, respectively.

The USTs 36 & 37 site is located at the 4/64 Armor motorpool, as illustrated in Figure 1. The USTs 36 & 37 site is located within an average or higher groundwater pollution susceptibility area and is more than 500 feet from a withdrawal point and more than 500 feet from a surface water body. Since public water supply wells exist within 2 miles of the site as defined in Georgia Underground Storage Tank (GUST) Management Rule 391-5-15-.09, the appropriate soil threshold levels (STLs) are those presented in Table A, Column 2 of GUST Rules 391-5-15. According to operational information maintained by the Fort Stewart Directorate of Public Works (DPW), UST 36 had a capacity of 25,000-gallons and was used for storing diesel fuel and UST 37 had a capacity of 6,000-gallons and was used for storing gasoline. The tanks were constructed of bare steel, and the associated piping was galvanized steel. The tank and piping were installed on or about January 1, 1982. The tanks were excavated and removed on September 30, 1995. The piping was closed in place due to the overlying 10 to 12 inches of high-strength concrete.

Anderson Columbia Environmental, Inc. (ACE) performed the Initial Site Characterization (ISC) in September 1995 (ACE 1996). The ISC consisted of the tank removal and collection of four soil samples from the tank pit. The soil samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX), polynuclear aromatic hydrocarbons (PAHs), and total petroleum hydrocarbons (TPH). Toluene, ethylbenzene, and xylenes were detected in three of the four soil samples (TK-36-S1, TK-37-S1, TK-37-S2) at concentrations below their respective STLs. TPH was detected in three of the four samples at concentrations ranging from 0.0199 mg/kg to 0.147 mg/kg. Benzene was not detected in any of the four soil samples. No groundwater samples were collected during the tank removal. The Closure Report (ACE 1996) was submitted to GA EPD in correspondence dated July 29, 1997. Following the review of the Closure Report and in correspondence dated March 3, 1998, GA EPD requested that Fort Stewart sample along the ancillary piping. As a result Fort Stewart submitted a Closure Report Addendum recommending a CAP-Part A investigation.

Following the ISC, Science Applications International Corporation (SAIC) conducted a preliminary groundwater investigation of the former tank pit in September 1996. The investigation was extended to a CAP-Part A SI in May 1998 to include the ancillary piping. Two additional phases of the CAP-Part A investigation were conducted in November 1998 and February 1999 to determine the extent of contamination. The preliminary groundwater and CAP-Part A investigations consisted of drilling 11 soil borings and one vertical-profile boring; collecting soil samples for BTEX, PAHs, TPH–diesel-range organics (DRO), TPH–gasoline-range organics (GRO), and volatile organic compound (VOC) headspace analyses; installing piezometers for groundwater sampling, water level measurements, and detection of free product; collecting groundwater samples for BTEX and PAH analyses; and conducting a survey of public and nonpublic drinking water supplies within a 2.0- and 0.5-mile radius of the site. The CAP-Part A Report describing the results of the ISC, preliminary groundwater, and CAP-Part A investigation activities (SAIC 1999) was submitted to the GA EPD Underground Storage Tank Management Program (USTMP) in July 1999. GA EPD USTMP conducted a technical review of the CAP-Part A Report (SAIC 1999). In correspondence dated November 10, 1999 (Logan 1999), GA EPD approved the technical proposal contained in the CAP-Part A Report for further investigation.

The CAP-Part B SI was conducted in January 2000 by SAIC. The CAP-Part B SI was performed in accordance with the technical approach described in the SI Plan and the requirements of the *Work Plan for Preliminary*

Groundwater and Corrective Action Plan – Part A/Part B Investigations at Former Underground Storage Tank Sites, Fort Stewart, Georgia (SAIC 1996). The CAP-Part B SI field activities included drilling seven monitoring well borings for groundwater sampling and water level measurements; collecting groundwater samples for BTEX and PAH analyses; and collecting a comprehensive round of site water level measurements. As recommended in the SI Plan provided in the CAP-Part A Report (SAIC 1999), soil sampling was not performed during the CAP-Part B SI. The CAP-Part B SI groundwater analytical laboratory results are included in Appendix VIII of this document. This SI Report presents the findings of the CAP-Part B investigation.

The CAP-Part B for USTs 36 & 37 was performed by SAIC in January 2000 for the Fort Stewart DPW, Environmental Branch through the U.S. Army Corps of Engineers (USACE), Savannah District under contract DACA21-95-D-022, delivery order 0055.

II.A. HORIZONTAL AND VERTICAL EXTENT OF CONTAMINATION

The horizontal and vertical extent of petroleum contamination in soil and groundwater has been delineated by activities performed during the ISC, preliminary groundwater investigation, CAP-Part A SI, and CAP-Part B SI.

II.A.1. Delineation of Soil Contamination

Petroleum-related contaminants detected in soil at the USTs 36 & 37 site during the ISC, preliminary groundwater investigation, CAP-Part A SI, and CAP-Part B SI included benzene, toluene, ethylbenzene, xylenes benzo(*a*)anthracene, benzo(*a*)pyrene, benzo(*b*)fluoranthene, benzo(*g,h,i*)pyrene, benzo(*k*)fluoranthene, chrysene, fluoranthene, indeno(*1,2,3-cd*)pyrene, phenanthrene, pyrene, TPH, TPH-DRO, and TPH-GRO. With the exception of phenanthrene, these constituents were present in 12 of the 17 soil samples collected during the CAP-Part A and CAP-Part B investigations. The constituents were present in low concentrations in the boreholes surrounding the tank pit and ancillary piping. The majority of the PAHs were detected in only one soil sample located within the tank pit during the CAP-Part A SI. However, only one soil sample collected during the CAP-Part A SI contained a benzene concentration in excess of applicable GUST STL (i.e., Table A, Column 2).

II.A.1.a. Contaminant concentrations

II.A.1.a.1. Initial site characterization

During the ISC, four soil samples were collected from the tank pit. The samples contained concentrations of toluene, ethylbenzene, xylenes, phenanthrane, pyrene, and TPH (Tables 1a and 1b). None of the constituents detected exceeded their respective GUST STLs; however, the TPH concentrations ranged from 0.0199 mg/kg to 0.147 mg/kg. Benzene was not detected in any of the four soil samples.

II.A.1.a.2. Preliminary groundwater and CAP-Part A site investigations

During the CAP-Part A SI, 17 soil samples were collected for geochemical analysis from 11 shallow soil borings, as presented in Figure 2. Sample locations are presented in the cross sections in Figure 3. In September 1996, two shallow soil borings were drilled at each end of the former tank pit, each to a depth of 8.5 feet below ground surface (BGS). In May and November 1998, seven additional shallow soil borings were installed around the ancillary piping to depths ranging from 7.0 to 12.0 feet BGS. In Feburary 1999, two more shallow soil borings were installed downgradient of the ancillary piping to depths ranging from 7.0 to 8.0 feet BGS. Field screening methods were used during drilling to select soil samples for geochemical analysis.

Analytical results for soil sampling are summarized in Tables 2a and 2b and presented in the plan view in Figure 4. The results exceeding applicable GUST STLs are presented in the cross sections in Figure 4. The results of soil samples collected during the CAP-Part A investigations are summarized below.

- Benzene was detected in one of the 17 soil samples at a concentration of 0.0102 mg/kg. The concentration exceeded the benzene STL of 0.008 mg/kg. However, the sample was collected from just below the concrete in boring 16-11, which is located 50 feet southwest of the closest former dispenser island and 110 feet southwest of the former tank pit. Armored personnel carriers are parked in this area, and drip pans are located under the vehicles to catch oil leaks. This contamination appears to be related to motorpool operations and not the former UST and ancillary piping.

- Toluene was detected in nine of the 17 soil samples at concentrations ranging from 0.0026 mg/kg to 0.0601mg/kg. The concentrations did not exceed the toluene STL of 6.0 mg/kg.

- Ethylbenzene was detected in three of the 17 soil samples at concentrations ranging from 0.00086J mg/kg to 0.0155 mg/kg. The concentrations did not exceed the ethylbenzene STL of 10 mg/kg.

- Xylenes were detected in six of the 17 soil samples at concentrations ranging from 0.0018J mg/kg to 0.0194 mg/kg. The concentrations did not exceed the xylenes STL of 700 mg/kg.

- Nine PAH constituents were detected in one of the 17 soil samples at concentrations ranging from 0.386 mg/kg to 2.19 mg/kg. The constituents were benzo(*a*)anthracene, benzo(*a*)pyrene, benzo(*b*)fluoranthene, benzo(*g,h,i*)pyrene, benzo(*k*)fluoranthene, chrysene, fluoranthene, indeno(*1,2,3-cd*)pyrene, and pyrene. There are no STLs for these constituents.

- TPH-DRO was detected in two of the 17 soil samples at concentrations of 16.7 mg/kg and 37.1 mg/kg.

- TPH-GRO was detected in three of the 17 soil samples at concentrations ranging from 0.163 mg/kg to 0.359J mg/kg.

Benzene was the only compound with detected concentrations of BTEX or PAH constituents that exceeded its applicable GUST STLs (i.e., Table A, Column 2) during the CAP-Part A SI. The detection limits for soil sample analyses during the CAP-Part A SI were 0.0021 to 0.0060 mg/kg for BTEX constituents and 0.348 to 1.48 mg/kg for PAH constituents.

II.A.1.a.3. CAP-Part B site investigation

As recommended in the SI Plan, no soil samples were collected for geochemical analysis from the seven CAP-Part B monitoring wells presented in Figure 2.

II.A.1.b. Field screening results

Field screening through VOC headspace was performed during drilling for soil collected during the CAP-Part A and CAP-Part B investigations. For each 4- or 5-foot interval drilled, two 2.0- or 2.5-foot soil grab samples were collected in glass jars and covered with aluminum foil. This sample corresponded to potential analytical sample aliquots collected from the same interval. After allowing at least 15 minutes for volatilization and temperature equilibration, the headspace VOC concentration was measured with a photoionization detector to quantify the VOCs present. The field screening results for each boring are indicated on each boring log.

For boreholes where two soil samples were sent to the analytical laboratory for analysis, sample selection was based on field headspace readings and was as follows:

- In cases where no contamination was detected by field headspace gas analysis in any of the borehole intervals, two soil samples were sent for chemical analyses: one from the interval nearest to the midpoint between the ground surface and the water table and one from the interval above the water table.

- In cases where contamination was detected by field headspace gas analysis in one or more of the borehole intervals, two soil samples were sent for chemical analyses: one from the interval with the highest detected organic vapor concentration and one from the interval with the lowest detected organic vapor concentration.

Field headspace readings were also used to select soil samples where only one sample was sent to the analytical laboratory and were as follows:

- In cases where no contamination was detected by field headspace gas analysis in any of the borehole intervals, the sample above the water table was selected.

- In cases where contamination was detected by field headspace gas analysis in one or more of the borehole intervals, the interval with the highest detected organic vapor concentration was selected.

II.A.2. Delineation of Groundwater Contamination

Petroleum-related contaminants detected in groundwater at the USTs 36 & 37 site during the CAP-Part A SI and CAP-Part B SI included benzene, ethylbenzene, toluene, total xylenes, ancenaphthene, anthracene, benzo(*a*)anthracene, benzo(*a*)pyrene, benzo(*b*)fluoranthene, benzo(*g,h,i*)perylene, benzo(*k*)fluoranthene, chrysene, fluoranthene, fluorene, indeno(*1,2,3-cd*)pyrene, naphthalene, phenanthrene, and pyrene. These constituents were present in ten of the 19 groundwater samples collected during the CAP-Part A and CAP-Part B investigations. Benzene, benzo(*a*)anthracene, benzo(*a*)pyrene, benzo(*k*)fluoranthene, chrysene, and indeno(*1,2,3-cd*)pyrene exceeded their respective Georgia In-Stream Water Quality Standards (IWQSs) during the CAP-Part A SI. The other constituents detected were all below applicable regulatory threshold values. None of the constituents detected during the CAP-Part B SI exceeded their respective Georgia IWQSs.

II.A.2.a. Horizontal extent of groundwater contamination

II.A.2.a.1. Initial site characterization

No groundwater samples were collected during the ISC, as indicated in Tables 1c and 1d.

II.A.2.a.2. Preliminary groundwater and CAP-Part A site investigations

During the CAP-Part A SI, 14 groundwater samples were collected for geochemical analysis from 11 shallow temporary piezometers and one vertical-profile boring, as presented in Tables 3a and 3b. The temporary piezometers (16-01 through 16-12; 16-10 was a vertical-profile boring for groundwater sampling) were located in the former tank pit and around the ancillary piping and were screened across the water table.

Benzene was identified in seven groundwater samples during the CAP-Part A SI at concentrations ranging from 0.42 µg/L to 221J µg/L, as illustrated in the plan view and cross section on Figure 5. The benzene concentrations in two samples were above the Georgia IWQS of 71.28 µg/L. The benzene concentrations in four samples were above the federal maximum contaminant level (MCL) of 5 µg/L. The benzene concentrations in seven samples exceeded the risk-based concentration of 0.36 µg/L. However, none of the concentrations

exceeded the benzene alternate concentration limit (ACL) of 313 µg/L. The analytical detection limit for benzene was less than 5 µg/L in all samples.

Toluene was identified in eight groundwater samples during the CAP-Part A SI at concentrations ranging from 0.86J µg/L to 1,740 µg/L, as illustrated in the plan view and cross section on Figure 6. The concentrations did not exceed the Georgia IWQS of 200,000 µg/L. The concentration in one sample exceeded the federal MCL of 1,000 µg/L and the risk-based screening level of 750 µg/L. The analytical detection limit for toluene was less than 5 µg/L in all samples.

Ethylbenzene was identified in 11 groundwater samples during the CAP-Part A SI at concentrations ranging from 0.041J µg/L to 791J µg/L, as illustrated in the plan view and cross section on Figure 7. The concentrations did not exceed the Georgia IWQS of 28,718 µg/L or the risk-based screening level of 1,300 µg/L. The concentration in one sample exceeded the federal MCL of 700 µg/L. The analytical detection limit for ethylbenzene was less than 5 µg/L in all samples.

Total xylenes were identified in nine groundwater samples during the CAP-Part A SI at concentrations ranging from 2J µg/L to 2,830J µg/L, as illustrated in the plan view and cross section on Figure 8. There is no Georgia IWQS for xylenes. The concentrations did not exceed the federal MCL of 10,000 µg/L or the risk-based screening level of 12,000 µg/L. The analytical detection limit for total xylenes was less than 5 µg/L in all samples.

Two PAH compounds were estimated at concentrations below the analytical reporting limit of 10 µg/L in samples from wells 16-01 and 16-10. The compounds were acenaphthene and benzo(*a*)pyrene, which were detected at concentrations of 8.7J µg/L and 6.3J µg/L, respectively. Only the benzo(*a*) pyrene concentration exceeded its Georgia IWQS. Twelve of the 14 PAH compounds were present in sample 160912 that were not observed in any other sample. The compounds detected in 160912 included ancenaphthene, anthracene, benzo(*a*)anthracene, benzo(*a*)pyrene, benzo(*b*)fluoranthene, benzo(*g,h,i*)perylene, benzo(*k*)fluoranthene, chrysene, fluoranthene, fluorene, indeno(*1,2,3-cd*)pyrene, naphthalene, phenanthrene, and pyrene. However, only the concentrations of benzo(*a*)anthracene, benzo(*a*)pyrene, benzo(*k*)fluoranthene, chrysene, and indeno(*1,2,3-cd*)pyrene exceeded their respective Georgia IWQSs. ACLs were calculated for these five constituents (see Appendix VI). The analytical detection limit for PAH compounds ranged from 1 µg/L to 18.9 µg/L.

Naphthalene was identified in four groundwater samples during the CAP-Part A SI at concentrations ranging from 1.6J µg/L to 164J µg/L, as illustrated in the plan view and cross section on Figure 9. This compound does not have a federal MCL or Georgia IWQS. The concentrations in three samples were above the risk-based screening level of 6.5 µg/L. The concentrations in two samples were below the naphthalene ACL of 286 µg/L (see Appendix VI).

II.A.2.a.3. CAP-Part B site investigation

During the CAP-Part B SI, seven groundwater samples were collected for geochemical analysis from seven groundwater monitoring wells, as presented in Tables 3a and 3b. The groundwater monitoring wells (16-13 through 16-19) were installed in January 2000 and drilled between 13.0 and 15.0 feet BGS. Monitoring well locations are presented in Figure 2.

Benzene was identified in three groundwater samples during the CAP-Part B SI at concentrations ranging from 1.1 µg/L to 27 µg/L, as illustrated in the plan view and cross section on Figure 10. The benzene concentrations were below the Georgia IWQS of 71.28 µg/L. One of the concentrations exceeded the federal MCL of 5 µg/L,

and three of the concentrations exceeded the risk-based screening level of 0.36 µg/L. However, none of the concentrations exceeded the benzene ACL of 313 µg/L (see Appendix VI). The analytical detection limit for benzene was 1 µg/L in all samples.

Toluene was identified in three groundwater samples during the CAP-Part B SI at concentrations ranging from 0.38J µg/L to 0.4J µg/L, as illustrated in the plan view and cross section on Figure 11. The concentrations do not exceed the Georgia IWQS of 200,000 µg/L, the federal MCL of 1,000 µg/L, or the risk-based screening level of 750 µg/L. The analytical detection limit for toluene was 1 µg/L.

Ethylbenzene was identified in four groundwater samples during the CAP-Part B SI at concentrations ranging from 0.051J µg/L to 12 µg/L, as illustrated in the plan view and cross section on Figure 12. The concentrations do not exceed the Georgia IWQS of 28,718 µg/L, the federal MCL of 700 µg/L, or the risk-based screening level of 1,300 µg/L. The analytical detection limits for ethylbenzene was 1 µg/L.

Total xylenes were identified in three groundwater samples during the CAP-Part B SI at concentrations ranging from 2.7J µg/L to 14.3 µg/L, as illustrated in the plan view and cross section on Figure 13. This compound does not have a Georgia IWQS. The concentrations were below the federal MCL of 10,000 µg/L and the risk-based screening level of 12,000 µg/L. The analytical detection limit for total xylenes was below 3 µg/L.

Several PAH compounds were present in samples 161712 and 161812 that were not observed in any other sample. The compounds included ancenaphthene, anthracene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene. However, none of the concentrations exceeded their respective Georgia IWQSs. The analytical detection limits for PAH compounds were less than 1 µg/L.

Naphthalene was identified in one groundwater sample during the CAP-Part B SI at a concentration of 16.8 µg/L, as illustrated in the plan view and cross section on Figure 14. This compound does not have a federal MCL or Georgia IWQS. The concentration was above the risk-based screening level of 6.5 µg/L; however, the concentration did not exceed the naphthalene ACL of 286 µg/L.

II.A.2.a.4. Conclusions of the horizontal extent of site groundwater contamination

Figures 5 through 14 demonstrate that the horizontal extent of contamination has been delineated. Petroleum contaminants identified in groundwater at the USTs 36 & 37 site include BTEX constituents normally associated with gasoline and diesel releases as well as PAH constituents, which likely represent less soluble biodegradation products of the release. The USTs 36 & 37 site is a candidate for natural attenuation because the source of the contamination has been removed and the concentrations around the ancillary piping decreased between May 1998 and January 2000. The highest benzene concentration at the site in January 2000 was 27 µg/L, which is below the Georgia IWQSs. None of the PAH constituents detected in January 2000 exceeded their respective Georgia IWQSs. Site groundwater flow and the geology are conducive to aerobic biodegradation, which is known to produce the most rapid biodegradation rates for hydrocarbons.

II.A.2.b. Vertical extent of groundwater contamination

The vertical extent of groundwater contamination was not investigated during the ISC. During the CAP-Part A SI, the vertical extent of groundwater was delineated through groundwater sampling below the water table. Vertical-profile boring 16-10 was advanced below the water table, and groundwater samples were collected at 5-foot intervals. Drilling was stopped after several 5-foot sample intervals contained headspace readings of zero. The Hawthorn Formation is estimated to be located at 50 feet BGS and was not encountered during

drilling of this vertical-profile boring. It is estimated that the Hawthorn Formation is located within 20 feet of the bottom of this boring. No contamination was observed in boring 16-10 below 20 feet BGS.

II.A.3. Delineation of Free Product Plume

Free product was not identified at the USTs 36 & 37 site during the ISC, preliminary groundwater investigation, CAP-Part A SI, or CAP-Part B SI.

II.A.4. Delineation of Surface Water Contamination

No surface water contamination has been identified or reported in association with the USTs 36 & 37 site. The nearest surface water body, which is a potential groundwater discharge receptor, is a drainage ditch located approximately 1,200 feet downgradient of the site. Due to the absence of any known impact, no surface water sampling has been conducted.

II.B. LOCAL AND SITE HYDROGEOLOGY

Discussion of the local and site hydrogeology is based on field observations and investigative activities performed during the ISC, CAP-Part A SI, and CAP-Part B SI of the USTs 36 & 37 site.

II.B.1. Documentation of Local Groundwater Conditions

II.B.1.a. Groundwater usage

According to the Groundwater Pollution Susceptibility Map of Georgia (GA EPD 1992), USTs 36 & 37, Facility ID #9-089016, are located within an average or higher groundwater pollution susceptibility area. A total of seven groundwater supply wells are located within a 2-mile radius of the Fort Stewart garrison area. Six of these wells are located within the confines of the garrison area. The other well is located at Wright Army Airfield, approximately 1.2 miles northeast of the garrison area. All of the groundwater supply wells are classified as public wells that supply water to Fort Stewart for drinking and nondrinking purposes. These wells are approximately 450 feet deep and draw groundwater from the Principal Artesian (also known as the Floridan) Aquifer. According to Fort Stewart DPW personnel, chlorine and fluoride are added to the groundwater at the well heads prior to its being pumped into storage tanks and/or water towers. The locations of the wells within the 2-mile radius, along with a 500-foot radius drawn around each well, are shown in Figure 15. Based on the location of Facility ID #9-089016 relative to the identified groundwater supply wells, this site is classified as being located more than 500 feet from a withdrawal point.

II.B.1.b. Aquifer description

The hydrogeology in the vicinity of Fort Stewart is dominated by two aquifers referred to as the Principal Artesian and the surficial aquifers. The Principal Artesian aquifer is the lowermost hydrologic unit and is regionally extensive from South Carolina through Georgia, Alabama, and most of Florida. Known elsewhere as the Floridan, this aquifer is composed primarily of Tertiary-age limestone, including the Bug Island Formation, the Ocala Group, and the Suwannee Limestone. These formations are approximately 800 feet thick, and groundwater from this aquifer is used primarily for drinking water (Arora 1984).

The uppermost hydrologic unit is the surficial aquifer, which consists of widely varying amounts of sand and clay ranging from 55 to 150 feet in thickness. This aquifer is primarily used for domestic lawn and agricultural irrigation. The top of the water table ranges from approximately 2 to 10 feet BGS. The base of the aquifer corresponds to the top of the underlying dense clay of the Hawthorn Group. The Hawthorn Group was not

encountered during drilling at this site but is believed to be located at approximately 50 feet BGS; thus, the effective aquifer thickness would be approximately 45 feet. Soil surveys for Liberty and Long counties describe the occurrence of a perched water table within the Stilson loamy sands present within Fort Stewart (Looper 1980).

The confining layer for the Principal Artesian Aquifer is the phosphatic clay of the Hawthorn Group and ranges in thickness from 15 to 90 feet. The vertical hydraulic conductivity of this confining unit is on the order of 10^{-8} cm/sec. There are minor occurrences of aquifer material within the Hawthorn Group; however, they have limited utilization (Miller 1990). The Hawthorn Group has been divided into three formations: Coosawhatchie Formation, Markshead Formation, and the Parachula Formation, which are listed from youngest to oldest.

The Coosawhatchie Formation is composed predominantly of clay but also has sandy clay, argillaceous sand, and phosphorite units. The formation is approximately 170 feet thick in the Savannah, Georgia, area. This unit disconformabily overlies the Markshead Formation and is distinguished from the underlying unit by dark phosphatic clays or phosphorite in the lower part and fine-grained sand in the upper part.

The Markshead Formation is approximately 70 feet thick in the Savannah, Georgia, area and consists of light-colored phosphatic, slightly dolomitic, argillacerous sand to fine-grained sandy clay with scattered beds of dolostone and limestone.

The Parachula Formation consists of sand, clay, limestone, and dolomite and is approximately 10 feet thick in the Savannah, Georgia, area. The Parachula Formation generally overlies the Suwannee Limestone in Georgia.

II.B.1.c. Surface water

The water resources survey conducted during the CAP-Part A SI is presented in Appendix III. Several surface water bodies are located within a 1-mile radius of the Fort Stewart garrison area and are shown in Figure 15. At the closest point to the site, Mill Creek is located approximately 1,900 feet southwest (downgradient) of the site. In the direction of groundwater flow, a storm water drainage ditch is located approximately 1,200 feet southwest of the site. Based on the surface water features discussed in Appendix III, the USTs 36 & 37 site, Facility ID #9-089016, is classified as being located more than 500 feet from a surface water body.

Runoff from the USTs 36 & 37 site moves over the existing concrete to the Fort Stewart storm drainage system. Since petroleum contamination at the site primarily impacts groundwater, the surface water runoff pathway is not a viable contaminant transport mechanism.

A storm drain is located about 40 feet southwest of boring 16-03 (i.e., area of highest contamination). The invert elevation of this line is estimated to be approximately 69.9 feet above mean sea level (AMSL) or 3.8 feet BGS, which is above the water table; thus, the storm drain line is not considered a preferential pathway. In addition, there is a water line located upgradient of the former tank pit.

II.B.2. Stratigraphic Boring Logs

The local stratigraphy of Fort Stewart and vicinity is presented in Section II.B.2.a, and the site stratigraphy from the CAP-Part A and CAP-Part B investigations is presented in Section II.B.2.b.

II.B.2.a. Local stratigraphy

Fort Stewart is located within the coastal plain physiographic province. This province is typified by nine southeastward-dipping strata that increase in thickness from 0 feet at the fall line, located approximately

150 miles inland from the Atlantic coast, to approximately 4,200 feet at the coast. State geologic records describe a probable petroleum exploration well (the No. 1 Jelks-Rogers) located in the region as encountering crystalline basement rocks at a depth of 4,254 feet BGS. This well provides the most complete record for Cretaceous, Tertiary, and Quaternary sedimentary strata in the region.

The Cretaceous section was found to be approximately 1,970 feet thick and dominated by clastics. The Tertiary section was found to be approximately 2,170 feet thick and dominated by limestone with a 175-foot-thick cap of dark green phosphatic clay. This clay is regionally extensive and is known as the Hawthorn Group. The interval from approximately 110 feet to the surface is Quaternary in age and composed primarily of sand with interbeds of clay or silt. This section is undifferentiated into separate formations (Herrick and Vochis 1963).

State geologic records contain information regarding a well drilled in October 1942, 1.8 miles north of Flemington at Liberty Field of Camp Stewart (now known as Fort Stewart). This well is believed to be an artesian well located approximately one-quarter mile north of the runway at Wright Army Airfield within the Fort Stewart Military Reservation (FSMR). The log for this well describes a 410-foot section, the lowermost 110 feet of which consisted predominantly of limestone sediments, above which 245 feet of dark green phosphatic clay typical of the Hawthorn Group were encountered. The uppermost portion of the section was found to be Quaternary-age interbedded sands and clays. The top 15 feet of these sediments were described as sandy clay (Herrick and Vochis 1963).

The surface soil located throughout the Fort Stewart garrison area consists of Stilson loamy sand. The surface layer of this soil is typically dark grayish-brown loamy sand measuring approximately 6 inches in depth. The surface layer is underlain by material consisting of pale yellow loamy sand and extends to a depth of approximately 29 inches. The subsoil is dominantly sandy clay loam and extends to a depth of 72 inches or more (Herrick and Vochis 1963).

II.B.2.b. Site stratigraphy

As determined from soil borings drilled during the CAP-Part A SI and CAP-Part B SI, the lithologies present within 15 feet of the surface at the USTs 36 & 37 site appear to correlate with the regional stratigraphic section. CAP-Part B SI soil boring logs are provided in Appendix IV. The lithology underlying the study area consists of interbedded layers of sand with varying amounts of silt and clay.

II.B.3. Stratigraphic Cross Sections

Stratigraphic cross sections have been developed based on the CAP-Part A SI and CAP-Part B SI soil boring logs. Figure 3 presents four cross sections that illustrate the geology described in Section II.B.2.b.

II.B.4. Referenced or Documented Calculations

Referenced or documented calculations performed to support the CAP-Part B SI include those used in developing and interpreting the results of geotechnical analysis and groundwater slug testing.

II.B.4.a. Geotechnical analysis

Soil samples for geotechnical analysis were collected as part of the CAP-Part investigation, and the results were provided in the CAP-Part A Report (SAIC 1999). Additional geotechnical sampling was not performed as part of the CAP-Part B SI.

II.B.4.b. Slug testing

Slug testing was not performed as part of the CAP-Part A or CAP-Part B investigations.

II.B.5. Direction of Groundwater Flow

II.B.5.a. Well construction details

Following contact with fully saturated material in a soil boring, a water level measurement was taken to determine the remaining depth to be drilled. This measurement was necessary to ensure the placement of at least 5 feet of well screen below the water table, in accordance with the Work Plan (SAIC 1996).

The monitoring well casing consisted of a 2- or 3/4-inch inside diameter, Schedule 40, flush-thread, polyvinyl chloride (PVC) riser pipe and screen in 10-foot sections. The well screen slot size was 0.010 inch. Table 4 summarizes construction details for CAP-Part A SI temporary piezometers and CAP-Part B SI monitoring wells. Well construction diagrams are presented in Appendix VII. Following installation of the well casing, filter-pack sand was poured while the augers were gradually removed to ensure a complete and even distribution of the filter pack. The filter pack extended to a measured level at least 0.5 foot above the top of the well screen.

Well seals were composed of 3/8-inch bentonite pellets and allowed to hydrate before filling of the annular space above the seal. The total volume of potable water used to hydrate the pellets averaged 2 gallons per well. The well seal extended to a measured level of at least 0.5 foot above the top of the filter pack.

Above the well seal, the remaining annular space was completed with a 1-foot-long, flush-mount sheet steel protective casing that was grouted in place with a 14-inch-diameter × 4-inch-thick, high-strength concrete pad. Well casings were capped with expandable locking caps. Protective casings were covered with bolted cast-iron manhole covers. Inscribed monitoring well identification plates were permanently affixed to the inside of each manhole cover.

II.B.5.b. Potentiometric mapping

Water level measurements were collected during the CAP-Part A SI 24 hours after piezometer installation in May and November 1998 and during CAP-Part B SI groundwater sampling activities in February 2000. Data obtained from these measurements are presented in Table 5. During the CAP-Part A SI in November 1998, groundwater flowed to the southwest with a gradient of 0.0039 foot/foot (Figure 16). During the CAP-Part B SI in February 2000, groundwater flowed to the southwest with a gradient of 0.0043 foot/foot (Figure 17).

II.B.5.c. Equipotential flow net

An equipotential flow net based on the February 2000 water level measurements and the contoured potentiometric surface are presented in Figure 18.

III. REMEDIAL ACTION PLAN

III.A. CORRECTIVE ACTION COMPLETED OR IN PROGRESS

III.A.1. Recovery/Removal of Free Product

No evidence of free product was observed at the USTs 36 & 37 site during the ISC, preliminary groundwater investigation, CAP-Part A SI, or CAP-Part B SI; therefore, no recovery/removal of free product has been performed.

III.A.2. Remediation/Treatment of Contaminated Backfill Material and Native Soils

No contaminated soil was excavated and disposed of during the closure activities in 1995. No further excavation of potentially contaminated backfill or native soils has occurred at the USTs 36 & 37 site.

III.B. OBJECTIVES OF CORRECTIVE ACTION

III.B.1. Removal of Free Product That Exceeds One-Eighth Inch

The ISC, preliminary groundwater investigation, CAP-Part A SI, and CAP-Part B SI determined that there is no evidence of free product at the USTs 36 & 37 site; therefore, no recovery/removal of free product has been performed, nor was it required based on known site conditions.

III.B.2. Remediate Groundwater Contamination

The CAP-Part A SI documented groundwater contamination that exceeded IWQSs in three CAP-Part A SI borings. Benzene, benzo(*a*)anthracene, benzo(*a*)pyrene, benzo(*k*)fluoranthene, chrysene, and indeno(*1,2,3-cd*)pyrene were the constituents that exceeded their respective IWQSs. However, benzo(*a*)anthracene, benzo(*a*)pyrene, and benzo(*b*)fluoranthene exceeded their respective ACLs. Further investigation during the CAP-Part B SI provided more groundwater contaminant data, which indicated that the contaminant concentrations decreased between May and November 1998 and January 2000. During the CAP-Part B SI, the highest benzene concentration was 27 µg/L, which is below the IWQS of 71.28 µg/L, and none of the PAH constituents were detected at concentrations above their respective IWQSs. As a result of the CAP-Part B SI, remediation or monitored natural attenuation of the site is not recommended.

III.B.3. Remediate Soil Contamination

Soil samples were collected from the tank pit during the ISC, and no constituent exceeded its respective its STL. Further investigation during the CAP-Part A SI provided soil contaminant data that indicated that benzene exceeded its STL in one soil sample. However, the sample was collected from just below the concrete, 50 feet southwest of the closest former dispenser island, and 110 feet southwest of the former tank pit. Armored personnel carriers are parked in this area of the sample location, and drip pans are located under the vehicles to catch oil leaks. This contamination appears to be related to motorpool operations and not the former UST and ancillary piping; therefore, remediation of soil is not recommended.

III.B.4. Provide Risk-based Corrective Action

As part of the CAP-Part A Report (SAIC 1999), a risk-based screening was performed. The results of that screening are summarized in the following sections.

III.B.4.a. Risk-based screening results

The risk-screening process is a systematic screening of sample results to determine site-related contaminants of potential concern (COPCs). Constituent concentrations below risk- or applicable or relevant and appropriate requirement–based screening levels are not considered COPCs and are not evaluated further. Table 6 presents the results of the risk-based screening for the CAP-Part A SI soil data. Table 7 presents the results of the risk-based screening for the CAP-Part A SI and CAP-Part B SI groundwater data. The risk-based screening for groundwater has been revised to include the CAP-Part B sampling results.

Seventeen soil samples were collected during the CAP-Part A SI. Benzene was detected at 10.2 µg/kg in a sample from boring 16-11, which exceeds the STL of 8 µg/kg. However, this sample is located approximately 50 feet away from the UST and ancillary piping and is above the water table in an area where armored personnel carriers are parked with drip pans placed underneath the vehicles to catch oil leaks. Thus, the contamination is assumed to be related to the motorpool operations and not the UST and ancillary piping. No other compounds were detected above the STLs or the risk-based screening levels for soil data collected for the CAP-Part A SI. Toluene, ethylbenzene, xylenes, benzo(*a*)anthracene, benzo(*a*)pyrene, benzo(*b*)fluoranthene, benzo(*g,h,i*)perylene, benzo(*k*)fluoranthene, chrysene, fluoranthene, indeno(*1,2,3-cd*)pyrene, pyrene, and TPH were detected below screening levels during the CAP-Part A sampling. No constituents were selected as COPCs for USTs 36 & 37 site soil.

The detection limits for benzo(*a*)pyrene and dibenzo(*a,h*)anthracene exceeded their risk-based screening levels for soil based on leaching to groundwater in one sample. Soil samples were not collected during the CAP-Part B SI. No COPCs for soils were selected for the site based on the detection-limit screening.

Fourteen groundwater samples were collected during the CAP-Part A SI. Benzene was detected in seven temporary wells at concentrations above screening levels. The detections ranged from 0.42 µg/L (well 16-02) to 221 µg/L (well 16-03). These results exceeded the risk-based screening level for benzene of 0.36 µg/L. Two of the seven results also exceeded the IWQS for benzene of 71.28 µg/L. Toluene was detected in eight wells. Of these eight detections, one (1,740 µg/L in well 16-05) exceeded the risk-based screening level for toluene. Benzo(*a*)pyrene was detected above its risk-based screening level in two wells (16-09 and 16-10). Naphthalene was detected above its risk-based screening level in three wells (16-03, 16-05, and 16-09). Several other PAHs were detected above risk-based screening levels in well 16-09. These PAHs include benzo(*a*)anthracene, benzo(*b*)fluoranthene, benzo(*k*)fluoranthene, chyrsene, indeno(*1,2,3-cd*)pyrene, and napththalene. Ethylbenzene, xylenes, acenaphthene, anthracene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene were detected below screening values for the CAP-Part A SI. Seven groundwater samples were collected during the CAP-Part B SI. Benzene was detected in three wells at concentrations above the risk-based screening level of 0.36 µg/L. Naphthalene was detected in one well (16-18) at a concentration above its risk-based screening level. Toluene, ethylbenzene, xylenes, acenaphthene, anthracene, fluoranthene, fluorene, phenanthrene, and pyrene were detected below screening values for the CAP-Part B SI. Benzene, toluene, benzo(*a*)anthracene, benzo(*a*)pyrene, benzo(*b*)fluoranthene, benzo(*k*)fluoranthene, chrysene, indeno(*1,2,3-cd*)pyrene, and naphthalene were selected as COPCs for the USTs 36 & 37 site groundwater.

The detection limits for benzene exceeded the risk-based screening level for leaching to groundwater. Detection limits achieved during both the CAP-Part A and CAP-Part B for several PAHs exceeded their respective IWQSs and/or risk-based screening levels for the groundwater data. For these constituents, screening levels represent values below analytically achievable levels. The PAH fraction of sample 161072 was rejected because the surrogate recovery was zero. No additional COPCs were selected for groundwater based on the detection-limit screening.

III.B.4.b. Fate and transport model

The fate and transport modeling results were presented in the CAP-Part A Report (SAIC 1999). In summary, benzene was modeled to three potential downgradient locations at which a receptor might encounter migrating groundwater contamination. The locations were a storm drain located 40 feet southwest of boring 16-03; a drainage ditch located approximately 1,200 feet southwest of the site; and Mill Creek located approximately 1,900 feet southwest of the site. All underground utilities are located above the water table; however, the storm drain is in close proximity to the water table and is considered a potential receptor only for the purpose of the fate and transport modeling. These are the nearest possible locations at which a receptor might encounter migrating groundwater contamination due to a possible hydraulic connection between the groundwater and the surface water in the utility line, ditch, or creek.

The Analytical Transient 1-, 2-, 3- Dimensional (AT123D) Model was used to determine the impact of dissolved hydrocarbons on potential receptors. A steady-state AT123D Model was developed by calibrating the model against observed maximum concentrations in the groundwater (i.e., 221 µg/L in boring 16-03 during the CAP-Part A investigation in May 1998) beneath the USTs 36 & 37 site. Modeling of the leaching of soil contamination to the groundwater was not performed because the additional contaminant contribution to the groundwater was negligible compared to the existing groundwater contamination.

Contaminant fate and transport simulations were performed to predict the maximum concentrations at these receptor locations over a simulation period of 100 years. The modeling results indicated that the benzene concentrations were predicted to be 49.7 µg/L at the storm drain, 0 µg/L at the drainage ditch, and 0 µg/L at Mill Creek. Therefore, the potential receptors and surface water located outside the plume will not be impacted at concentrations above the IWQSs by the current site conditions at USTs 36 & 37, Facility ID # 9-089016.

Based on modeling results, the dilution attenuation factor (DAF) is estimated to be 4.4 at the storm drain, infinity at the drainage ditch, and infinity at Mill Creek. Infinite DAFs indicate that the predicted concentrations at these receptors are zero.

III.B.4.c. Site-specific levels

Detections exceeding the conservative generic screening levels are considered COPCs. Alternative threshold levels (ATLs) and ACLs are developed, when appropriate, for the COPCs using site-specific information from the fate and transport modeling and applicable regulatory levels.

III.B.4.c.1. Alternate Threshold Levels

No COPCs were identified for USTS 36 & 37 site soil; thus, no ATLs were developed for soil.

III.B.4.c.2. Alternative Concentration Limits

Benzene, toluene, benzo(*a*)anthracene, benzo(*a*)pyrene, benzo(*b*)fluoranthene, benzo(*k*)fluoranthene, chrysene, and indeno(*1,2,3-cd*)pyrene were identified as COPCs for groundwater at the site. Benzene was considered the most mobile, and thus conservative, constituent. Benzene was modeled to potential downgradient locations at which a receptor may come in contact with migrating site contamination. The modeling results estimated a DAF of 4.4 for the storm drain. PAH constituents are much less mobile in the environment than benzene; thus, a DAF of 44 (i.e., 10 times the benzene DAF) was used to develop ACLs for the PAH constituents. Compound-specific regulatory levels or risk-based screening criteria were used in conjunction with site-specific DAFs identified for the potential migration of contamination from the site to determine the ACL

for each compound. The ACL calculations are presented in Appendix VI and were determined to be as follows:

- 313 µg/L for benzene (i.e., 4.4 × 71.28 µg/L),
- 880,000 µg/L for toluene (i.e., 4.4 × 200,000 µg/L),
- 4.0 µg/L for benzo(*a*)anthracene (i.e., 44 × 0.092 µg/L),
- 8.8 µg/L for benzo(*a*)pyrene (i.e., 44 × 0.2 µg/L),
- 4.0 µg/L for benzo(*b*)fluoranthene (i.e., 44 × 0.092 µg/L),
- 40 µg/L for benzo(*k*)fluoranthene (i.e., 44 × 0.92 µg/L),
- 404 µg/L for chrysene (i.e., 44 × 9.2 µg/L),
- 4.0 µg/L for indeno(*1,2,3-cd*)pyrene (i.e., 44 × 0.092 µg/L), and
- 286 µg/L for naphthalene (i.e., 44 × 6.5 µg/L).

During the CAP-Part A investigation in 1998 and 1999, only the concentrations of benzo(*a*)anthracene, benzo(*a*)pyrene, and benzo(*b*)fluoranthene exceeded their respective ACLs. During the CAP-Part B investigation in 2000, none of the constituents exceeded their respective ACLs.

III.B.4.d. Conclusions and recommendations

The conclusions below are based on a review of the CAP-Part A SI and CAP-Part B SI results using a risk-based approach and the fate and transport modeling, assuming a continuous source of contamination of infinite duration at the site based on the maximum observed benzene concentration (i.e., 221 µg/L) in groundwater during the CAP-Part A investigation.

- Free product was not detected during the ISC, preliminary groundwater investigation, CAP-Part A SI, or CAP-Part B SI.

- The vertical extent of soil and groundwater contamination was determined during the CAP-Part A and CAP-Part B investigations.

- Risk-based screening results showed that benzene, toluene, benzo(*a*)anthracene, benzo(*a*)pyrene, benzo(*b*)fluoranthene, benzo(*k*)fluoranthene, chrysene, and indeno(*1,2,3-cd*)pyrene concentrations in groundwater exceeded the initial screening levels.

- Risk-based screening results showed that benzene concentrations in soil due to tank operations did not exceed the initial screening levels.

- The modeling of benzene estimated a DAF of 4.4 for the storm drain.

- Benzo(*a*)anthracene, benzo(*a*)pyrene, and benzo(*b*)fluoranthene concentrations in groundwater exceeded the ACLs of 4 µg/L, 8.8 µg/L, and 4 µg/L, respectively, during the CAP-Part A SI. None of the constituents were detected in groundwater during the CAP-Part B SI at concentrations exceeding their respective ACLs.

- Fate and transport modeling of benzene indicated that contamination did not exceed IWQSs at the conservatively defined downgradient receptors—a storm drain, a drainage ditch, and Mill Creek.

- Based on the CAP-Part B data, the environmental site ranking score is 510 (see Appendix X).

Considering that the site is located within the garrison area of Fort Stewart, that the most recent benzene concentrations in groundwater are below the IWQS, and that the most recent PAH concentrations in groundwater are below their respective ACLs, a no-further-action-required status is recommended for the site.

III.C. DESIGN AND OPERATION OF CORRECTIVE ACTION SYSTEMS

A correction action system is not required for this site because no further action is being recommended for the site.

III.D. IMPLEMENTATION

There is no corrective action to be implemented at the site. Fort Stewart is submitting a petition for permanent closure in conjunction with this CAP-Part B Report. Fort Stewart requests that all monitoring wells at the site be decommissioned. Upon approval from GA EPD, decommissioning of the monitoring wells will be completed in accordance with the USACE design manual for monitoring wells and will comply with all applicable state and federal standards.

III.E. PUBLIC NOTIFICATION

The USTs 36 & 37 site is located entirely within the confines of FSMR, a federal facility. The U.S. Government owns all of the property contiguous to the site. The Fort Stewart DPW has complied with the public notice requirements defined by GA EPD guidance by publishing an announcement in the *Savannah Morning News* on July 16 and 23, 2000. A copy of the newspaper announcement used for public notification is presented in Appendix XI of this report.

IV. CLAIM FOR REIMBURSEMENT

Fort Stewart is a federally owned facility and has funded the investigation for the USTs 36 & 37 site, Facility ID# 9-089016, using Department of Defense Environmental Restoration Account Funds. Application for GUST Trust Fund reimbursement is not being pursued at this time.

V. REFERENCES

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APPENDIX I

REPORT FIGURES

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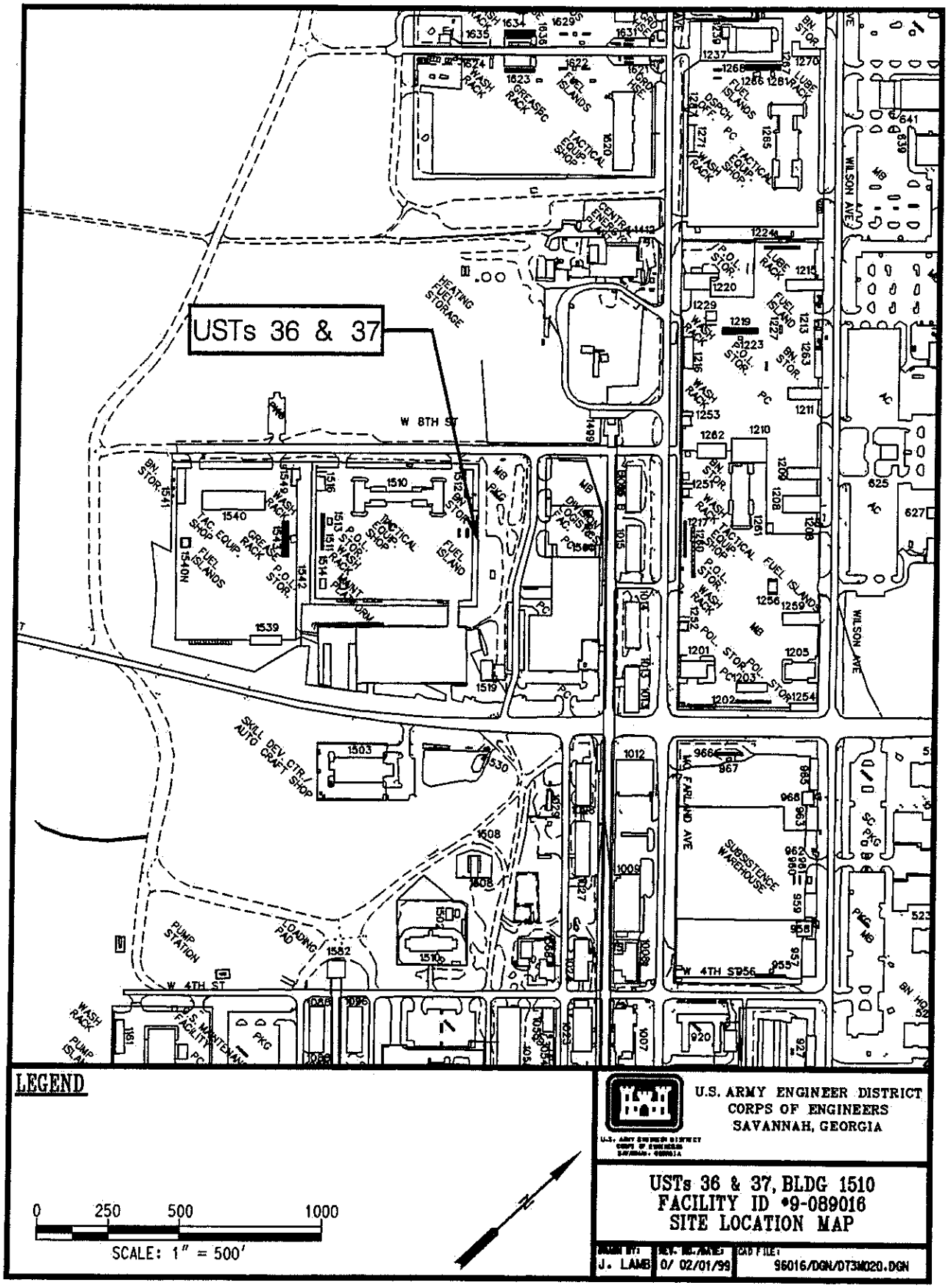

Figure 1. Location Map for the USTs 36 & 37 Site, Facility ID #9-089016

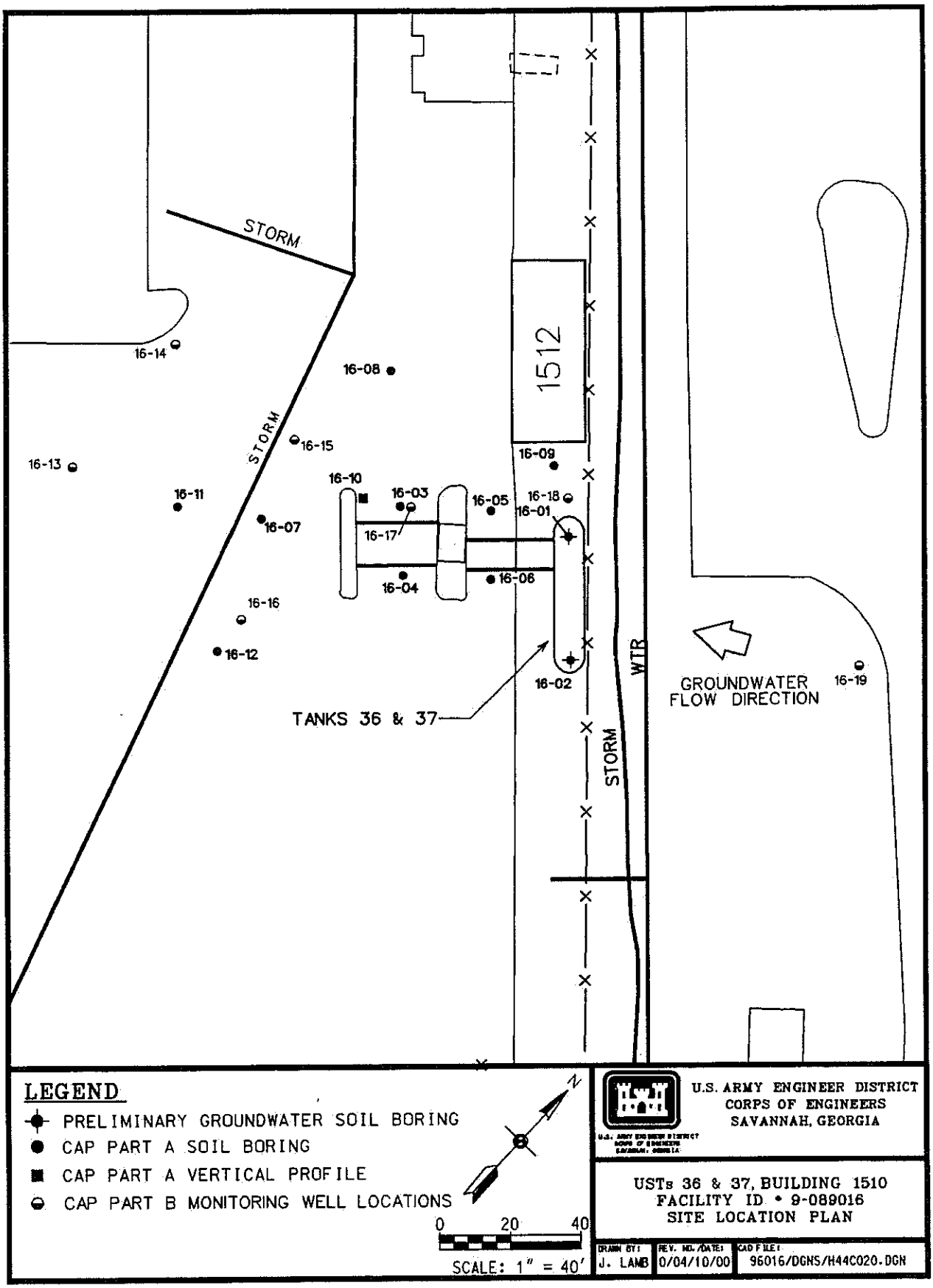

Figure 2. Site Map of the USTs 36 & 37 Site, Facility ID #9-089016

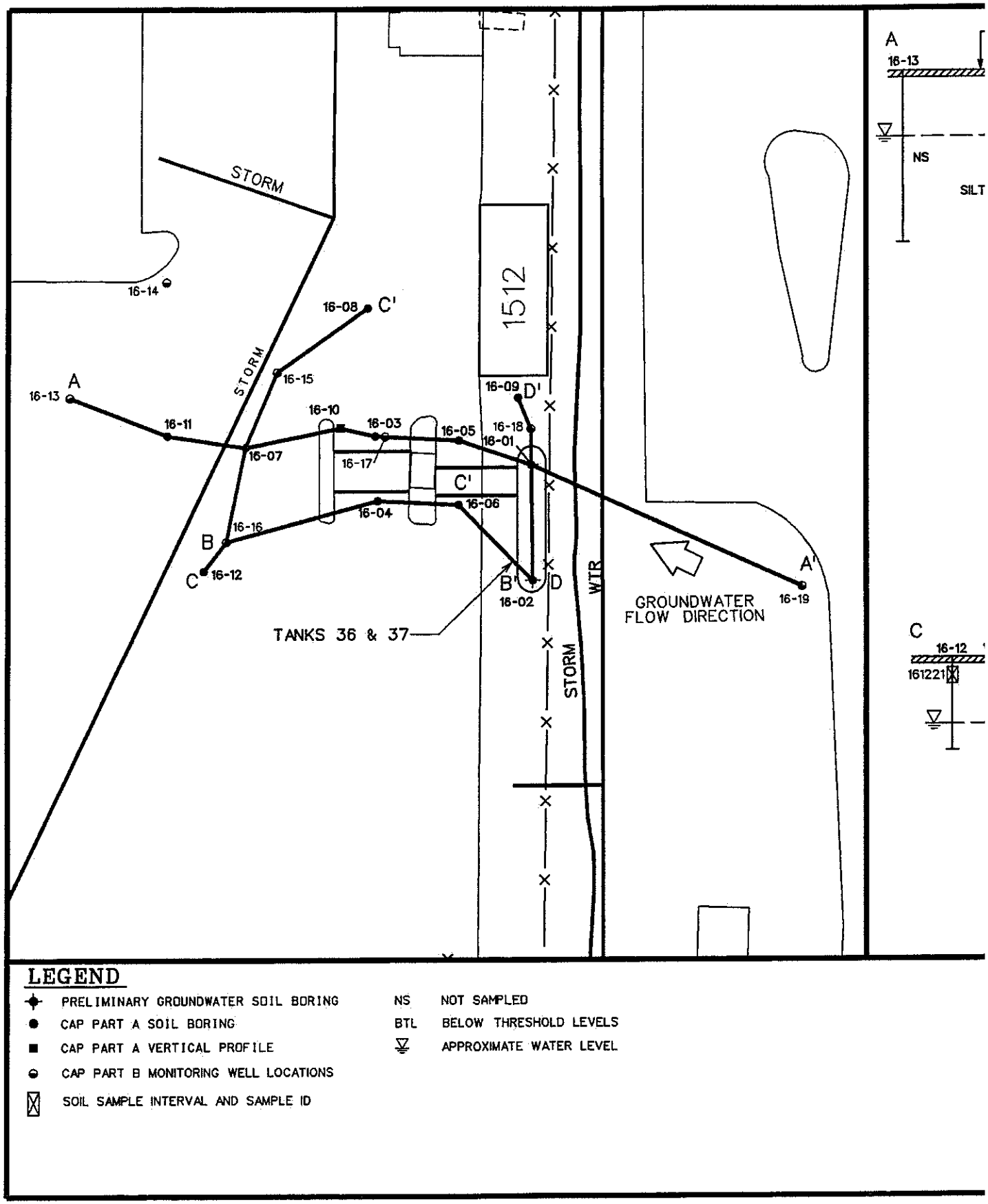

Figure 3. CAP-Part A and B Soil
Faci

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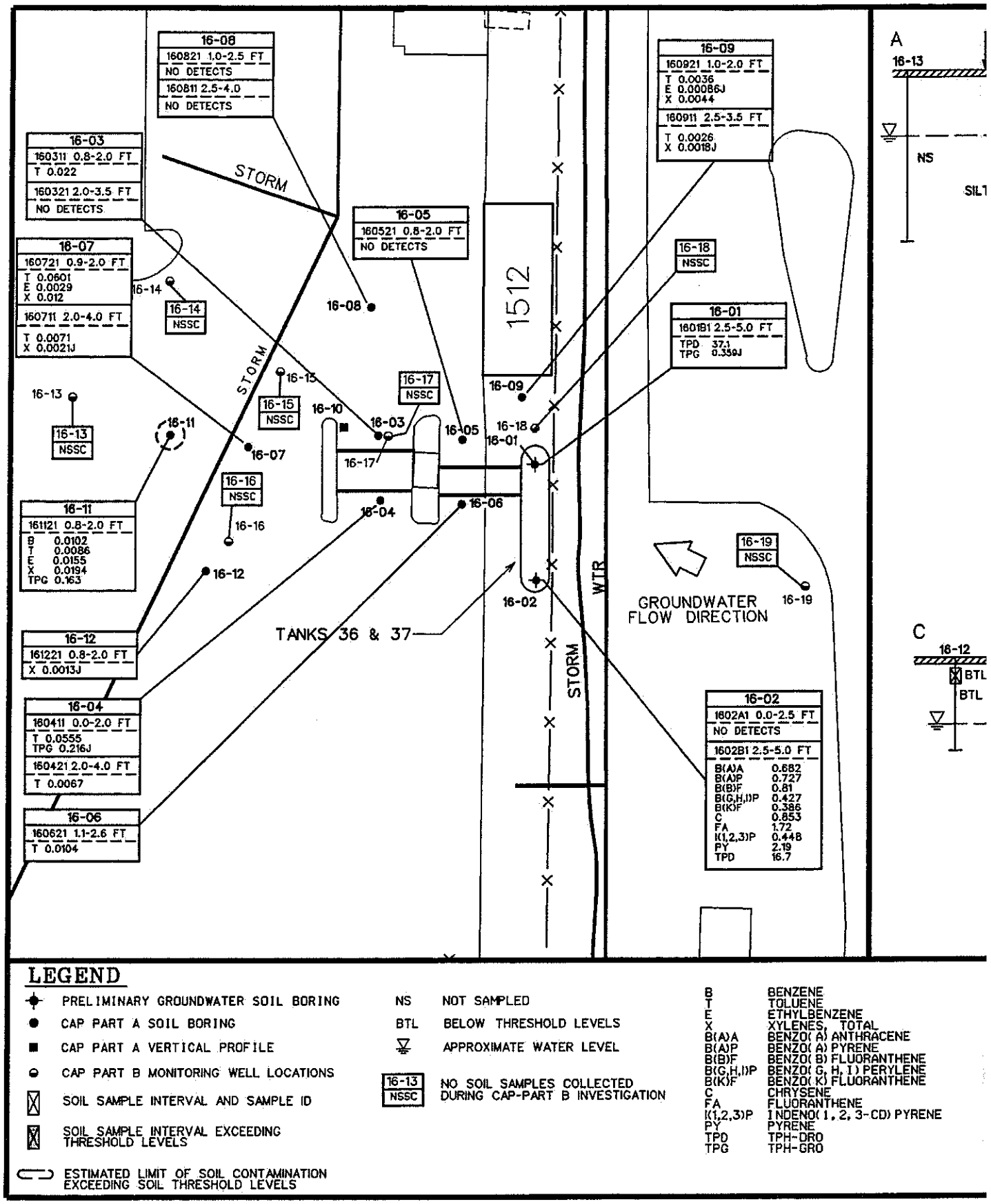

Figure 4. CAP-Part A and B Soil Sampling A
Facility ID

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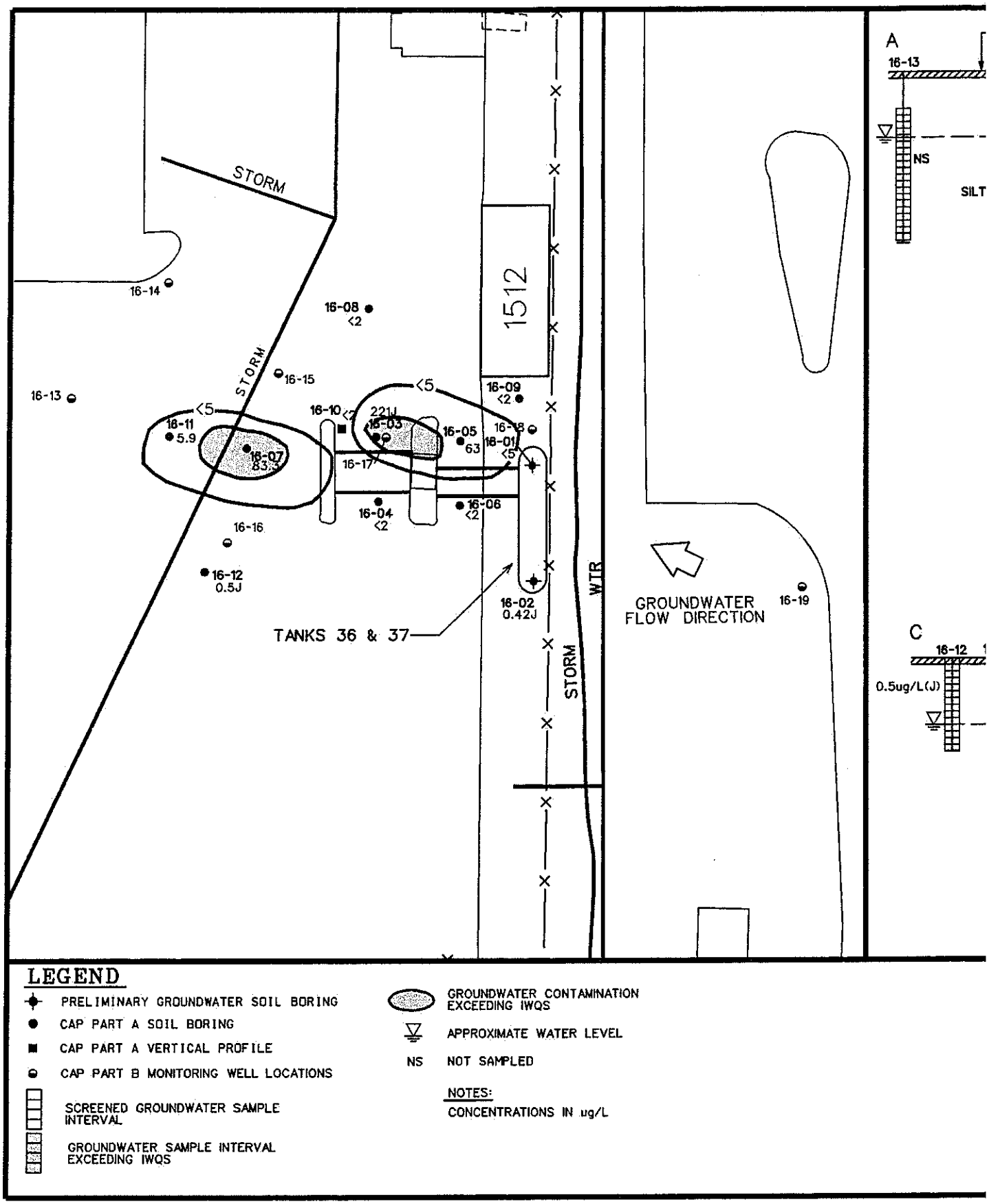

Figure 5. Benzene Contamination in Groundwater Determ
the USTs 36 & 37 Site, Fac

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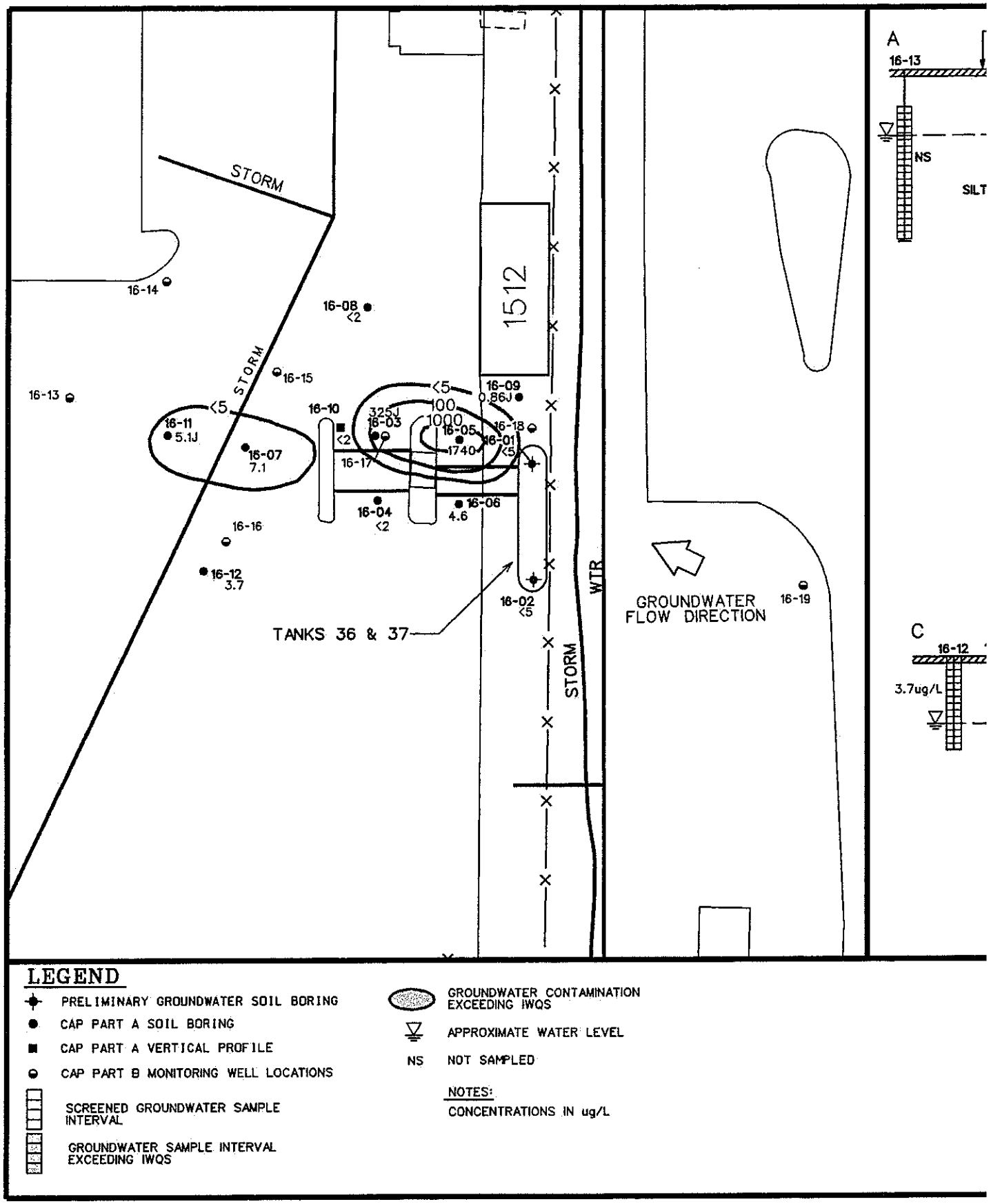

Figure 6. Toluene Contamination in Groundwater Determined D
the USTs 36 & 37 Site, Facility II

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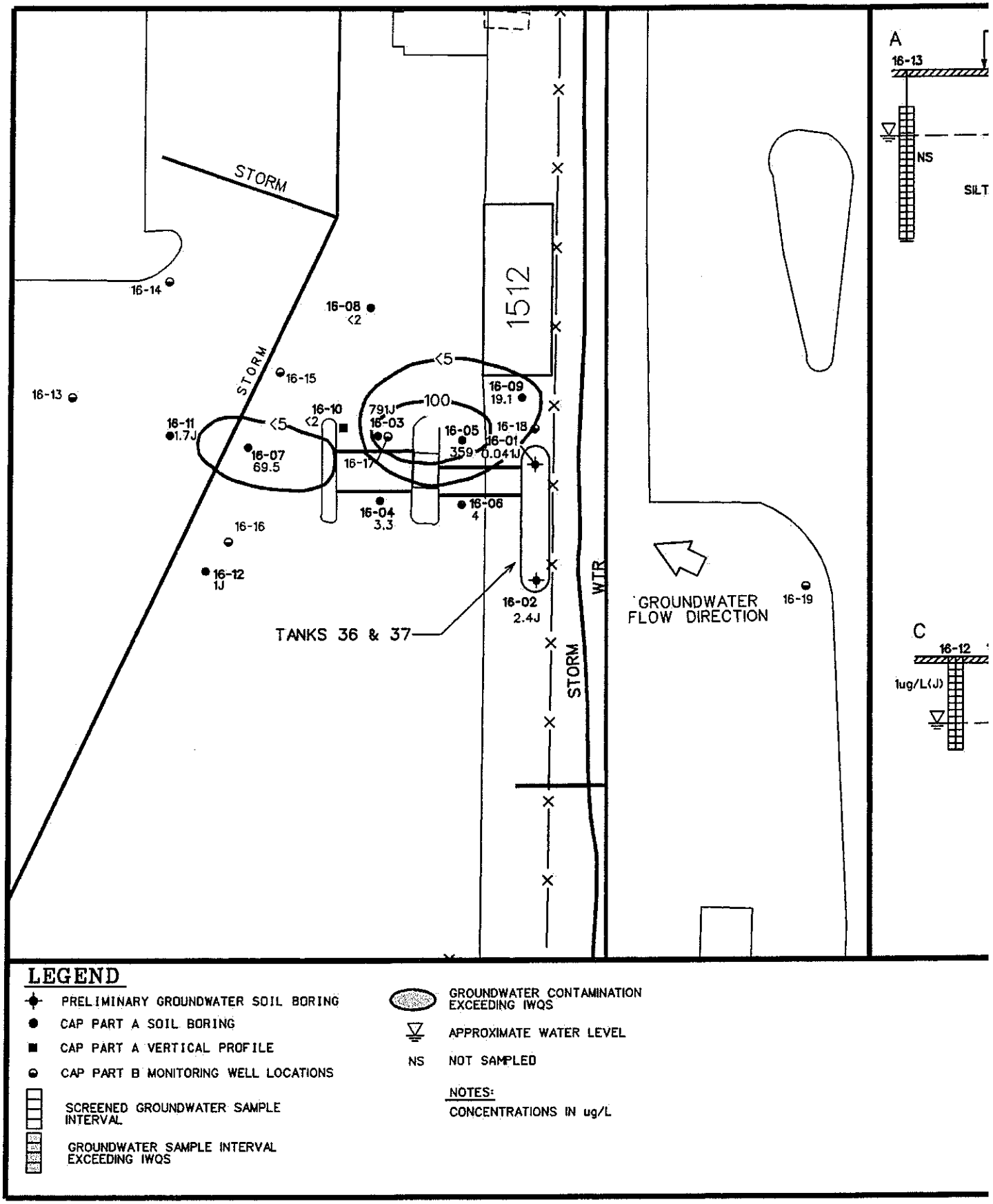

Figure 7. Ethylbenzene Contamination in Groundwate
Investigation at the USTs 36 & 37 Si

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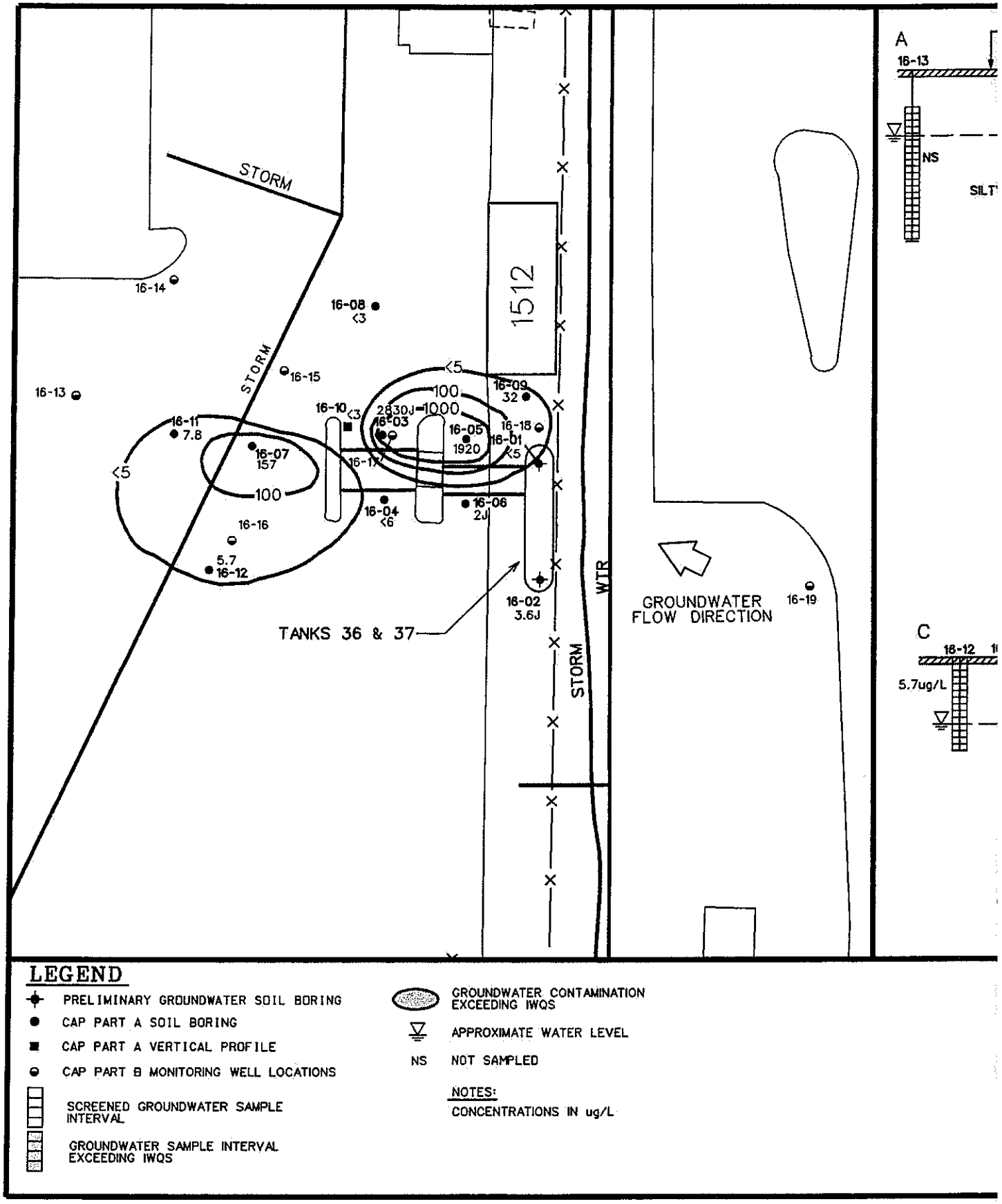

Figure 8. Total Xylenes Contamination in Groun
Investigation at the USTs 36 &

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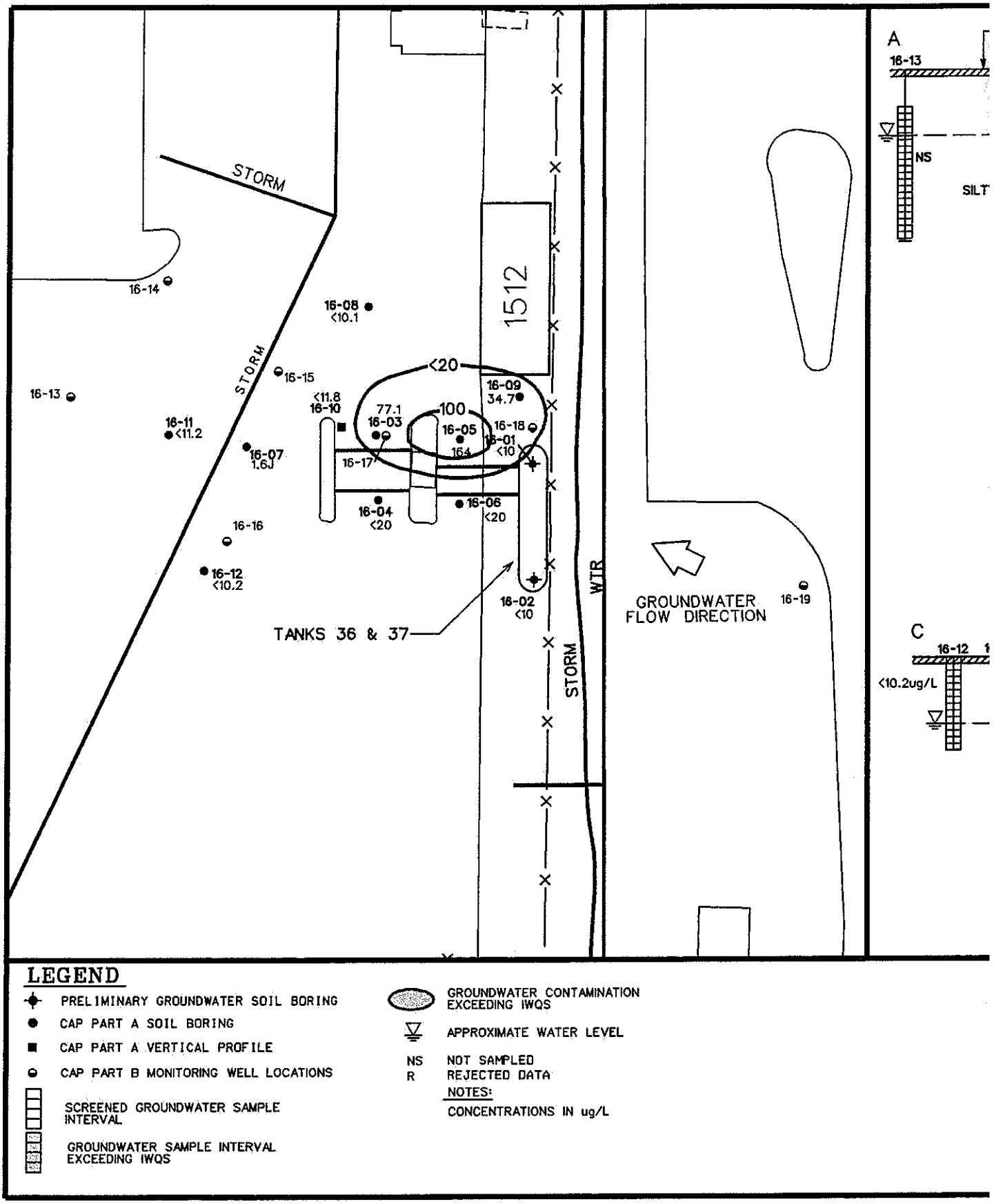

Figure 9. Naphthalene Contamination in Groundwater De
at the USTs 36 & 37 Site, F

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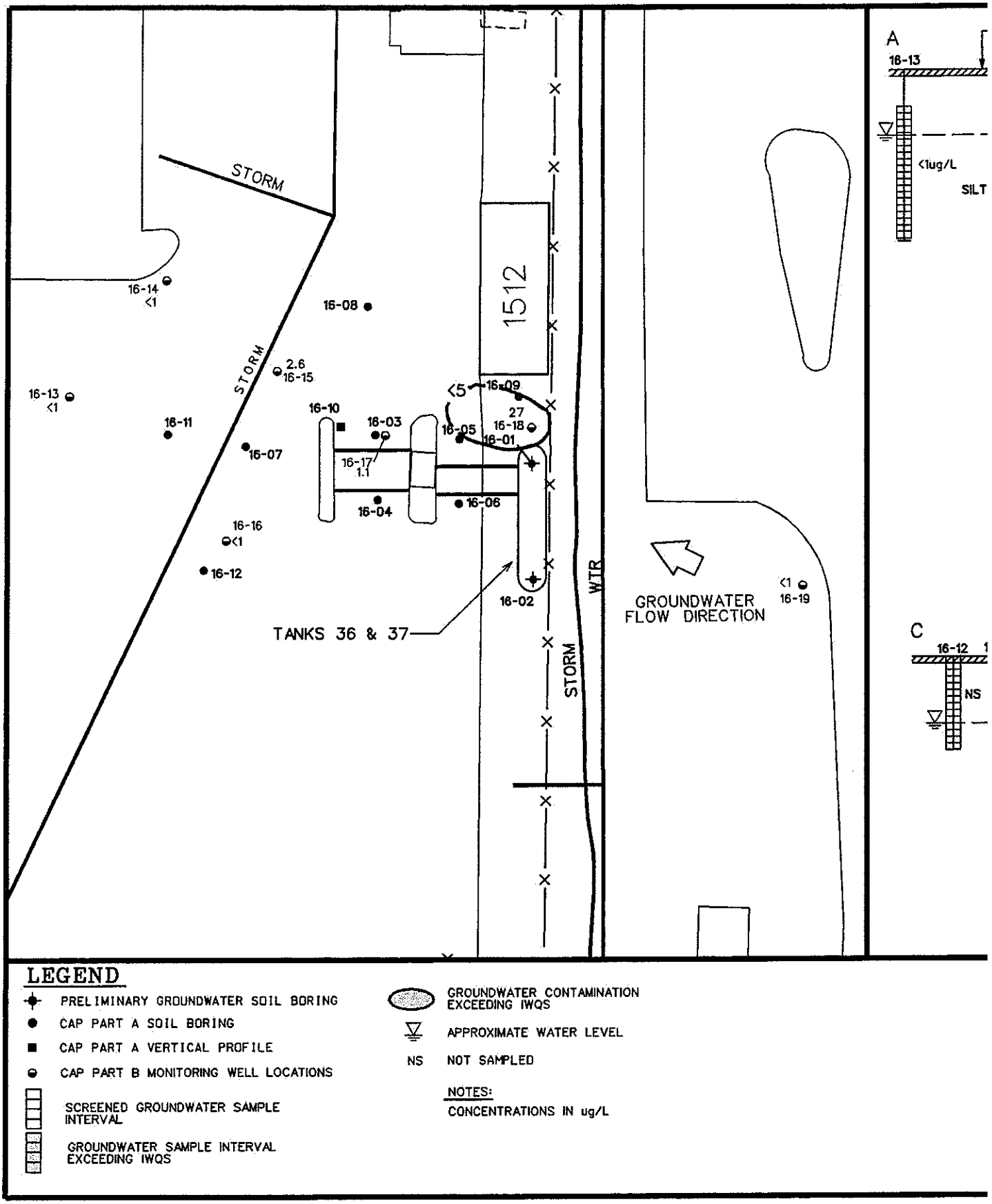

Figure 10. Benzene Contamination in Groundwate
the USTs 36 & 37 S

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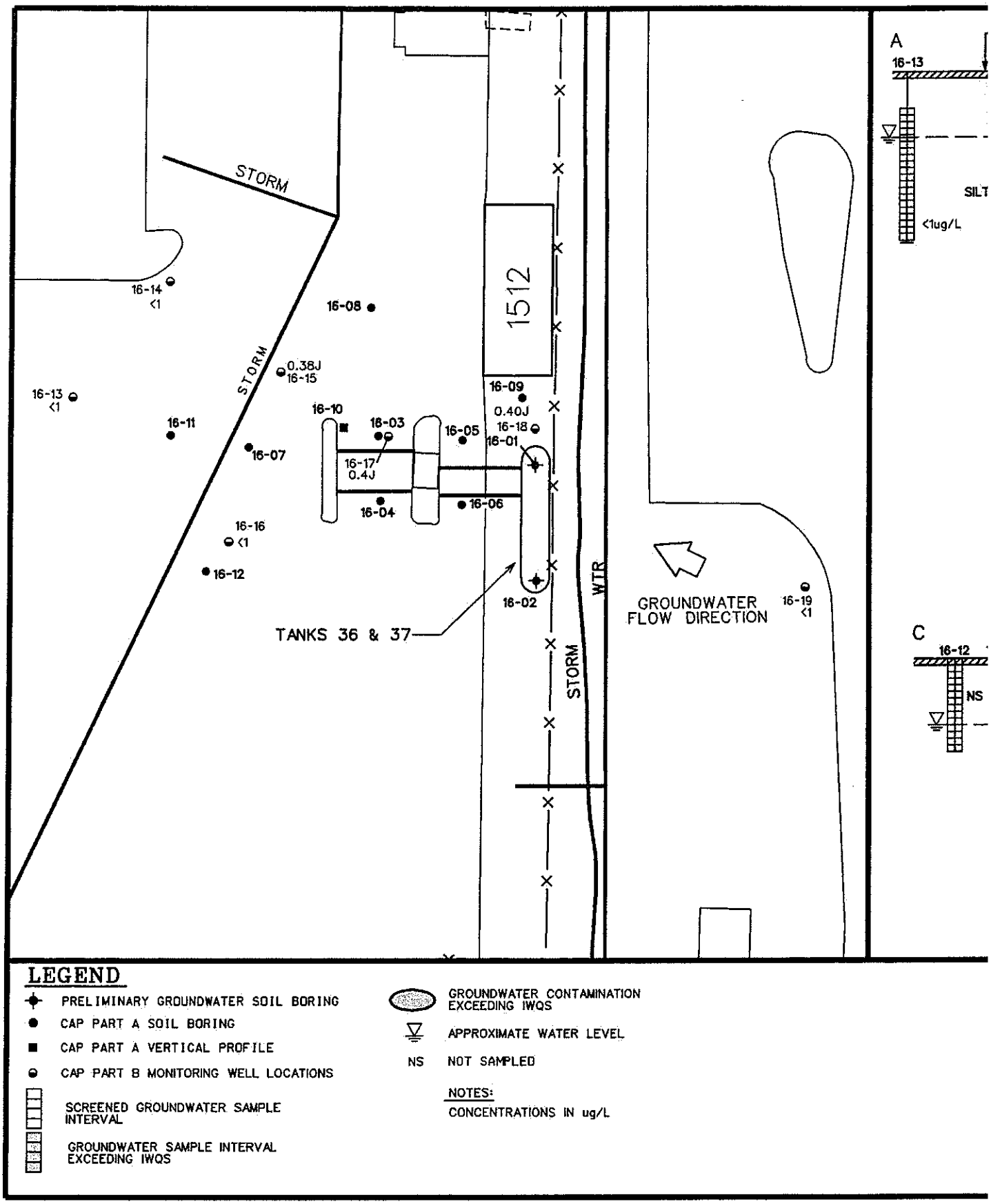

Figure 11. Toluene Contamination in Groundwater Dete
the USTs 36 & 37 Site, F

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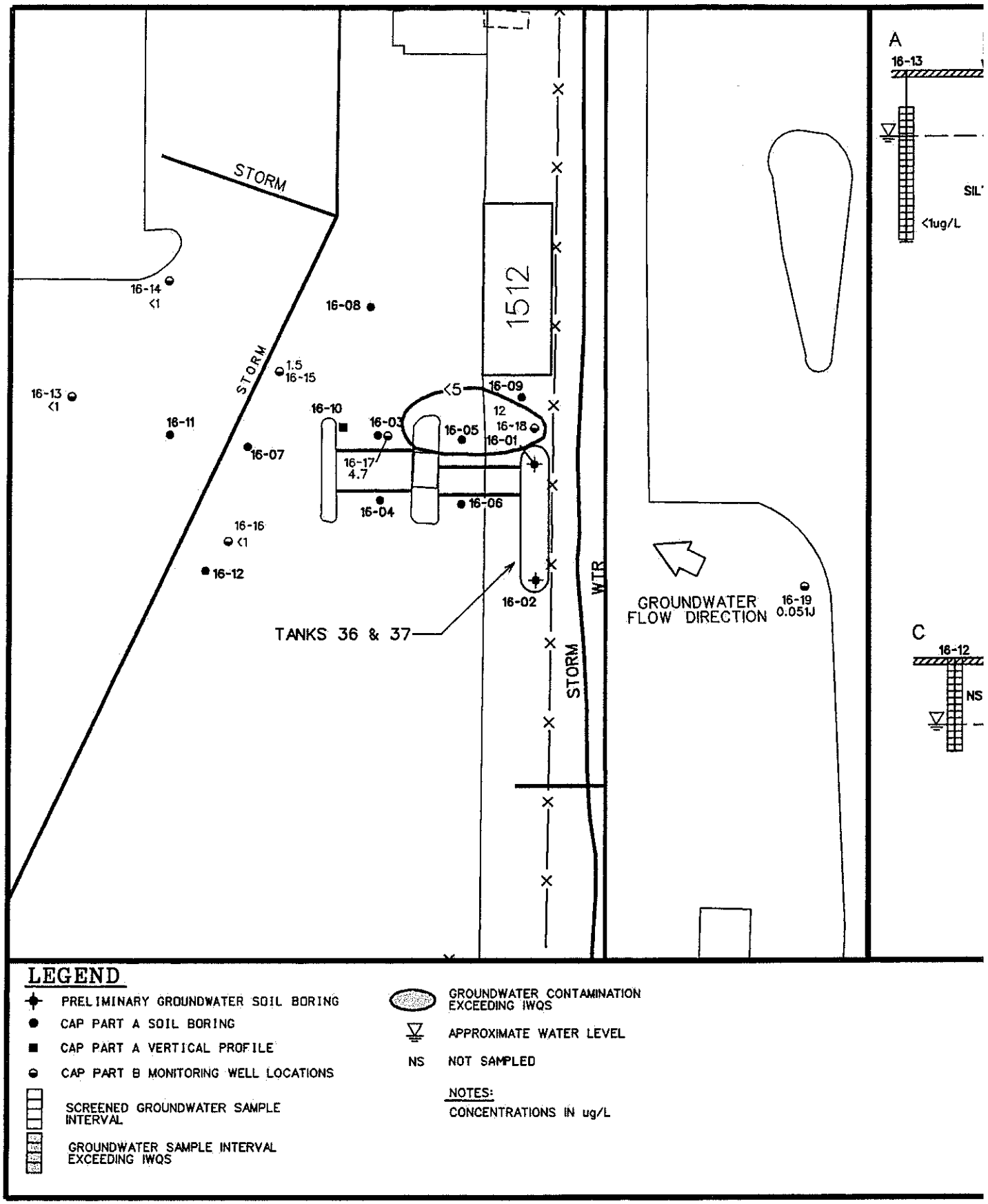

Figure 12. Ethylbenzene Contamination in Groundwa
Investigation at the USTs 36 & 37 S

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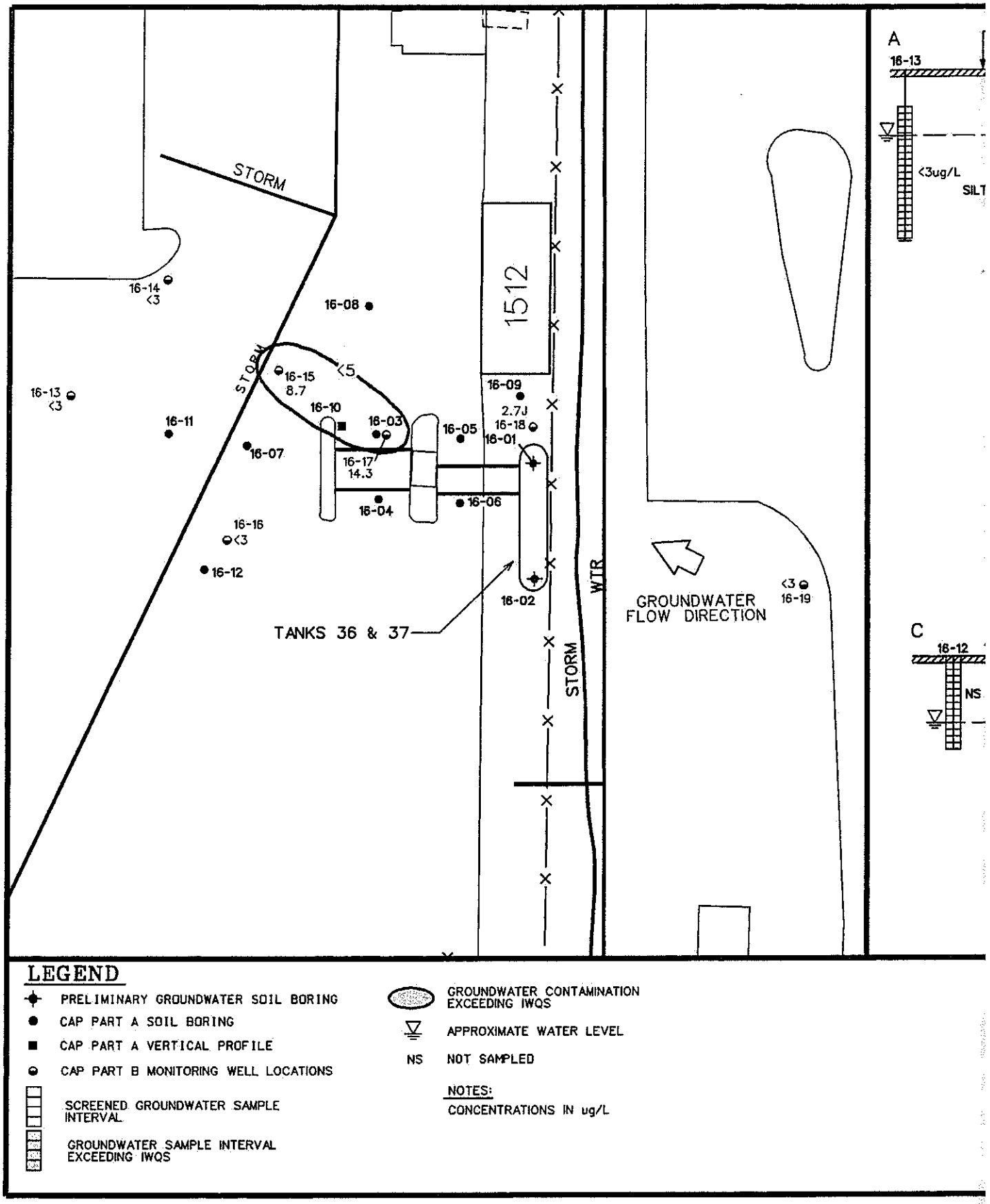

Figure 13. Total Xylenes Contamination in Groundwater De
Investigation at the USTs 36 & 37 Site, Fa

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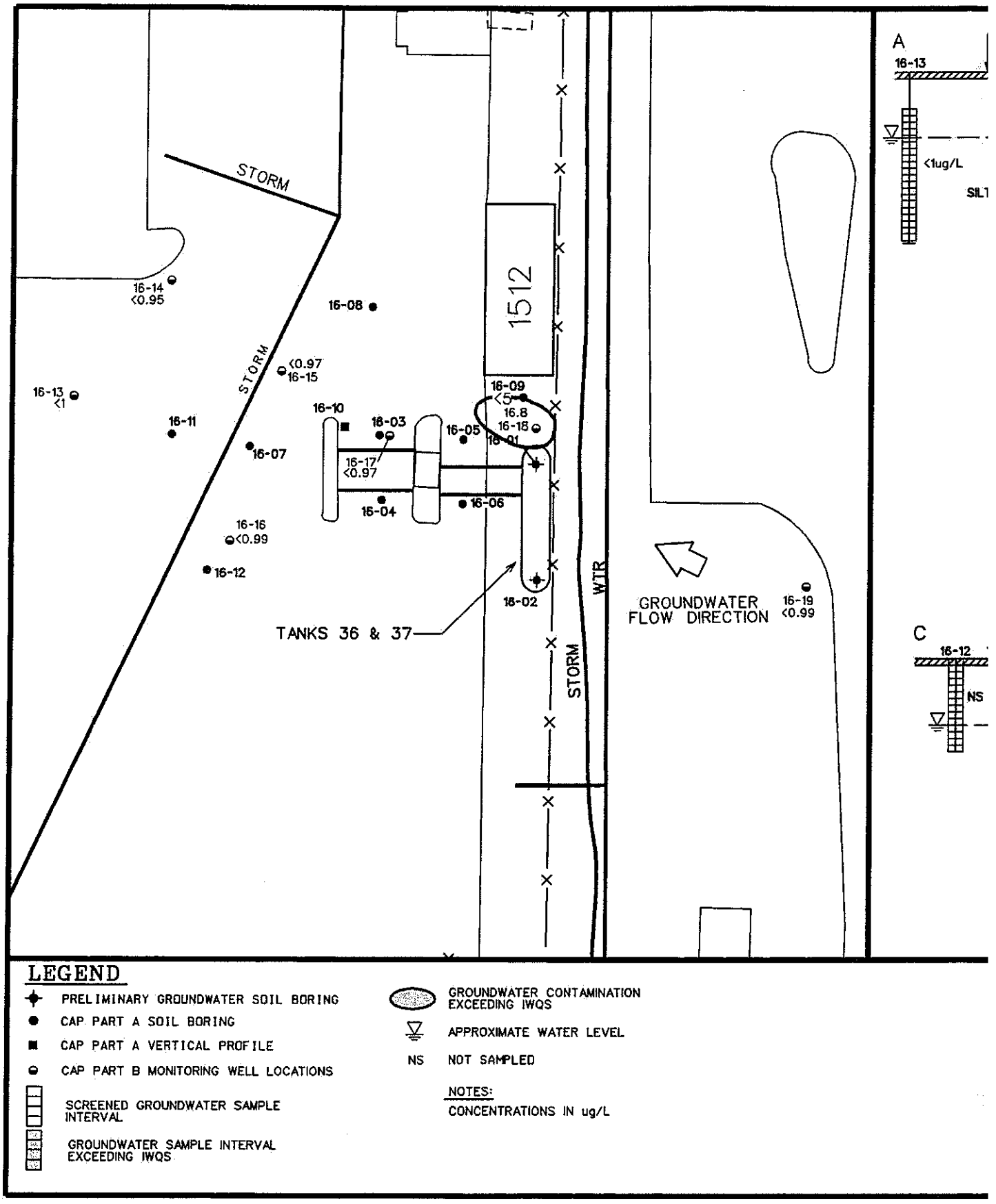

Figure 14. Naphthalene Contamination in
Investigation at the UST

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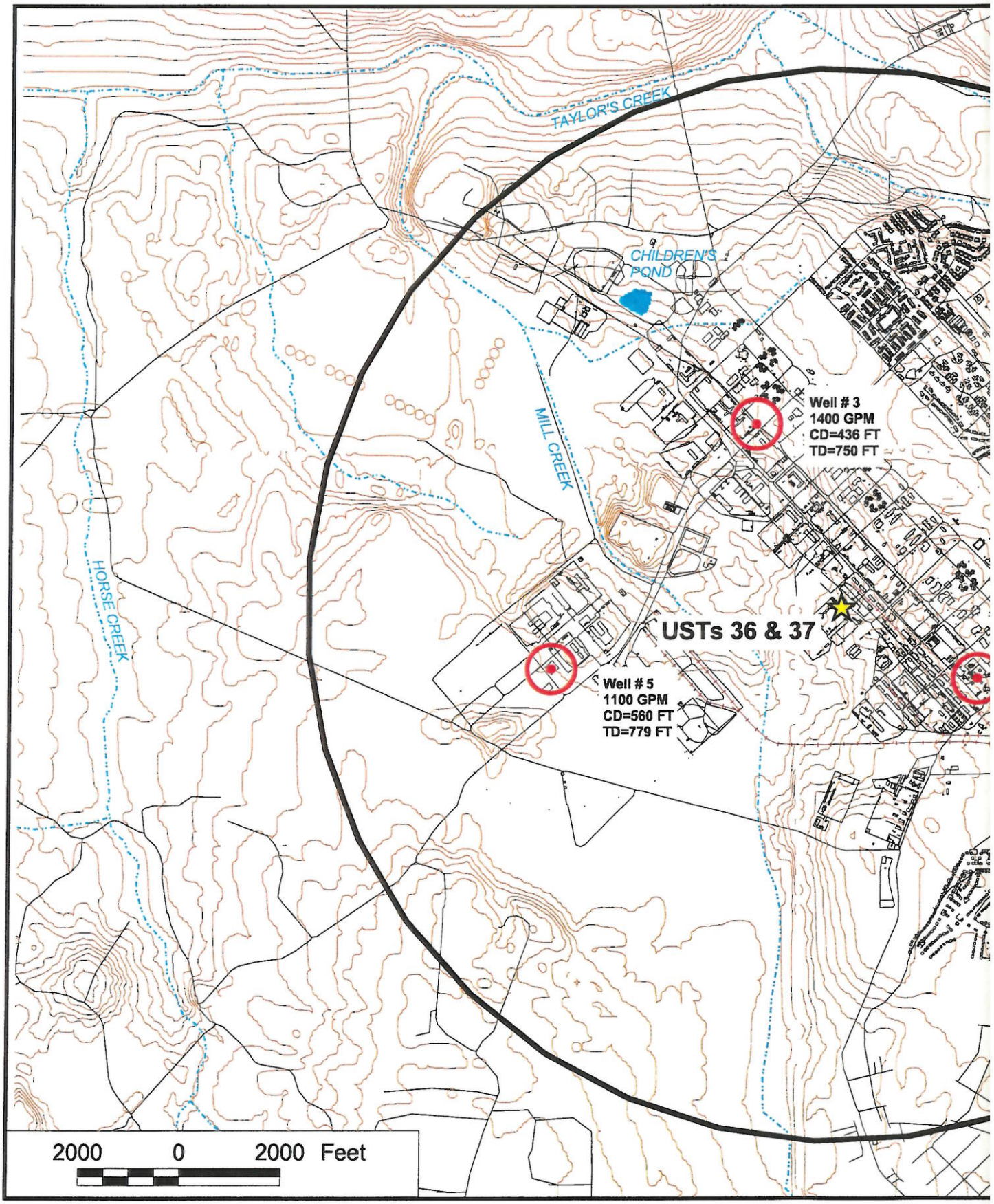

Figure 15. Locations of Groundwater Supply Wells and Surfac
USTs 36 & 37 Site, Facility ID #9-(

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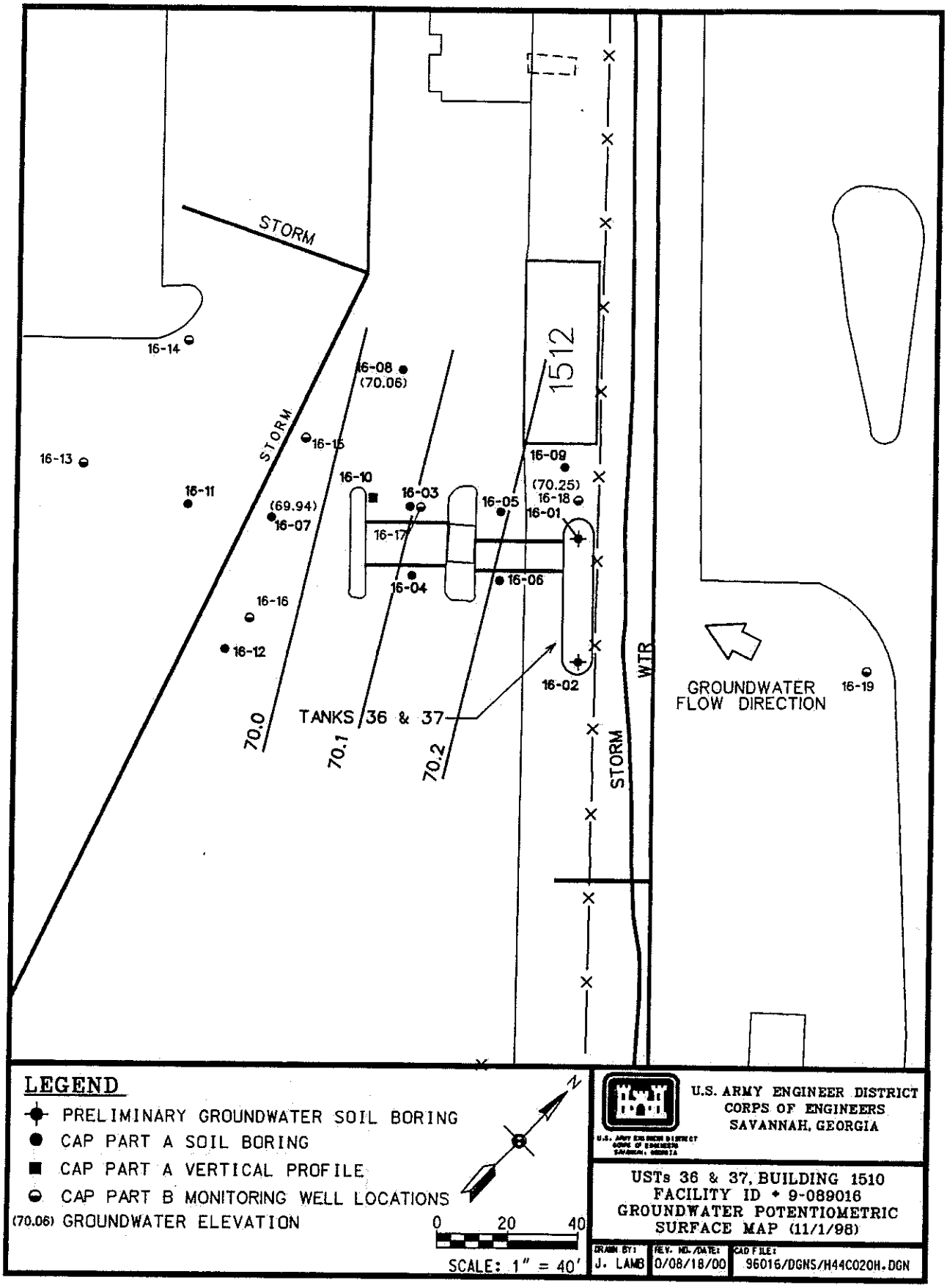

Figure 16. Groundwater Potentiometric Surface Map (November 1998) for the USTs 36 & 37 Site, Facility ID #9-089016

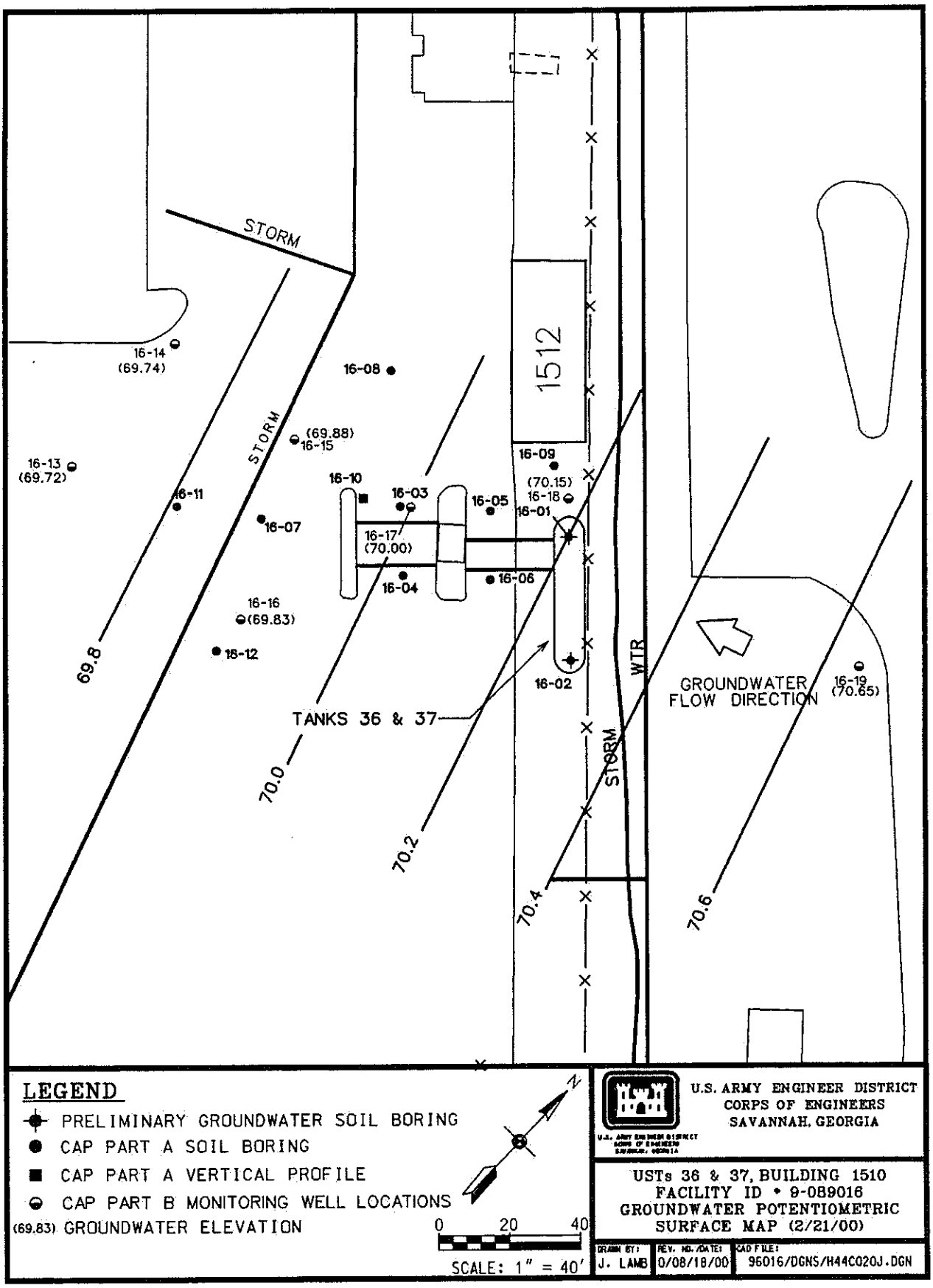

Figure 17. Groundwater Potentiometric Surface Map (February 2000) for the USTs 36 & 37 Site, Facility ID #9-089016

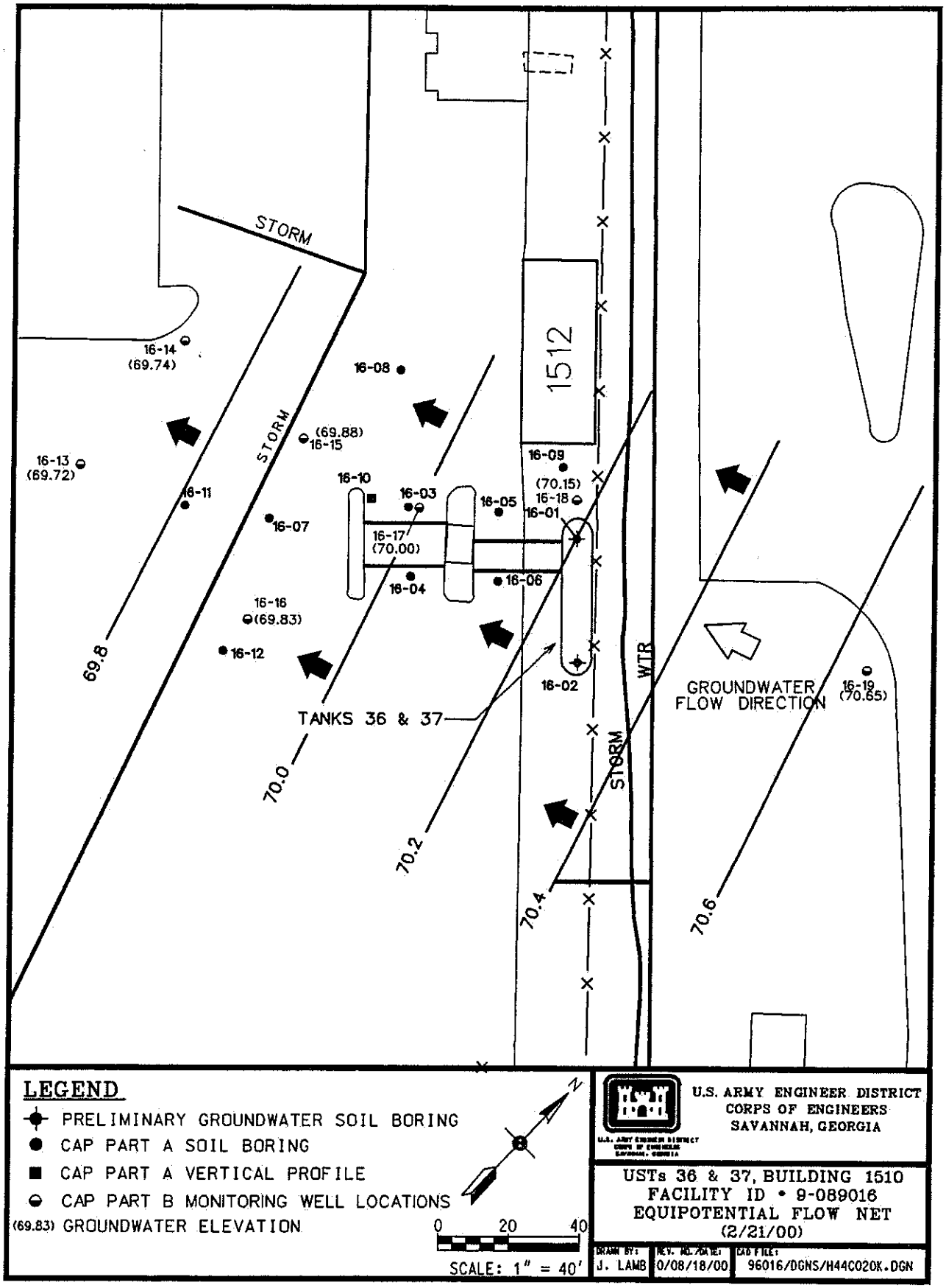

Figure 18. Equipotential Flow Net (February 2000) for the USTs 36 & 37 Site, Facility ID #9-089016

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APPENDIX II

REPORT TABLES

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Table 1a. UST System Closure[a] – Soil Analytical Results
(VOLATILE ORGANIC COMPOUNDS)

Sample Location	Depth (ft BGS)	Date Sampled	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH (mg/kg)
TK-36-S1	unknown	9/27/95	0.00188 U	0.0182 =	0.0688 =	0.0915 =	0.1785	0.147 =
TK-36-S2	unknown	9/27/95	0.00127 U	0.00127 U	0.00127 U	0.00127 U	ND	0.0828 =
TK-37-S1	unknown	9/27/95	0.00133 U	0.00133 U	0.0108 =	0.0392 =	0.05	0.0199 =
TK-37-S2	unknown	9/27/95	0.00126 U	0.150 =	0.00957 =	0.05671 =	0.21628	0.0126 U
GUST Soil Threshold Levels (Table A, Column 2)			0.008	6	10	700	NRC	NRC

Table 1b. UST System Closure[a] – Soil Analytical Results
(POLYNUCLEAR AROMATIC HYDROCARBONS)

Sample Location	Depth (ft BGS)	Date Sampled	Detected PAH Compounds (mg/kg)		
			Phenanthrene	Pyrene	Total PAHs (mg/kg)
TK-36-S1	unknown	9/27/95	1.48 =	1.07 =	2.55
TK-36-S2	unknown	9/27/95			ND
TK-37-S1	unknown	9/27/95	2.59 =		2.59
TK-37-S2	unknown	9/27/95			ND
GUST Soil Threshold Levels (Table A, Column 2)			NRC	NRC	NRC

NOTES:

[a] Underground storage tank system closure performed by ACE (1995).
BGS Below ground surface
BTEX Benzene, toluene, ethylbenzene, and xylenes
ND Not detected
NRC No regulatory criteria
PAH Polynuclear aromatic hydrocarbon

Laboratory Qualifiers

U Indicates that the compound was not detected at the concentration reported.
UJ Indicates that the compound was not detected above an approximated sample quantitation limit.
J Indicates that the value for the compound is an estimated value.
= Indicates that the compound was detected at the concentration reported.

Table 1c. UST System Closure[a] – Groundwater Analytical Results
(VOLATILE ORGANIC COMPOUNDS)

Sample Location	Depth (ft BGS)	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethyl – benzene (µg/L)	Xylenes (µg/L)	Total BTEX (µg/L)
			No groundwater samples were collected.				
In-Stream Water Quality Standards (GA Chapter 391-3-6)			71.28	200,000	28,718	NRC	NRC

Table 1d. UST System Closure[a] – Groundwater Analytical Results
(POLYNUCLEAR AROMATIC HYDROCARBONS)

Sample Location	Depth (ft BGS)	Date Sampled	Detected PAH Compounds (ug/L)					Total PAHs (µg/L)
			No groundwater samples were collected.					
In-Stream Water Quality Standards (GA Chapter 391-3-6)								

NOTES:

[a] Underground storage tank system closure performed by ACE. (1995)
BGS Below ground surface
BTEX Benzene, toluene, ethylbenzene, and xylenes
NRC No regulatory criteria.
PAH Polynuclear aromatic hydrocarbons

Laboratory Qualifiers

U Indicates that the compound was not detected at the concentration reported.
UJ Indicates that the compound was not detected above an approximated sample quantitation limit.
J Indicates that the value for the compound is an estimated value.
= Indicates that the compound was detected at the concentration reported.

Table 2a. CAP-Part A/B – Soil Analytical Results
(VOLATILE ORGANIC COMPOUNDS)

Sample Location	Sample ID	Depth (ft BGS)	Date Sampled	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH-DRO (mg/kg)	TPH-GRO (mg/kg)
Preliminary Groundwater Investigation - 1996										
16-01	1601B1	2.5 - 5.0	9/6/96	0.0060 U	0.0060 U	0.0060 U	0.0060 U	ND	37.1 =	0.359 J
16-02	1602A1	0.0 - 2.5	9/6/96	0.0053 U	0.0053 U	0.0053 U	0.0053 U	ND	0.43 U	0.106 U
16-02	1602B1	2.5 - 5.0	9/6/96	0.0056 U	0.0056 U	0.0056 U	0.0056 U	ND	16.7 =	0.112 UJ
CAP-Part A Investigation - 1998										
16-03	160311	0.8 - 2.0	5/12/98	0.0022 U	0.022 =	0.0022 U	0.0064 U	0.022	0.3 UJ	1.08 U
16-03	160321	2.0 - 3.5	5/12/98	0.0022 U	0.0022 U	0.0022 U	0.0067 U	ND	1.2 U	1.11 U
16-04	160411	0.0 - 2.0	5/12/98	0.0023 U	0.0555 =	0.0023 U	0.0069 U	0.0555	1 U	0.216 J
16-04	160421	2.0 - 4.0	5/12/98	0.0022 U	0.0067 =	0.0022 U	0.0067 U	0.0067	0.88 UJ	1.12 UJ
16-05	160521	0.8 - 2.0	5/12/98	0.0022 U	0.0022 U	0.0022 U	0.0067 U	ND	1.5 UJ	1.12 UJ
16-06	160621	1.1 - 2.6	5/12/98	0.0022 U	0.0104 =	0.0022 U	0.0067 U	0.0104	0.89 UJ	1.12 U
16-07	160711	2.0 - 4.0	11/14/98	0.0023 U	0.0071 =	0.0023 U	0.0021 J	0.0092	1.3 U	0.115 U
16-07	160721	0.9 - 2.0	11/14/98	0.0021 U	0.0601 =	0.0029 =	0.012 =	0.075	7.1 U	0.111 U
16-08	160811	2.5 - 4.0	11/13/98	0.0024 U	0.0024 U	0.0024 U	0.0036 U	ND	0.96 U	0.119 U
16-08	160821	1.0 - 2.5	11/13/98	0.0022 U	0.0022 U	0.0022 U	0.0032 U	ND	2.2 U	0.0538 U
16-09	160921	1.0 - 2.0	11/13/98	0.0021 U	0.0036 =	0.00086 J	0.0044 =	0.00886	0.95 U	0.0526 U
16-09	160911	2.5 - 3.5	11/13/98	0.0024 U	0.0026 =	0.0024 U	0.0018 J	0.0044	1.2 U	0.0595 UJ
CAP-Part A Investigation - 1999										
16-11	161121	0.8 - 2.0	2/20/99	**0.0102** =	0.0086 =	0.0155 =	0.0194 =	0.0537	0.94 U	0.163 =
16-12	161221	0.8 - 2.0	2/20/99	0.0036 U	0.0036 U	0.0036 U	0.0013 J	0.0013	0.25 U	0.112 U
CAP-Part B Investigation - 2000										
				No soil samples were collected during the CAP-Part B investigation.						
GUST Soil Threshold Levels (Table A, Column 2)				0.008	6	10	700	NRC	NRC	NRC

NOTES:

September 1996 and May 1998 sampling was performed prior to the new CAP-Part A guidance that was published in May 1998; thus, the new SW-846 analytical methods were not used during that sampling event.

November 1998 and February 1999 sampling was performed in accordance with the CAP-Part A guidance that was published in May 1998.

BGS Below ground surface
BTEX Benzene, toluene, ethylbenzene, and xylenes
DRO Diesel-range organics
GRO Gasoline-range organics
ND Not detected
NRC No regulatory criteria
TPH Total petroleum hydrocarbon

Laboratory Qualifiers

U Indicates that the compound was not detected above the reported sample quantitation limit.
UJ Indicates that the compound was not detected above an approximated sample quantitation limit.
J Indicates that the value for the compound was an estimated value.
R Indicates that the sample results are unusable and the presence or absence of the compound could not be verified.
= Indicates that the compound was detected at the concentration reported.

Table 2b. CAP-Part A/B – Soil Analytical Results
(POLYNUCLEAR AROMATIC HYDROCARBONS)

Sample Location	Sample ID	Depth (ft BGS)	Date Sampled	Detected PAH Compounds (mg/kg)									Total PAHs (mg/kg)
				Benzo(*a*)anthrecene	Benzo(*a*)pyrene	Benzo(*b*)fluoranthene	Benzo(*g,h,i,*)perylene	Benzo(*k*)fluoranthene	Chrysene	Flooranthene	Indeno(*1,2,3-cd*)pyrene	Pyrene	
Preliminary Groundwater Investigation - 1996													
16-01	1601B1	2.5 - 5.0	9/6/96										ND
16-02	1602A1	0.0 - 2.5	9/6/96										ND
16-02	1602B1	2.5 - 5.0	9/6/96	0.682 =	0.727 =	0.81 =	0.427 =	0.386 =	0.853 =	1.72 =	0.448 =	2.19 =	8.243
CAP-Part A Investigation - 1998													
16-03	160311	0.8 - 2.0	5/12/98										ND
16-03	160321	2.0 - 3.5	5/12/98										ND
16-04	160411	0.0 - 2.0	5/12/98										ND
16-04	160421	2.0 - 4.0	5/12/98										ND
16-05	160521	0.8 - 2.0	5/12/98										ND
16-06	160621	1.1 - 2.6	5/12/98										ND
16-07	160711	2.0 - 4.0	11/14/98										ND
16-07	160721	0.9 - 2.0	11/14/98										ND
16-08	160811	2.5 - 4.0	11/13/98										ND
16-08	160821	1.0 - 2.5	11/13/98										ND
16-09	160921	1.0 - 2.0	11/13/98										ND
16-09	160911	2.5 - 3.5	11/13/98										ND
CAP-Part A Investigation - 1999													
16-11	161121	0.8 - 2.0	2/20/99										ND
16-12	161221	0.8 - 2.0	2/20/99										ND
CAP-Part B Investigation - 2000													
				No soil samples were collected during the CAP-Part B investigation.									
GUST Soil Threshold Levels (Table A, Column 2)				NRC	NRC	NRC	NRC	NRC	NRC	NRC	NRC	NRC	NRC

NOTES:

September 1996 and May 1998 sampling was performed prior to the new CAP-Part A guidance that was published in May 1998; thus, the new SW-846 analytical methods were not used during that sampling event.

November 1998 and February 1999 sampling was performed in accordance with the CAP-Part A guidance that was published in May 1998.

BGS Below ground surface
ND Not detected (refer to Appendix V, Table V-A for complete list of PAH results)
NRC No regulatory criteria
PAH Polynuclear aromatic hydrocarbon

Laboratory Qualifiers

U Indicates that the compound was not detected above the reported sample quantitation limit.
UJ Indicates that the compound was not detected above an approximated sample quantitation limit.
J Indicates that the value for the compound was an estimated value.
= Indicates that the compound was detected at the concentration reported.

Table 3a. CAP-Part A/B – Groundwater Analytical Results
(VOLATILE ORGANIC COMPOUNDS)

Sample Location	Sample ID	Screened Interval (ft BGS)	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethyl – benzene (µg/L)	Xylenes (µg/L)	Total BTEX (µg/L)
Preliminary Groundwater Investigation – 1996								
16-01	1601W2	3.5 - 8.5	9/6/96	5 U	5 U	0.041 J	5 U	0.04
16-02	1602W2	3.5 - 8.5	9/6/96	0.42 J	5 U	2.4 J	3.6 J	6.42
CAP-Part A Investigation – 1998								
16-03	160312	0.0 - 8.0	5/12/98	**221 J**	325 J	791 J	2830 J	4167
16-04	160412	0.0 - 7.0	5/12/98	2 U	2 U	3.3 =	6 U	33
16-05	160512	0.0 - 8.0	5/12/98	63 =	1740 =	359 =	1920 =	4082
16-06	160612	0.0 - 8.0	5/12/98	2 U	4.6 =	4 =	2 J	10.6
16-07	160712	0.0 - 8.0	11/14/98	**83.3** =	7.1 =	69.5 =	157 =	316.9
16-08	160812	0.0 - 8.5	11/13/98	2 U	2 U	2 U	3 U	ND
16-09	160912	0.0 - 12.0	11/13/98	2 U	0.86 J	19.1 =	32 =	51.96
16-10	161012	6.0 - 10.0	11/13/98	2 U	2 U	2 U	3 U	ND
16-10	161052	18.0 - 20.0	11/13/98	1.7 J	14.7 =	1.3 J	3.9 =	21.6
16-10	161072	30.0 - 32.0	11/13/98	2 U	2 U	2 U	3 U	ND
CAP-Part A Investigation – 1999								
16-11	161112	0.0 - 8.0	2/20/99	5.9 =	5.1 J	1.7 J	7.8 =	20.5
16-12	161212	0.0 - 7.0	2/20/99	0.5 J	3.7 =	1 J	5.7 =	10.9
CAP-Part B Investigation – 2000								
16-13	161312	2.8 - 12.8	1/13/00	1 U	1 U	1 U	3 U	ND
16-14	161412	2.8 - 12.8	1/13/00	1 U	1 U	1 U	3 U	ND
16-15	161512	3.6 – 13.6	1/31/00	2.6 =	0.38 J	1.5 =	8.7 =	13.18
16-16	161612	2.8 - 12.8	1/31/00	1 U	1 U	1 U	3 U	ND
16-17	161712	3.0 – 13.0	1/31/00	1.1 =	0.40 J	4.7 =	14.3 =	20.5
16-18	161812	2.8 - 12.8	1/31/00	27 =	0.40 J	12 =	2.7 J	42.1
16-19	161912	2.8 - 12.8	1/31/00	1 U	1 U	0.051 J	3 U	0.051
In-Stream Water Quality Standards (GA Chapter 391-3-6)				71.28	200,000	28,718	NRC	NRC
Alternate Concentration Limits				313	—	—	—	—

NOTES:

September 1996 and May 1998 sampling was performed prior to the new CAP-Part A guidance that was published in May 1998; thus, the new SW-846 analytical methods were not used during that sampling event.

November 1998 and February 1999 sampling was performed in accordance with the CAP-Part A guidance that was published in May 1998.

Bold values exceed IWQSs.

Italic values exceed ACLs.

BTEX Benzene, toluene, ethylbenzene, and xylenes
BGS Below ground surface
ND Not detected
NRC No regulatory criteria

Laboratory Qualifiers

U Indicates that the compound was not detected at the concentration reported.
UJ Indicates that the compound was not detected above an approximated sample quantitation limit.
J Indicates that the value for the compound is an estimated value.
= Indicates that the compound was detected at the concentration reported.

Table 3b. CAP-Part A/B – Groundwater Analytical Results
(POLYNUCLEAR AROMATIC HYDROCARBONS)

Sample Location	Sample ID	Screened Interval (ft BGS)	Date Sampled	Detected PAH Compounds (ug/L)														Total PAHs (µg/L)
				Acenaphthene	Anthracene	Benzo(*a*)anthrecene	Benzo(*a*)pyrene	Benzo(*b*)fluoranthene	Benzo(*g,h,i*)perylene	Benzo(*k*)fluoranthene	Chrysene	Fluoranthene	Fluorene	Indeno(*1,2,3-cd*)pyrene	Naphthalene	Phenanthrene	Pyrene	
Preliminary Groundwater Investigation – 1996																		
16-01	1601W2	3.5 - 8.5	9/6/96	8.7 J														8.7
16-02	1602W2	3.5 - 8.5	9/6/96															ND
CAP-Part A Investigation – 1998																		
16-03	160312	0.0 - 8.0	5/12/98												77.1=			77.1
16-04	160412	0.0 - 7.0	5/12/98															ND
16-05	160512	0.0 - 8.0	5/12/98												164=			164
16-06	160612	0.0 - 8.0	5/12/98															ND
16-07	160712	0.0 - 8.0	11/14/98												1.6J			1.6
16-08	160812	0.0 - 8.5	11/13/98															ND
16-09	160912	0.0 - 12.0	11/13/98	27.6=	24.8=	**17.8=**	**11=**	14.5=	3.7J	**6.1J**	**19.8=**	94.9=	17.6=	**3.2J**	34.7=	114=	63.5=	383.8
16-10	161012	6.0 - 10.0	11/13/98															ND
16-10	161052	18.0 - 20.0	11/13/98				**6.3J**											6.3
16-10	161072	30.0 - 32.0	11/13/98															R
CAP-Part A Investigation - 1999																		
16-11	161112	0.0 - 8.0	2/20/99															ND
16-12	161212	0.0 - 7.0	2/20/99															ND
CAP-Part B Investigation - 2000																		
16-13	161312	2.8 - 12.8	1/13/00															ND
16-14	161412	2.8 - 12.8	1/13/00															ND
16-15	161512	3.6 – 13.6	1/31/00															ND
16-16	161612	2.8 - 12.8	1/31/00															ND
16-17	161712	3.0 – 13.0	1/31/00	3.1=									1.2=					4.3
16-18	161812	2.8 - 12.8	1/31/00	7.5=	0.7J							0.99=	3.0=		16.8=	2.7=	1.0=	32.69
16-19	161912	2.8 - 12.8	1/31/00															ND
In-Stream Water Quality Standards (GA Chapter 391-3-6)				NRC	110,000	0.0311	0.0311	NRC	NRC	0.0311	0.0311	370	14,000	0.0311	NRC	NRC	11,000	NRC
Alternate Concentration Limits				—	—			—	—			—	—		—	—	—	—

NOTES:

September 1996 and May 1998 sampling was performed prior to the new CAP-Part A guidance that was published in May 1998; thus, the new SW-846 analytical methods were not used during that sampling event.

November 1998 and February 1999 sampling was performed in accordance with the CAP-Part A guidance that was published in May 1998.

Bold values exceed IWQSs.

Italic values exceed ACLs.

BGS Below ground surface

ND Not detected (refer to Appendix VIII, Table VIII-A for complete list of PAH results)

NRC No regulatory criteria

PAH Polynuclear aromatic hydrocarbon

Laboratory Qualifiers

U Indicates that the compound was not detected at the concentration reported.

UJ Indicates that the compound was not detected above an approximated sample quantitation limit.

J Indicates that the value for the compound is an estimated value.

= Indicates that the compound was detected at the concentration reported.

R Indicates that the sample results are unusable and the presence or absence of the compound could not be verified.

Table 4. CAP-Part A/B – Well Construction Details

Boring/Well Number	Date Installed	Boring Depth (ft BGS)	Screened Interval (ft BGS)	Type of Completion	Coordinates (NAD 83)		Elevation (NGVD 88)	
					Northing	Easting	Ground Surface	Top of Casing
Preliminary Groundwater Investigation – 1996								
16-01	9/9/96	8.5	3.5 - 8.5	Temporary piezometer	679363.58	825196.59	—	—
16-02	9/9/96	8.5	3.5 - 8.5	Temporary piezometer	679338.75	825220.89	—	—
CAP-Part A Investigation – 1998								
16-03	5/12/98	8.0	0.0 - 8.0	Temporary piezometer	679337.62	825155.95	74.53	76.82
16-04	5/12/98	7.0	0.0 - 7.0	Temporary piezometer	676323.89	825169.91	74.39	76.40
16-05	5/12/98	8.0	0.0 - 8.0	Temporary piezometer	679354.19	825175.44	74.68	76.47
16-06	5/12/98	8.0	0.0 - 8.0	Temporary piezometer	679339.93	825188.71	74.61	77.57
16-07	11/14/98	8.0	0.0 - 8.0	Temporary piezometer	679308.16	825129.72	74.41	76.33
16-08	11/13/98	8.5	0.0 - 8.5	Temporary piezometer	679363.93	825127.66	74.41	76.59
16-09	11/13/98	12.0	0.0 - 12.0	Temporary piezometer	679375.82	825179.76	74.71	78.00
16-10	11/13/98	32.0	—	Vertical profile	679332.14	825146.60	74.52	—
CAP-Part A Investigation – 1999								
16-11	2/20/99	8.0	0.0 - 8.0	Temporary piezometer	973294.49	825109.92	74.43	—
16-12	2/20/99	7.0	0.0 - 7.0	Temporary piezometer	679272.26	825146.09	73.88	—
CAP-Part B Investigation – 2000								
16-13	1/13/00	13.0	2.8 - 12.8	3/4" PVC	679282.36	825080.45	74.66	74.44
16-14	1/13/00	13.0	2.8 - 12.8	3/4" PVC	679327.75	825077.85	75.35	75.10
16-15	1/13/00	15.0	3.6 – 13.6	2" PVC	679331.06	825121.10	74.66	74.49
16-16	1/13/00	13.0	2.8 - 12.8	2" PVC	679283.43	825144.99	73.98	73.85
16-17	1/13/00	15.0	3.0 – 13.0	2" PVC	679339.59	825158.30	74.51	74.35
16-18	1/13/00	13.0	2.8 - 12.8	2" PVC	679371.74	825189.06	74.94	74.82
16-19	1/13/00	13.0	2.8 - 12.8	2" PVC	679393.42	825281.66	77.24	77.15

NOTES:

BGS Below ground surface
NAD North American Datum
NGVD National Geodetic Vertical Datum
PVC Polyvinyl chloride

Table 5. CAP-Part A/B – Groundwater Elevations

Well Number	Date Measured	Ground Surface Elev. (ft MSL)	Top of Casing Elev. (ft MSL)	Depth of Screened Interval (ft BGS)	Depth of Free Product (ft BTOC)	Water Depth (ft BTOC)	Product Thickness (ft)	Specific Gravity Adjustment	Corrected Groundwater Elev. (ft MSL)
CAP-Part A Investigation – 1998									
16-03	5/10/98	74.53	76.82	0.0 – 8.0	N/A	5.96	N/A	N/A	70.86
16-04	5/10/98	74.39	76.40	0.0 – 7.0	N/A	5.52	N/A	N/A	70.88
16-05	5/10/98	74.68	76.47	0.0 – 8.0	N/A	5.40	N/A	N/A	71.07
16-06	5/10/98	74.61	77.57	0.0 – 8.0	N/A	6.53	N/A	N/A	71.04
16-07	11/18/98	74.41	76.33	0.0 – 8.0	N/A	6.39	N/A	N/A	69.94
16-08	11/18/98	74.41	76.59	0.0 – 8.5	N/A	6.53	N/A	N/A	70.06
16-09	11/18/98	74.71	78.00	0.0 – 12.0	N/A	7.75	N/A	N/A	70.25
CAP-Part B Investigation – 2000									
16-13	2/21/00	74.66	74.44	2.8 - 12.8	N/A	4.72	N/A	N/A	69.72
16-14	2/21/00	75.35	75.10	2.8 - 12.8	N/A	5.36	N/A	N/A	69.74
16-15	2/21/00	74.66	74.49	3.6 – 13.6	N/A	4.61	N/A	N/A	69.88
16-16	2/21/00	73.98	73.85	2.8 - 12.8	N/A	4.02	N/A	N/A	69.83
16-17	2/21/00	74.51	74.35	3.0 – 13.0	N/A	4.35	N/A	N/A	70.00
16-18	2/21/00	74.94	74.82	2.8 - 12.8	N/A	4.67	N/A	N/A	70.15
16-19	2/21/00	77.24	77.15	2.8 - 12.8	N/A	6.50	N/A	N/A	70.65

NOTE:
- MSL Mean sea level
- BGS Below ground surface
- BTOC Below top of casing
- N/A Not applicable

Table 6. Soil Data Risk-based Screening Results

Station:	Screening Levels			16-01	16-02	16-02	16-03	16-03	16-04
Sample ID:	GUST	Risk-based		1601B1	1602A1	1602B1	160311	160321	160411
Sample Interval (ft BGS):	Soil Threshold	Screening	Leaching to	2.5 - 5.0	0.0 - 2.5	2.5 - 5.0	0.8 - 2.0	2.0 - 3.5	0.0 - 2.0
Collection Date:	Level[a]	Level[b]	Groundwater[c]	06-Sep-96	06-Sep-96	06-Sep-96	12-May-98	12-May-98	12-May-98
Units:	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)
Volatile Organic Compounds									
Benzene	8	197,400	30	6 U	5.3 U	5.6 U	2.2 U	2.2 U	2.3 U
Toluene	6,000	408,800,000	12,000	6 U	5.3 U	5.6 U	22 =	2.2 U	55.5 =
Ethylbenzene	10,000	204,400,000	13,000	6 U	5.3 U	5.6 U	2.2 U	2.2 U	2.3 U
Xylenes, Total	700,000	4,088,000,000	190,000	6 U	5.3 U	5.6 U	6.4 U	6.7 U	6.9 U
Polynuclear Aromatic Hydrocarbons									
2-Chloronaphthalene[d]	N/A[e]	40,880,000	84,000	394 U	348 U	364 U	358 U	370 U	379 U
Acenaphthene	N/A[e]	122,640,000	570,000	394 U	348 U	364 U	358 U	370 U	379 U
Acenaphthylene	N/A[e]	61,320,000	4,200,000	394 U	348 U	364 U	358 U	370 U	379 U
Anthracene	N/A[e]	613,200,200	12,000,000	394 U	348 U	364 U	358 U	370 U	379 U
Benzo(*a*)anthracene	N/A[e]	7,840	2,000	394 U	348 U	682 =	358 U	370 U	379 U
Benzo(*a*)pyrene	N/A[e]	784	8,000	394 U	348 U	727 =	358 U	370 U	379 U
Benzo(*b*)fluoranthene	N/A[e]	7,840	5,000	394 U	348 U	810 =	358 U	370 U	379 U
Benzo(*g,h,i*)perylene	N/A[e]	--	--	394 U	348 U	427 =	358 U	370 U	379 U
Benzo(*k*)fluoranthene	N/A[e]	78,400	49,000	394 U	348 U	386 =	358 U	370 U	379 U
Chrysene	N/A[e]	784,000	160,000	394 U	348 U	853 =	358 U	370 U	379 U
Dibenzo(*a,h*)anthracene	N/A[e]	784	2,000	394 U	348 U	364 U	358 U	370 U	379 U
Fluoranthene	N/A[e]	81,760,000	4,300,000	394 U	348 U	1720 =	358 U	370 U	379 U
Fluorene	N/A[e]	81,760,000	560,000	394 U	348 U	364 U	358 U	370 U	379 U
Indeno(*1,2,3-cd*)pyrene	N/A[e]	7,840	14,000	394 U	348 U	448 =	358 U	370 U	379 U
Naphthalene	N/A[e]	40,880,000	84,000	394 U	348 U	364 U	358 U	370 U	379 U
Phenanthrene[f]	N/A[e]	61,320,000	4,200,000	394 U	348 U	364 U	358 U	370 U	379 U
Pyrene	N/A[e]	61,320,000	4,200,000	394 U	348 U	2190 =	358 U	370 U	379 U
Other Analytes									
TPH-Diesel-range Organics	--	--	--	37,100 =	430 U	16,700 =	300 UJ	1,200 U	1,000 U
TPH-Gasoline-range Organics	--	--	--	359 J	106 U	112 UJ	1,080 U	1,110 U	216 J

[a] Average or higher groundwater pollution susceptibility area (where public water supply is within 2.0 miles).
[b] Protective of soil exposure during industrial land use.
[c] Protective of groundwater ingestion. Used a dilution attenuation factor of 20.
[d] Values based on naphthalene as a surrogate chemical.
[e] Not applicable. The screening level exceeds the expected soil concentration under free product condition.
[f] Values based on pyrene as a surrogate chemical.

Bold values indicate results exceeding GUST action levels.

Italicized values indicate results exceeding risk-based screening levels.

Underlined values indicate results exceeding leaching to groundwater screening levels.

U Indicates that the compound was not detected above the reported sample quantitation limit.
J Indicates that the value for the compound was an estimated value.
UJ Indicates that the sample was not detected above an approximate sample quantitation limit.
= Indicates that the compound was detected at the concentration reported.

Table 6. Data Risk-based Screening Results (continued)

Station:	Screening Levels			16-04	16-05	16-06	16-07	16-07	16-08
Sample ID:	GUST	Risk-based		160421	160521	160621	160711	160721	160811
Sample Interval (ft BGS):	Soil Threshold	Screening	Leaching to	2.0 - 4.0	0.8 - 2.0	1.1 - 2.6	2.0 - 4.0	0.9 - 2.0	2.5 - 4.0
Collection Date:	Level[a]	Level[b]	Groundwater[c]	12-May-98	12-May-98	12-May-98	14-Nov-98	14-Nov-98	13-Nov-98
Units:	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)
Volatile Organic Compounds									
Benzene	8	197,400	30	2.2 U	2.2 U	2.2 U	2.3 U	2.1 U	2.4 U
Toluene	6,000	408,800,000	12,000	6.7 =	2.2 U	10.4 =	7.1 =	60.1 =	2.4 U
Ethylbenzene	10,000	204,400,000	13,000	2.2 U	2.2 U	2.2 U	2.3 U	2.9 =	2.4 U
Xylenes, Total	700,000	4,088,000,000	190,000	6.7 U	6.7 U	6.7 U	2.1 J	12 =	3.6 U
Polynuclear Aromatic Hydrocarbons									
2-Chloronaphthalene[d]	N/A[e]	40,880,000	84,000	374 U	374 U	374 U	383 U	1480 U	397 U
Acenaphthene	N/A[e]	122,640,000	570,000	374 U	374 U	374 U	383 U	1480 U	397 U
Acenaphthylene	N/A[e]	61,320,000	4,200,000	374 U	374 U	374 U	383 U	1480 U	397 U
Anthracene	N/A[e]	613,200,200	12,000,000	374 U	374 U	374 U	383 U	1480 U	397 U
Benzo(*a*)anthracene	N/A[e]	7,840	2,000	374 U	374 U	374 U	383 U	1480 U	397 U
Benzo(*a*)pyrene	N/A[e]	784	8,000	374 U	374 U	374 U	383 U	1480 U	397 U
Benzo(*b*)fluoranthene	N/A[e]	7,840	5,000	374 U	374 U	374 U	383 U	1480 U	397 U
Benzo(*g,h,i*)perylene	N/A[e]	--	--	374 U	374 U	374 U	383 U	1480 U	397 U
Benzo(*k*)fluoranthene	N/A[e]	78,400	49,000	374 U	374 U	374 U	383 U	1480 U	397 U
Chrysene	N/A[e]	784,000	160,000	374 U	374 U	374 U	383 U	1480 U	397 U
Dibenzo(*a,h*)anthracene	N/A[e]	784	2,000	374 U	374 U	374 U	383 U	1480 U	397 U
Fluoranthene	N/A[e]	81,760,000	4,300,000	374 U	374 U	374 U	383 U	1480 U	397 U
Fluorene	N/A[e]	81,760,000	560,000	374 U	374 U	374 U	383 U	1480 U	397 U
Indeno(*1,2,3-cd*)pyrene	N/A[e]	7,840	14,000	374 U	374 U	374 U	383 U	1480 U	397 U
Naphthalene	N/A[e]	40,880,000	84,000	374 U	374 U	374 U	383 U	1480 U	397 U
Phenanthrene[f]	N/A[e]	61,320,000	4,200,000	374 U	374 U	374 U	383 U	1480 U	397 U
Pyrene	N/A[e]	61,320,000	4,200,000	374 U	374 U	374 U	383 U	1480 U	397 U
Other Analytes									
TPH-Diesel-range Organics	--	--	--	880 UJ	1,500 UJ	890 UJ	1,300 U	7,100 U	960 U
TPH-Gasoline-range Organics	--	--	--	1,120 UJ	1,120 UJ	1,120 U	115 U	111 U	119 U

[a] Average or higher groundwater pollution susceptibility area (where public water supply is within 2.0 miles).
[b] Protective of soil exposure during industrial land use.
[c] Protective of groundwater ingestion. Used a dilution attenuation factor of 20.
[d] Values based on naphthalene as a surrogate chemical.
[e] Not applicable. The screening level exceeds the expected soil concentration under free product condition.
[f] Values based on pyrene as a surrogate chemical.

Bold values indicate results exceeding GUST action levels.

Italicized values indicate results exceeding risk-based screening levels.

Underlined values indicate results exceeding leaching to groundwater screening levels.

U Indicates that the compound was not detected above the reported sample quantitation limit.
J Indicates that the value for the compound was an estimated value.
UJ Indicates that the sample was not detected above an approximate sample quantitation limit.
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Table 6. Data Risk-based Screening Results (continued)

Station:	Screening Levels			16-08	16-09	16-09	16-11	16-12
Sample ID:	GUST	Risk-based		160821	160911	160921	161121	161221
Sample Interval (ft BGS):	Soil Threshold	Screening	Leaching to	1.0 - 2.5	2.5 - 3.5	1.0 - 2.0	0.8 - 2.0	0.8 - 2.0
Collection Date:	Level[a]	Level[b]	Groundwater[c]	13-Nov-98	13-Nov-98	13-Nov-98	20-Feb-99	20-Feb-99
Units:	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)
Volatile Organic Compounds								
Benzene	8	197,400	30	2.2 U	2.4 U	2.1 U	10.2 =	3.6 U
Toluene	6,000	408,800,000	12,000	2.2 U	2.6 =	3.6 =	8.6 =	3.6 U
Ethylbenzene	10,000	204,400,000	13,000	2.2 U	2.4 U	0.86 J	15.5 =	3.6 U
Xylenes, Total	700,000	4,088,000,000	190,000	3.2 U	1.8 J	4.4 =	19.4 =	1.3 J
Polynuclear Aromatic Hydrocarbons								
2-Chloronaphthalene[d]	N/A[e]	40,880,000	84,000	358 U	397 U	351 U	1430 U	374 U
Acenaphthene	N/A[e]	122,640,000	570,000	358 U	397 U	351 U	1430 U	374 U
Acenaphthylene	N/A[e]	61,320,000	4,200,000	358 U	397 U	351 U	1430 U	374 U
Anthracene	N/A[e]	613,200,200	12,000,000	358 U	397 U	351 U	1430 U	374 U
Benzo(*a*)anthracene	N/A[e]	7,840	2,000	358 U	397 U	351 U	1430 U	374 U
Benzo(*a*)pyrene	N/A[e]	784	8,000	358 U	397 U	351 U	1430 U	374 U
Benzo(*b*)fluoranthene	N/A[e]	7,840	5,000	358 U	397 U	351 U	1430 U	374 U
Benzo(*g,h,i*)perylene	N/A[e]	--	--	358 U	397 U	351 U	1430 U	374 U
Benzo(*k*)fluoranthene	N/A[e]	78,400	49,000	358 U	397 U	351 U	1430 U	374 U
Chrysene	N/A[e]	784,000	160,000	358 U	397 U	351 U	1430 U	374 U
Dibenzo(*a,h*)anthracene	N/A[e]	784	2,000	358 U	397 U	351 U	1430 U	374 U
Fluoranthene	N/A[e]	81,760,000	4,300,000	358 U	397 U	351 U	1430 U	374 U
Fluorene	N/A[e]	81,760,000	560,000	358 U	397 U	351 U	1430 U	374 U
Indeno(*1,2,3-cd*)pyrene	N/A[e]	7,840	14,000	358 U	397 U	351 U	1430 U	374 U
Naphthalene	N/A[e]	40,880,000	84,000	358 U	397 U	351 U	1430 U	374 U
Phenanthrene[f]	N/A[e]	61,320,000	4,200,000	358 U	397 U	351 U	1430 U	374 U
Pyrene	N/A[e]	61,320,000	4,200,000	358 U	397 U	351 U	1430 U	374 U
Other Analytes								
TPH-Diesel-range Organics	--	--	--	2,200 U	1,200 U	950 U	940 U	250 U
TPH-Gasoline-range Organics	--	--	--	53.8 U	59.5 UJ	52.6 U	163 =	112 U

[a] Average or higher groundwater pollution susceptibility area (where public water supply is within 2.0 miles).
[b] Protective of soil exposure during industrial land use.
[c] Protective of groundwater ingestion. Used a dilution attenuation factor of 20.
[d] Values based on naphthalene as a surrogate chemical.
[e] Not applicable. The screening level exceeds the expected soil concentration under free product condition.
[f] Values based on pyrene as a surrogate chemical.

Bold values indicate results exceeding GUST action levels.

Italicized values indicate results exceeding risk-based screening levels.

Underlined values indicate results exceeding leaching to groundwater screening levels.

U Indicates that the compound was not detected above the reported sample quantitation limit.

J Indicates that the value for the compound was an estimated value.

UJ Indicates that the sample was not detected above an approximate sample quantitation limit.

= Indicates that the compound was detected at the concentration reported.

Table 7. Groundwater Data Risk-based Screening Results

Station:	Screening Levels		16-01	16-02	16-03	16-04	16-05	16-06	16-07
Sample ID:			1601W2	1602W2	160312	160412	160512	160612	160712
Screened Interval (ft BGS)	Georgia		3.5 - 8.5	3.5 - 8.5	0.0 - 8.0	0.0 - 7.0	0.0 - 8.0	0.0 - 8.0	0.0 - 8.0
Collection Date:	IWQS	Risk-based[a]	06-Sep-96	06-Sep-96	12-May-98	12-May-98	12-May-98	12-May-98	14-Nov-98
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
VOLATILE ORGANIC COMPOUNDS									
Benzene	71.28	0.36	5 U	0.42 J	**221 J**	2 U	63 =	2 U	**83.3** =
Toluene	200,000	750	5 U	5 U	325 J	2 U	1740 =	4.6 =	7.1 =
Ethylbenzene	28,718	1,300	0.04 J	2.4 J	791 J	3.3 =	359 =	4 =	69.5 =
Xylenes, Total	-	12,000	5 U	3.6 J	2830 J	6 U	1920 =	2 J	157 =
POLYNUCLEAR AROMATIC HYDROCARBONS									
2-Chloronaphthalene[b]	-	6.5	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U
Acenaphthene	-	365	8.7 J	10 U	20 U	20 U	20 U	20 U	10.5 U
Acenaphthylene	-	182.5	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U
Anthracene	110,000	182.5	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U
Benzo(*a*)anthracene	0.0311	0.092	**10 U**	**10 U**	**20 U**	**20 U**	**20 U**	**20 U**	**10.5 U**
Benzo(*a*)pyrene	0.0311	0.0092	**10 U**	**10 U**	**20 U**	**20 U**	**20 U**	**20 U**	**10.5 U**
Benzo(*b*)fluoranthene	-	0.092	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U
Benzo(*g,h,i*)perylene	-	-	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U
Benzo(*k*)fluoranthene	0.0311	0.92	**10 U**	**10 U**	**20 U**	**20 U**	**20 U**	**20 U**	**10.5 U**
Chrysene	0.0311	9.2	**10 U**	**10 U**	**20 U**	**20 U**	**20 U**	**20 U**	**10.5 U**
Dibenzo(*a,h*)anthracene	0.0311	0.0092	**10 U**	**10 U**	**20 U**	**20 U**	**20 U**	**20 U**	**10.5 U**
Fluoranthene	370	1,460	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U
Fluorene	14,000	243	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U
Indeno(*1,2,3-cd*)pyrene	0.0311	0.092	**10 U**	**10 U**	**20 U**	**20 U**	**20 U**	**20 U**	**10.5 U**
Naphthalene	-	6.5	10 U	10 U	77.1 =	20 U	164 =	20 U	1.6 J
Phenanthrene[c]	-	182.5	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U
Pyrene	11,000	182.5	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U

[a] Protective of tap water ingestion by a resident.
[b] Values based on naphthalene as a surrogate chemical.
[c] Values based on pyrene as a surrogate chemical.
Bold values indicate results exceeding Georgia IWQSs.
Underlined values indicate results exceeding risk-based screening levels.

U Indicates that the compound was not detected above the reported sample quantitation limit.
J Indicates that the value for the compound was an estimated value.
UJ Indicates that the sample was not detected above an approximate sample quantitation limit.
= Indicates that the compound was detected at the concentration reported.

Table 7. Groundwater Data Risk-based Screening Results (continued)

Station:	Screening Levels		16-08	16-09	16-10	16-10	16-10	16-11	16-12
Sample ID:			160812	160912	161012	161052	161072	161112	161212
Screened Interval (ft BGS)	Georgia		0.0 - 8.5	0.0 - 12.0	6.0 - 10.0	18.0 - 20.0	30.0 - 32.0	0.0 - 8.0	0.0 - 7.0
Collection Date:	IWQS	Risk-based[a]	13-Nov-98	13-Nov-98	13-Nov-98	13-Nov-98	13-Nov-98	20-Feb-99	20-Feb-99
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
VOLATILE ORGANIC COMPOUNDS									
Benzene	71.28	0.36	2 U	2 U	2 U	1.7 J	2 U	5.9 =	0.5 J
Toluene	200,000	750	2 U	0.86 J	2 U	14.7 =	2 U	5.1 J	3.7 =
Ethylbenzene	28,718	1,300	2 U	19.1 =	2 U	1.3 J	2 U	1.7 J	1 J
Xylenes, Total	-	12,000	3 U	32 =	3 U	3.9 =	3 U	7.8 =	5.7 =
POLYNUCLEAR AROMATIC HYDROCARBONS									
2-Chloronaphthalene[b]	-	6.5	10.1 U	10.5 U	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Acenaphthene	-	365	10.1 U	27.6 =	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Acenaphthylene	-	182.5	10.1 U	10.5 U	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Anthracene	110,000	182.5	10.1 U	24.8 =	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Benzo(*a*)anthracene	0.0311	0.092	**10.1 U**	**17.8 =**	**11.8 U**	**11.9 UJ**	**12 R**	**11.2 UJ**	**10.2 UJ**
Benzo(*a*)pyrene	0.0311	0.0092	**10.1 U**	**11 =**	**11.8 U**	**6.3 J**	**12 R**	**11.2 UJ**	**10.2 UJ**
Benzo(*b*)fluoranthene	-	0.092	10.1 U	14.5 =	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Benzo(*g,h,i*)perylene	-	-	10.1 U	3.7 J	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Benzo(*k*)fluoranthene	0.0311	0.92	**10.1 U**	**6.1 J**	**11.8 U**	**11.9 UJ**	**12 R**	**11.2 UJ**	**10.2 UJ**
Chrysene	0.0311	9.2	**10.1 U**	**19.8 =**	**11.8 U**	**11.9 UJ**	**12 R**	**11.2 UJ**	**10.2 UJ**
Dibenzo(*a,h*)anthracene	0.0311	0.0092	**10.1 U**	**10.5 U**	**11.8 U**	**11.9 UJ**	**12 R**	**11.2 UJ**	**10.2 UJ**
Fluoranthene	370	1,460	10.1 U	94.9 =	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Fluorene	14,000	243	10.1 U	17.6 =	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Indeno(*1,2,3-cd*)pyrene	0.0311	0.092	**10.1 U**	**3.2 J**	**11.8 U**	**11.9 UJ**	**12 R**	**11.2 UJ**	**10.2 UJ**
Naphthalene	-	6.5	10.1 U	34.7 =	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Phenanthrene[c]	-	182.5	10.1 U	114 =	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Pyrene	11,000	182.5	10.1 U	63.5 =	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ

[a] Protective of tap water ingestion by a resident.
[b] Values based on naphthalene as a surrogate chemical.
[c] Values based on pyrene as a surrogate chemical.
Bold values indicate results exceeding Georgia IWQSs.
Underlined values indicate results exceeding risk-based screening levels.

U Indicates that the compound was not detected above the reported sample quantitation limit.
J Indicates that the value for the compound was an estimated value.
UJ Indicates that the sample was not detected above an approximate sample quantitation limit.
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Table 7. Groundwater Data Risk-based Screening Results (continued)

Station:	Screening Levels		16-13	16-14	16-15	16-16	16-17	16-18	16-19
Sample ID:			161312	161412	161512	161612	161712	161812	161912
Screened Interval (ft BGS)	Georgia		2.8 - 12.8	2.8 - 12.8	3.6 – 13.6	2.8 - 12.8	3.0 – 13.0	2.8 - 12.8	2.8 - 12.8
Collection Date:	IWQS	Risk-based[a]	13-Jan-00	13-Jan-00	31-Jan-00	31-Jan-00	31-Jan-00	31-Jan-00	31-Jan-00
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
VOLATILE ORGANIC COMPOUNDS									
Benzene	71.28	0.36	1 U	1 U	2.6 =	1 U	1.1 =	27 =	1 U
Toluene	200,000	750	1 U	1 U	0.38 J	1 U	0.40 J	0.40 J	1 U
Ethylbenzene	28,718	1,300	1 U	1 U	1.5 =	1 U	4.7 =	12 =	0.051 J
Xylenes, Total	-	12,000	3 U	3 U	8.7 =	3 U	14.3 =	2.7 J	3 U
POLYNUCLEAR AROMATIC HYDROCARBONS									
2-Chloronaphthalene[b]	-	6.5	1 U	0.95 U	0.97 U	0.99 U	0.97 U	0.97 U	0.99 U
Acenaphthene	-	365	1 U	0.95 U	0.97 U	0.99 U	3.1 =	7.5 =	0.99 U
Acenaphthylene	-	182.5	1 U	0.95 U	0.97 U	0.99 U	0.97 U	0.97 U	0.99 U
Anthracene	110,000	182.5	1 U	0.95 U	0.97 U	0.99 U	0.97 U	0.70 J	0.99 U
Benzo(*a*)anthracene	0.0311	0.092	**1 U**	**0.95 U**	**0.97 U**	**0.99 U**	**0.97 U**	**0.97 U**	**0.99 U**
Benzo(*a*)pyrene	0.0311	0.0092	**1 U**	**0.95 U**	**0.97 U**	**0.99 U**	**0.97 U**	**0.97 U**	**0.99 U**
Benzo(*b*)fluoranthene	-	0.092	1 U	0.95 U	0.97 U	0.99 U	0.97 U	0.97 U	0.99 U
Benzo(*g,h,i*)perylene	-	-	1 U	0.95 U	0.97 U	0.99 U	0.97 U	0.97 U	0.99 U
Benzo(*k*)fluoranthene	0.0311	0.92	**1 U**	**0.95 U**	**0.97 U**	**0.99 U**	**0.97 U**	**0.97 U**	**0.99 U**
Chrysene	0.0311	9.2	**1 U**	**0.95 U**	**0.97 U**	**0.99 U**	**0.97 U**	**0.97 U**	**0.99 U**
Dibenzo(*a,h*)anthracene	0.0311	0.0092	**1 U**	**0.95 U**	**0.97 U**	**0.99 U**	**0.97 U**	**0.97 U**	**0.99 U**
Fluoranthene	370	1,460	1 U	0.95 U	0.97 U	0.99 U	0.97 U	0.99 =	0.99 U
Fluorene	14,000	243	1 U	0.95 U	0.97 U	0.99 U	1.2 =	3 =	0.99 U
Indeno(*1,2,3-cd*)pyrene	0.0311	0.092	**1 U**	**0.95 U**	**0.97 U**	**0.99 U**	**0.97 U**	**0.97 U**	**0.99 U**
Naphthalene	-	6.5	1 U	0.95 U	0.97 U	0.99 U	0.97 U	16.8 =	0.99 U
Phenanthrene[c]	-	182.5	1 U	0.95 U	0.97 U	0.99 U	0.97 U	2.7 =	0.99 U
Pyrene	11,000	182.5	1 U	0.95 U	0.97 U	0.99 U	0.97 U	1 =	0.99 U

[a] Protective of tap water ingestion by a resident.
[b] Values based on naphthalene as a surrogate chemical.
[c] Values based on pyrene as a surrogate chemical.
Bold values indicate results exceeding Georgia IWQSs.
Underlined values indicate results exceeding risk-based screening levels.

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APPENDIX III

WATER RESOURCES SURVEY DOCUMENTATION

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WATER RESOURCES SURVEY DOCUMENTATION

1.0 LOCAL WATER RESOURCES

As required by the GA EPD UST CAP-Part A guidance, a water resource survey documenting information for public and non-public water supply wells, surface water bodies, underground utilities, and potential receptors was conducted for the Fort Stewart UST investigation sites. The information presented in this appendix provides the supporting documentation for Section II.B1.c of the CAP-Part B Report.

1.1 WATER SUPPLY WELL SURVEY

The water supply well survey was conducted using the following GA EPD guidelines/requirements:

- Determine if Fort Stewart is located in an area of average or higher groundwater pollution susceptibility.
- Locate all public supply wells as defined by GA EPD that exist within 2 miles of the investigation sites.
- Locate all nonpublic supply wells that exist within 0.5 mile of the investigation sites.
- Locate all supply wells nearest the investigation sites.
- Locate all wells downgradient of the investigation sites.

A total of seven groundwater supply wells are located within a 2-mile radius of the Fort Stewart garrison area. Six of these wells are located within the confines of the garrison area. The other well is located at Wright Army Airfield, approximately 1.2 miles northeast of the garrison area. All of the groundwater supply wells are classified as public wells that supply water to Fort Stewart for drinking and nondrinking purposes. These wells are approximately 450 feet deep and draw groundwater from the Principal Artesian (also known as the Floridan) Aquifer. Chlorine and fluoride are added into the groundwater at the well heads prior to its being pumped into storage tanks and/or water towers according to Fort Stewart DPW personnel. The locations of these wells, along with a 500-foot radius drawn around each well, are shown in Figure 15.

1.2 SURFACE WATER BODIES

Surface water(s) in the State of Georgia, as defined by Rules and Regulations for Water Quality Control, Chapter 391-3-6, shall mean any and all rivers, streams, creeks, branches, lakes, reservoirs, ponds, drainage systems, springs producing 100,000 gallons per day, and all other bodies of surface water, natural or artificial, lying within or forming part of the boundaries of the state, that are not entirely confined and retained completely upon the property of a single individual, partnership, or corporation. The surface water body survey was conducted using the following GA EPD guidelines/requirements:

- surface water bodies that exist within 1 mile of the investigation sites,
- all surface water bodies nearest the investigation sites if these bodies lie outside the 1-mile radius of concern,

- all surface water bodies downgradient of the investigation sites, and
- the storm and sanitary sewers adjacent to the investigation sites.

Several surface water bodies are located within a 1-mile radius of the Fort Stewart garrison area. These are shown in Figure 15 and include Mill Creek, Taylor's Creek, Peacock Creek, Children's Pond, and two unnamed ponds. Mill Creek extends along the western side of the garrison area and flows into Taylor's Creek, located approximately 0.75 mile northwest of the garrison area. Taylor's Creek then flows northward approximately 3.5 miles to its confluence with Canoochee Creek. Peacock Creek originates near the eastern corner of the garrison area and flows southward from the garrison. Mill Creek, Taylor's Creek, and Peacock Creek all have natural streambeds and exhibit perennial flow.

Children's Pond is located at the northwestern end of the garrison area. The two unnamed ponds are located at the northwestern end of the facility golf course in the vicinity of Children's Pond. All of the ponds are isolated water bodies that are relatively small in size, measuring less than 500 feet in diameter.

Typically, surface water runoff from the UST site moves over the existing concrete and asphalt cover to the Fort Stewart storm water drainage system. Since petroleum contamination at the sites primarily impacts surficial groundwater, the surface water runoff pathway is not a viable contaminant transport mechanism because of the concrete acting as a barrier and the location of the nearest surface water body.

2.0 POTENTIAL RECEPTOR SURVEY SUMMARY OF THE USTS 36 & 37 SITE

A field potential receptor survey was conducted for the USTs 36 & 37 site in May 1998. The site and adjacent areas were surveyed for locations of surface water bodies, utility lines, and basements. Basements do not exist in the buildings adjacent to the site. Additional information, provided by Fort Stewart DPW, was used to determine the location of the nearest public and nonpublic water supply wells and downgradient surface water bodies not located during the field survey.

2.1 Water Supply Wells Near the USTs 36 & 37 Site

The USTs 36 & 37 site is located approximately 3,000 feet northwest (side gradient) of well #1 and 5,900 feet northeast (upgradient) of well #5. Therefore, the USTs 36 & 37 site is classified as being located more than 500 feet from a withdrawal point. There are no other public or nonpublic supply wells located downgradient of the site within a 2-mile radius.

2.2 Surface Water Bodies Near the USTs 36 & 37 Site

At the closest point to the site, Mill Creek is located approximately 1,900 feet southwest (downgradient) of the site. In the direction of groundwater flow, a storm water drainage ditch is located approximately 1,200 feet southwest of the site. Based on the distances between the UST and the nearest surface water body, the site is classified as being located more than 500 feet from a downgradient surface water body.

2.3 Underground Utility Lines Near the USTs 36 & 37 Site

A storm drain is located about 40 feet southwest of boring 16-03 (i.e., area of highest contamination). The invert elevation of this line is estimated to be approximately 69.9 feet AMSL or 3.8 feet BGS, which is above the water table; thus, the storm drain line is not considered a preferential pathway. In addition, there is a water line located upgradient of the former tank pit.

CONTACT REPORT	
INDIVIDUAL CONTACTED, TITLE: Pam Babbs	ORIGINATOR: Patty Stoll
ORGANIZATION: Fort Stewart DPW – Water Resources	DATE CONTACTED: October 10, 1998
PHONE: (912) 767- 2281	TIME CONTACTED: 11:00 am
ADDRESS:	CONTACT TYPE: telephone
SUBJECT: Update Supply Well Information for Fort Stewart Supply Wells for Water Resources Survey	
DISCUSSION: During a telephone conversation with Pam Babbs on October 10, 1998, the following information on the supply wells at Fort Stewart was provided. Well No.1: 1750 gpm, CD = 451 ft, TD = 816 ft Well No.2: 1400 gpm, CD = 470 ft, TD = 808 ft Well No.3: 1400 gpm, CD = 436 ft, TD = 750 ft Well No.4: 1600 gpm, CD = 464 ft, TD = 802 ft Well No.5: 1100 gpm, CD = 560 ft, TD = 779 ft Well No.6A: 500 gpm, CD = 374 ft, TD = 508 ft Well No.6B: 500 gpm, CD = 393 ft, TD = 600 ft Evans Well: 190 gpm, CD = 404 ft, TD = 600 ft Camp Oliver Well: 400 gpm, CD = 451 ft, TD = 706 ft	COMMENTS, ACTIONS, DATES Incorporate new pumping rate data into the CAP-Part A and -Part B reports prepared for Fort Stewart.
DISTRIBUTION: Melanie Little (Fort Stewart DPW) Central Records (SAIC) Project File (SAIC)	

CONTACT REPORT	
INDIVIDUAL CONTACTED, TITLE: Jeff Barnes	ORIGINATOR: Patty Stoll
ORGANIZATION: Georgia Department of Natural Resources	DATE CONTACTED: October 1, 1997
PHONE: (912) 353- 3225	TIME CONTACTED: 11:00 am
ADDRESS:	CONTACT TYPE: telephone
SUBJECT: Update Supply Well Information Liberty County Supply Wells for Water Resources Survey	
DISCUSSION: During a telephone conversation with the Georgia Department of Natural Resources regarding drinking water wells in Liberty County, it was suggested that I contact Mr. Jeff Barnes. After being transferred to Mr. Barnes and explaining our needs, he agreed to send a printout of the permitted drinking water systems in Liberty County. On October 17, 1997, we received the list of permitted drinking water systems in Liberty County.	COMMENTS, ACTIONS, DATES Review list of permitted drinking water supply wells for proximity to Fort Stewart CAP-Part A and -Part B sites.
DISTRIBUTION: Melanie Little (Fort Stewart DPW) Central Records (SAIC) Project File (SAIC)	

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APPENDIX IV

SOIL BORING LOGS

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HTRW DRILLING LOG

HOLE NUMBER 16-13

PROJECT: Fort Stewart USTs | INSPECTOR J. CELESTE | SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0	CONCRETE				
	1	Silty SAND, fine grained soft, light brown (7.5Y6/2)				
	5					▽ WET BELOW 5.0 FT
	8	END OF SOIL SAMPLING AT 8.0 FT				COLLECTED GROUNDWATER SAMPLE 161312 FROM MONITORING POINT PUSHED TO 13.6 FT BGS TO SET 3/4" MONITORING POINT SCREENED FROM 2.8 TO 12.8 FT.

HTRW DRILLING LOG

HOLE NUMBER 16-14

PROJECT: Fort Stewart USTs | INSPECTOR J. CELESTE | SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0	CONCRETE				
	1	silty SAND, fine grained, subrounded, soft, very dark brown (2.5 Y 2.5/1) to black				
	2					
	3					
	4					
	5					▽ = WET BELOW 5.0 FT
	6					
	7					
	8	END OF SOIL SAMPLING AT 8.0 FT				COLLECTED GROUNDWATER SAMPLE 16412 FROM MONITORING POINT
	9					PUSHED TO 13.0 FT BGS TO SET 3/4" MONITORING POINT SCREENED FROM 2.8 TO 12.8 FT BGS
	10					

HTRW DRILLING LOG

HOLE NUMBER 16-15

PROJECT: Fort Stewart USTs

INSPECTOR Vicki Brumback

SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	1	CONCRETE				Ran 4.0', Rec 2.5'
	2	SAND w/SILT (SW-SM), fine grained, subrounded, nonplastic, moist (2.5Y 2.5/1)	0.3 ppm			
	3	SAND w/SILT (SW-SM), medium grained, subrounded, nonplastic, moist, olive brown (2.5Y 4/3) to light gray (2.5Y 7/2)	0.2 ppm			
	4	NO RECOVERY				
	5	SAND w/SILT (SW-SM), medium grained, subrounded, nonplastic, moist, dark olive gray (5Y 3/2) to black (5Y 2.5/1)	0.7 ppm			▽ wet below 5.0 ft BGS Ran 5.0', Rec 2.5'
	6					
	7		0.2 ppm			
	8	NO RECOVERY				
	9					DRILLED TO 15.0 FT BGS TO SET 2" MONITORING POINT SCREENED FROM 3.6 TO 13.6 FT BGS
	10					

HTRW DRILLING LOG

HOLE NUMBER 16-16

PROJECT: Fort Stewart USTs | INSPECTOR S. Pulaski | SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0	CONCRETE				
	1	Silty SAND (SM), fine grained, soft, moist, yellowish brown (10 YR 5/4) to dark brown (10 YR 3/3)				
	2					
	3					
	4	Sandy SILT (ML), fine grained, soft, moist, very dark brown (10 YR 2/2)				
	5	NO RECOVERY				
	6	Sandy SILT (ML), fine grained, soft, saturated, very dark brown (10 YR 2/2)				
	7					
	8	NO RECOVERY				
	9					DRILLED TO 13.0 FT BGS TO SET 2" MONITORING POINT SCREENED FROM 2.8 TO 12.8 FT BGS
	10					

HTRW DRILLING LOG

HOLE NUMBER 16-17

PROJECT: Fort Stewart USTs

INSPECTOR S. Pulaski

SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0	CONCRETE				
	1	Silty SAND (SM), fine grained, soft, moist, light yellowish brown (2.5Y 6/3)				
	2					
	3	Silty SAND (SM), fine grained, firm, moist, black (2.5Y 3/1) to light gray (2.5Y 7/2)				
	4					
	5	NO RECOVERY				▽ = Wet below 5.0 ft BGS
	6	Silty SAND (SM), fine grained, firm, moist, black (2.5Y 3/1)				
	7					
	8					
	9					
	10	NO RECOVERY				DRILLED TO 15.0 FT BGS TO SET 2" MONITORING POINT SCREENED FROM 3.0 TO 13.0 FT BGS

HTRW DRILLING LOG

HOLE NUMBER 16-18

PROJECT: Fort Stewart USTs | INSPECTOR Vicki Brumback | SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	1	SAND w/SILT (SW-SM), medium grained, subrounded, nonplastic, dry, dark brown (7.5 YR 3/4) to strong brown (7.5 YR 5/8)	Ø.Ø ppm			Ran 5.Ø', Rec 3.2'
	2					
	3		Ø.Ø ppm			
	4	NO RECOVERY				
	5		Ø.Ø ppm			
	6	SAND w/SILT (SW-SM), medium grained, subrounded, nonplastic, dry, strong brown (7.5 YR 5/8) to black (10 YR 2/1)				Ran 5.Ø', Rec 2.1'
	7		11.Ø ppm			▽ Wet below 6.3 ft BGS
	8					
	9	NO RECOVERY				
	10					DRILLED TO 13.Ø FT BGS TO SET 2" MONITORING POINT SCREENED FROM 2.8 TO 12.8 FT BGS

HTRW DRILLING LOG

HOLE NUMBER 16-19

PROJECT: Fort Stewart USTs | INSPECTOR S. Pulaski | SHEET 1 OF 2

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0–1	SAND w/ SILT (SP-SM), medium grained, soft, damp, very dark brown (10 YR 3/2)				
	2	SAND (SW), fine to medium grained, some silt, subangular, damp, very soft, pale yellow (2.5 Y 7/3)				
	3–4	Silty SAND (SM), fine to medium grained, damp, firm, light olive brown (2.5 Y 5/3)				
	5	NO RECOVERY				
	5–8	Sandy SILT (ML), fine grained, damp, soft, black				
	8–9	Silty SAND (SM), fine to medium grained, subangular, black				
	9	Sandy SILT (ML), fine grained, damp, firm, strong brown, (7.5 YR 4/6)				▽ wet below 9.0 ft BGS
	10	NO RECOVERY				

HTRW DRILLING LOG

HOLE NUMBER 16-19

PROJECT: Fort Stewart USTs | INSPECTOR S. Pulaski | SHEET 2 OF 2

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	11					
	12					
	13					DRILLED TO 13.0 FT BGS TO SET 2" MONITORING POINT SCREENED FROM 2. TO 12. FT BGS
	14					
	15					
	16					
	17					
	18					
	19					
	20					

APPENDIX V

SOIL LABORATORY REPORTS

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TABLE V-A. Summary of Soil Analytical Results

Station:	GUST	16-01	16-02	16-02	16-03	16-03
Sample ID:	Soil	1601B1	1602A1	1602B1	160311	160321
Sample Interval (ft BGS):	Threshold	2.5 - 5.0	0.0 - 2.5	2.5 - 5.0	0.8 - 2.0	2.0 - 3.5
Collection Date:	Level[a]	06-Sep-96	06-Sep-96	06-Sep-96	12-May-98	12-May-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Volatile Organic Compounds						
Benzene	0.008	0.006 U	0.0053 U	0.0056 U	0.0022 U	0.0022 U
Toluene	6	0.006 U	0.0053 U	0.0056 U	0.022 =	0.0022 U
Ethylbenzene	10	0.006 U	0.0053 U	0.0056 U	0.0022 U	0.0022 U
Xylenes, Total	700	0.006 U	0.0053 U	0.0056 U	0.0064 U	0.0067 U
Polynuclear Aromatic Hydrocarbons						
2-Chloronaphthalene	NRC	0.394 U	0.348 U	0.364 U	0.358 U	0.370 U
Acenaphthene	NRC	0.394 U	0.348 U	0.364 U	0.358 U	0.370 U
Acenaphthylene	NRC	0.394 U	0.348 U	0.364 U	0.358 U	0.370 U
Anthracene	NRC	0.394 U	0.348 U	0.364 U	0.358 U	0.370 U
Benzo(*a*)anthracene	NRC	0.394 U	0.348 U	0.682 =	0.358 U	0.370 U
Benzo(*a*)pyrene	NRC	0.394 U	0.348 U	0.727 =	0.358 U	0.370 U
Benzo(*b*)fluoranthene	NRC	0.394 U	0.348 U	0.81 =	0.358 U	0.370 U
Benzo(*g,h,i*)perylene	NRC	0.394 U	0.348 U	0.427 =	0.358 U	0.370 U
Benzo(*k*)fluoranthene	NRC	0.394 U	0.348 U	0.386 =	0.358 U	0.370 U
Chrysene	NRC	0.394 U	0.348 U	0.853 =	0.358 U	0.370 U
Dibenzo(*a,h*)anthracene	NRC	0.394 U	0.348 U	0.364 U	0.358 U	0.370 U
Fluoranthene	NRC	0.394 U	0.348 U	1.72 =	0.358 U	0.370 U
Fluorene	NRC	0.394 U	0.348 U	0.364 U	0.358 U	0.370 U
Indeno(*1,2,3-cd*)pyrene	NRC	0.394 U	0.348 U	0.448 =	0.358 U	0.370 U
Naphthalene	NRC	0.394 U	0.348 U	0.364 U	0.358 U	0.370 U
Phenanthrene	NRC	0.394 U	0.348 U	0.364 U	0.358 U	0.370 U
Pyrene	NRC	0.394 U	0.348 U	2.19 =	0.358 U	0.370 U
Other Analytes						
Lead	NRC					4.2 =
Total Organic Carbon	NRC					
TPH-Diesel-range Organics	NRC	37.1 =	0.43 U	16.7 =	0.3 UJ	1.2 U
TPH-Gasoline-range Organics	NRC	0.359 J	0.106 U	0.112 UJ	1.08 U	1.11 U

NOTE:

September 1996 and May 1998 sampling was performed prior to the new CAP-Part A guidance that was published in May 1998; thus, the new SW-846 analytical methods were not used during that sampling event.

November 1998 and February 1999 sampling was performed in accordance with the CAP-Part A guidance that was published in May 1998.

Elevated PAH detection limits are a result of associated organic content such as TPH. During extraction of the PAH compounds, all other organic compounds are extracted, causing a wide range of organic compounds to be present; thus, the target PAHs become small peaks in the chromatograph. As a result, the laboratory dilutes the concentrate, in turn elevating the detection limit.

[a] Georgia Department of Natural Resources Applicable Soil Threshold Levels (Table A, Column 2)

NRC No regulatory criteria

Laboratory Qualifiers

U Indicates that the compound was not detected above the reported sample quantitation limit.

UJ Indicates that the compound was not detected above an approximated sample quantitation limit.

J Indicates that the value for the compound was an estimated value.

= Indicates that the compound was detected at the concentration reported.

TABLE V-A. Summary of Soil Analytical Results (continued)

Station:	GUST	16-04	16-04	16-05	16-06	16-07	16-07
Sample ID:	Soil	160411	160421	160521	160621	160711	160721
Sample Interval (ft BGS):	Threshold	0.0 - 2.0	2.0 - 4.0	0.8 - 2.0	1.1 - 2.6	2.0 - 4.0	0.9 - 2.0
Collection Date:	Level[a]	12-May-98	12-May-98	12-May-98	12-May-98	14-Nov-98	14-Nov-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Volatile Organic Compounds							
Benzene	0.008	0.0023 U	0.0022 U	0.0022 U	0.0022 U	0.0023 U	0.0021 U
Toluene	6	0.0555 =	0.0067 =	0.0022 U	0.0104 =	0.0071 =	0.0601 =
Ethylbenzene	10	0.0023 U	0.0022 U	0.0022 U	0.0022 U	0.0023 U	0.0029 =
Xylenes, Total	700	0.0069 U	0.0067 U	0.0067 U	0.0067 U	0.0021 J	0.012 =
Polynuclear Aromatic Hydrocarbons							
2-Chloronaphthalene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Acenaphthene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Acenaphthylene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Anthracene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Benzo(*a*)anthracene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Benzo(*a*)pyrene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Benzo(*b*)fluoranthene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Benzo(*g,h,i*)perylene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Benzo(*k*)fluoranthene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Chrysene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Dibenzo(*a,h*)anthracene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Fluoranthene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Fluorene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Indeno(*1,2,3-cd*)pyrene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Naphthalene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Phenanthrene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Pyrene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Other Analytes							
Lead	NRC		31.2 =	27.6 =	17.1 =		29.9 =
Total Organic Carbon	NRC						9310 =
TPH-Diesel-range Organics	NRC	1 U	0.88 UJ	1.5 UJ	0.89 UJ	1.3 U	7.1 U
TPH-Gasoline-range Organics	NRC	0.216 J	1.12 UJ	1.12 UJ	1.12 U	0.115 U	0.111 U

NOTE:

September 1996 and May 1998 sampling was performed prior to the new CAP-Part A guidance that was published in May 1998; thus, the new SW-846 analytical methods were not used during that sampling event.

November 1998 and February 1999 sampling was performed in accordance with the CAP-Part A guidance that was published in May 1998.

Elevated PAH detection limits are a result of associated organic content such as TPH. During extraction of the PAH compounds, all other organic compounds are extracted, causing a wide range of organic compounds to be present; thus, the target PAHs become small peaks in the chromatograph. As a result, the laboratory dilutes the concentrate, in turn elevating the detection limit.

[a] Georgia Department of Natural Resources Applicable Soil Threshold Levels (Table A, Column 2)

NRC No regulatory criteria

Laboratory Qualifiers

U Indicates that the compound was not detected above the reported sample quantitation limit.

UJ Indicates that the compound was not detected above an approximated sample quantitation limit.

J Indicates that the value for the compound was an estimated value.

= Indicates that the compound was detected at the concentration reported.

TABLE V-A. Summary of Soil Analytical Results (continued)

Station:	GUST	16-08	16-08	16-09	16-09	16-11	16-12
Sample ID:	Soil	160811	160821	160911	160921	161121	161221
Sample Interval (ft BGS):	Threshold	2.5 - 4.0	1.0 - 2.5	2.5 - 3.5	1.0 - 2.0	0.8 - 2.0	0.8 - 2.0
Collection Date:	Level[a]	13-Nov-98	13-Nov-98	13-Nov-98	13-Nov-98	20-Feb-99	20-Feb-99
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Volatile Organic Compounds							
Benzene	0.008	0.0024 U	0.0022 U	0.0024 U	0.0021 U	0.0102 =	0.0036 U
Toluene	6	0.0024 U	0.0022 U	0.0026 =	0.0036 =	0.0086 =	0.0036 U
Ethylbenzene	10	0.0024 U	0.0022 U	0.0024 U	0.00086 J	0.0155 =	0.0036 U
Xylenes, Total	700	0.0036 U	0.0032 U	0.0018 J	0.0044 =	0.0194 =	0.0013 J
Polynuclear Aromatic Hydrocarbons							
2-Chloronaphthalene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Acenaphthene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Acenaphthylene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Anthracene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Benzo(*a*)anthracene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Benzo(*a*)pyrene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Benzo(*b*)fluoranthene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Benzo(*g,h,i*)perylene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Benzo(*k*)fluoranthene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Chrysene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Dibenzo(*a,h*)anthracene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Fluoranthene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Fluorene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Indeno(*1,2,3-cd*)pyrene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Naphthalene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Phenanthrene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Pyrene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Other Analytes							
Lead	NRC		2.1 =		1.8 =	28.1 =	4.3 =
Total Organic Carbon	NRC						
TPH-Diesel-range Organics	NRC	0.96 U	2.2 U	1.2 U	0.95 U	0.94 U	0.25 U
TPH-Gasoline-range Organics	NRC	0.119 U	0.0538 U	0.0595 UJ	0.0526 U	0.163 =	0.112 U

NOTE:

September 1996 and May 1998 sampling was performed prior to the new CAP-Part A guidance that was published in May 1998; thus, the new SW-846 analytical methods were not used during that sampling event.

November 1998 and February 1999 sampling was performed in accordance with the CAP-Part A guidance that was published in May 1998.

Elevated PAH detection limits are a result of associated organic content such as TPH. During extraction of the PAH compounds, all other organic compounds are extracted, causing a wide range of organic compounds to be present; thus, the target PAHs become small peaks in the chromatograph. As a result, the laboratory dilutes the concentrate, in turn elevating the detection limit.

[a] Georgia Department of Natural Resources Applicable Soil Threshold Levels (Table A, Column 2)

NRC No regulatory criteria

Laboratory Qualifiers

U Indicates that the compound was not detected above the reported sample quantitation limit.

UJ Indicates that the compound was not detected above an approximated sample quantitation limit.

J Indicates that the value for the compound was an estimated value.

= Indicates that the compound was detected at the concentration reported.

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Analytical data sheets associated with the CAP-Part A investigation were provided in the CAP-Part A Report (SAIC 1999). Soil samples were not collected as part of the CAP-Part B investigation.

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APPENDIX VI

ALTERNATE CONCENTRATION LIMIT AND ALTERNATE THRESHOLD LEVEL CALCULATIONS

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1.0 ALTERNATE CONCENTRATION LIMITS

The maximum benzene concentration in groundwater was 221J µg/L in May 1998. Toluene, benzo(*a*)anthracene, benzo(*a*)pyrene, benzo(*b*)fluoranthene, benzo(*k*)fluoranthene, chrysene, indeno(*1,2,3-cd*)pyrene, and naphthalene were also selected as COPCs in groundwater. The modeling results for benzene estimated a DAF of 4.4 for the storm drain. The DAFs for benzene were infinity for the drainage ditch and Mill Creek, indicating that contamination will never reach those locations. PAH constituents are much less mobile in the environment than benzene; thus, a DAF of 10 times the benzene DAF (i.e, a DAF of 44) was used to develop ACLs for the PAH constituents. Compound-specific regulatory levels or risk-based screening criteria were used in conjunction with the site-specific DAFs identified for the potential migration of contamination from the site to determine the ACL for each compound. The ACLs are presented in Table VI-A along with the maximum observed concentrations for each constituent.

Table VI-A. Alternate Concentration Limits for Contaminants in Groundwater

Contaminant	Regulatory Level (µg/L)	DAF[a]	Calculated ACL[b] (µg/L)	Maximum Observed Concentration (µg/L)	
				CAP-Part A	CAP-Part B
Benzene	71.28[c]	4.4	313	221	27
Toluene	200,000[c]	4.4	880,000[d]	1740	0.4
Benzo(*a*)anthracene	0.092[e]	44	4	**17.8**	ND
Benzo(*a*)pyrene	0.2[f]	44	8.8	**11.0**	ND
Benzo(*b*)fluoranthene	0.092[e]	44	4	**14.5**	ND
Benzo(*k*)fluoranthene	0.92[e]	44	40	6.1	ND
Chrysene	9.2[e]	44	404	19.8	ND
Indeno(*1,2,3-cd*)pyrene	0.092[e]	44	4	3.2	ND
Naphthalene	6.5[e]	44	286	77.1	16.8

[a] DAF = Maximum benzene observed concentration ÷ predicted benzene concentration at the receptor
= 221 ÷ 49.7 ≈ 4.4 for benzene at the storm drain.
[b] ACL = Regulatory level × DAF
[c] In-Stream Water Quality Standard
[d] Since the maximum observed concentrations do not exceed the IWQS, the IWQS will also be the ACL.
[e] Risk-based screening criteria
[f] Maximum contaminant level
Bold values exceed the calculated ACL.
ND Not detected

2.0 ALTERNATE THRESHOLD LEVELS

The benzene concentrations in soil exceeded its respective STL in one soil sample located 50 feet away from the former dispenser island and are related to motorpool operations and not the UST and ancillary piping. Armored personnel carriers are parked in the area and have drip pans underneath the vehicles to catch oil leaks; thus, no ATLs were calculated because the one detection is not related to a release from the former UST system.

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APPENDIX VII

MONITORING WELL DETAILS

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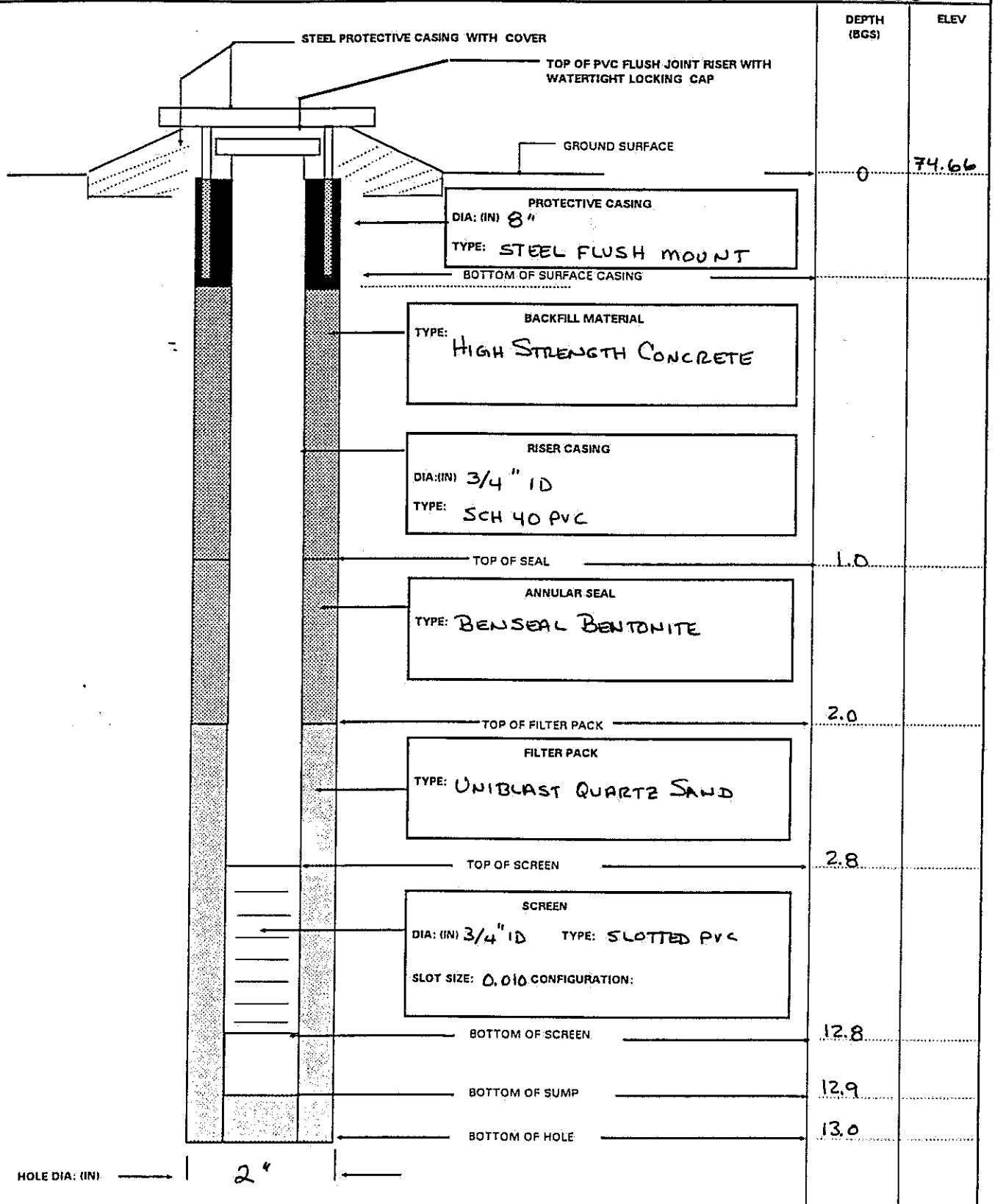
MONITORING WELL

PROJECT: USTs 36 & 37

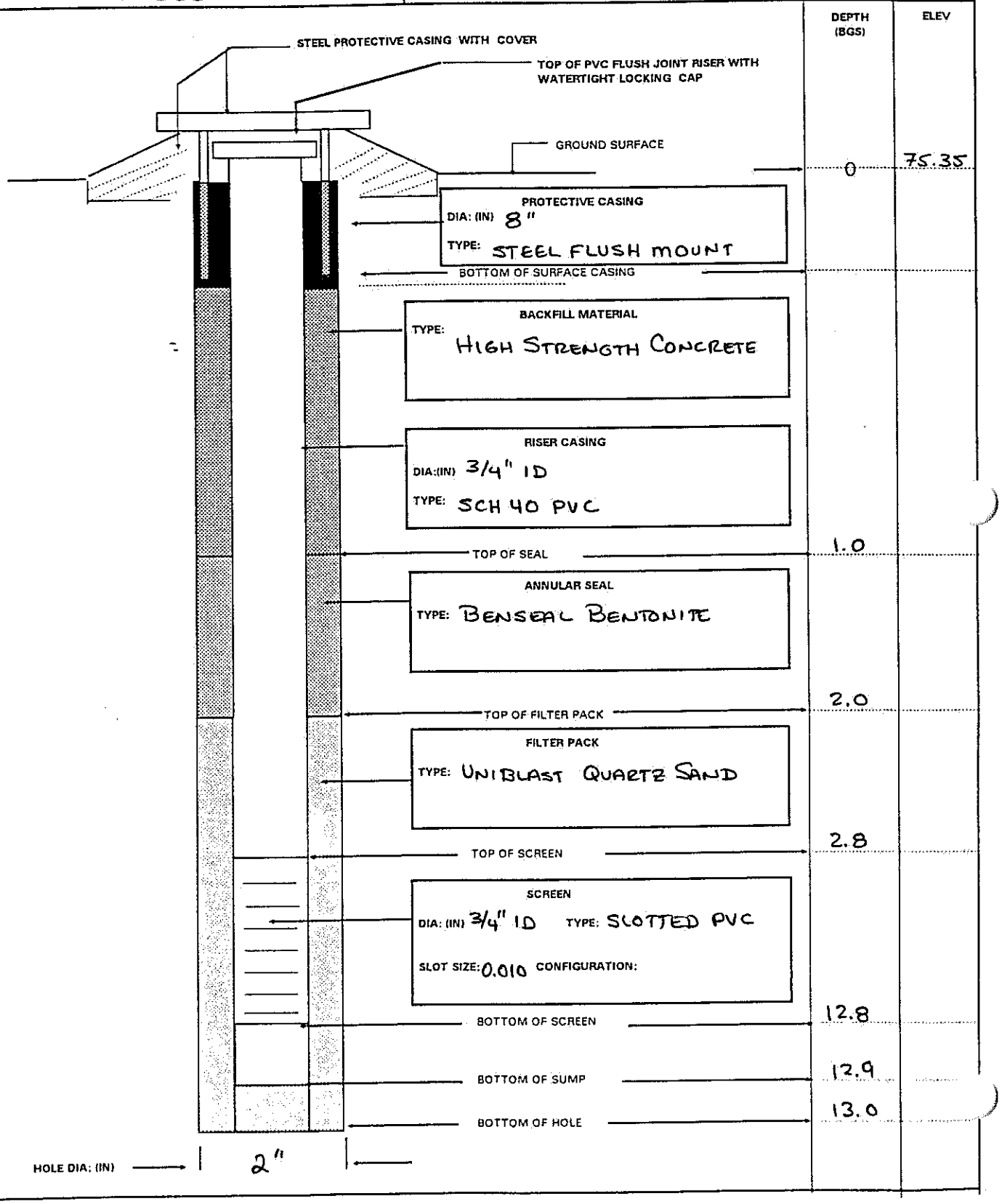
WELL NUMBER: 16-13	BEGIN: 1/13/00	END: 1/13/00
COORDINATES: N: 679282.36 E: 825080.45	REFERENCE POINT: TOC	ELEVATION: 74.44
DATUM/UNITS: NAD83		DATUM/UNITS: NGVD88



MONITORING WELL

PROJECT: USTs 36 & 37

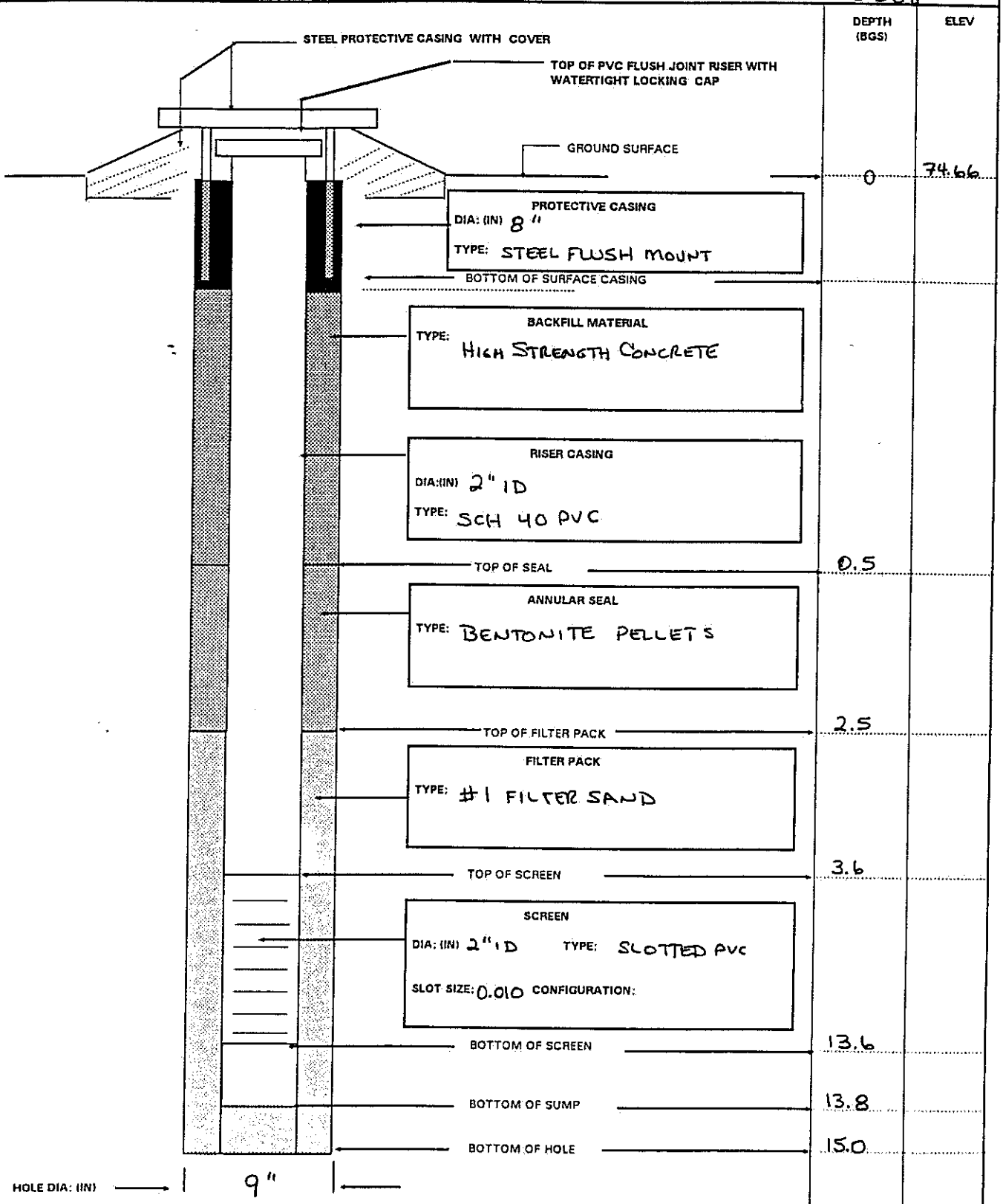
WELL NUMBER: 16-14	BEGIN: 1/13/00	END: 1/13/00
COORDINATES: N: 679327.75 E: 825077.85	REFERENCE POINT: TOC	ELEVATION: 75.10
DATUM/UNITS: NAD83		DATUM/UNITS: NGVD 88



MONITORING WELL

PROJECT: USTs 36 & 37

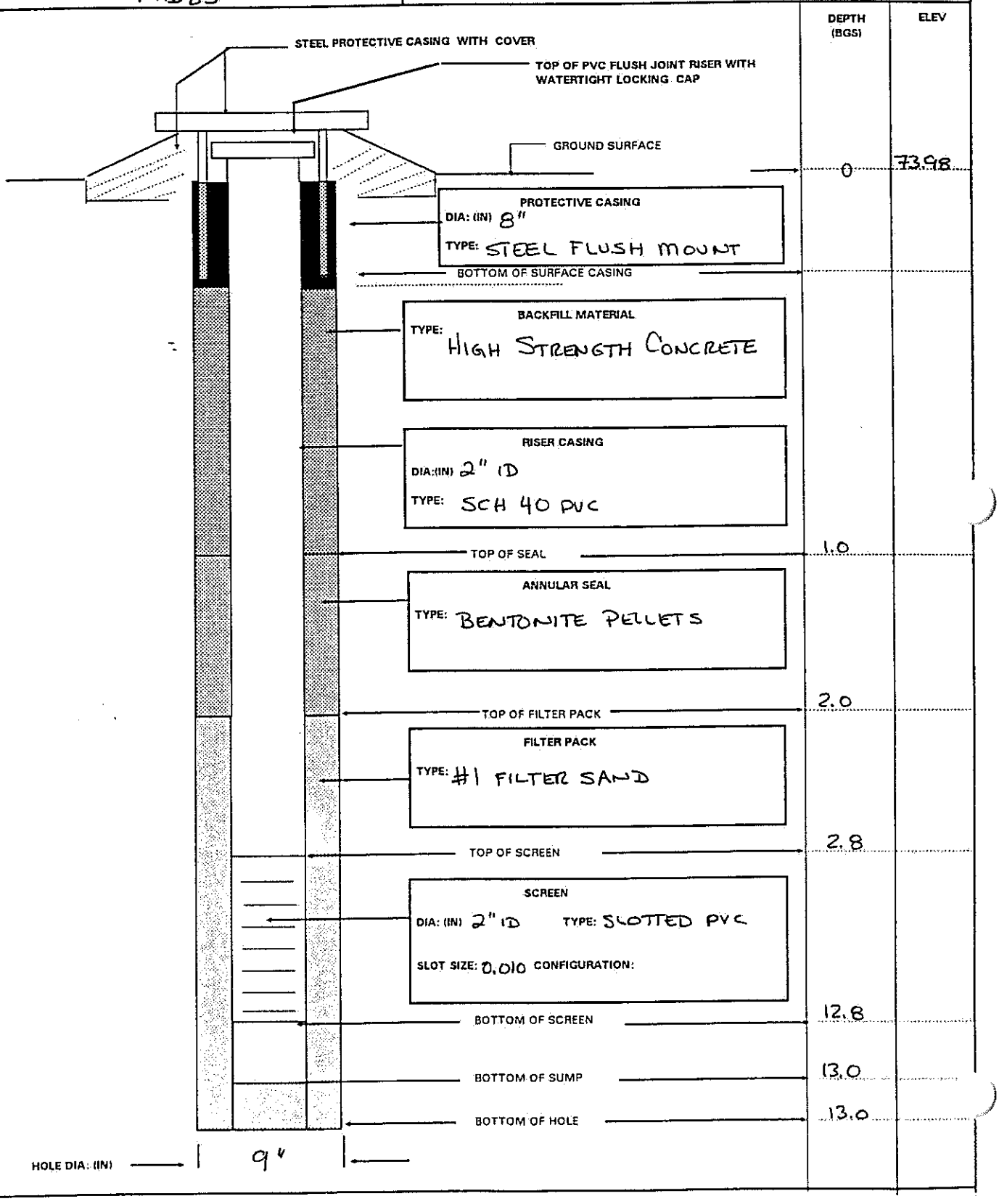
WELL NUMBER: 16-15	BEGIN: 1/13/00	END: 1/13/00
COORDINATES: N: 679331.06 E: 825121.10	REFERENCE POINT: TOC	ELEVATION: 74.49
DATUM/UNITS: NAD83		DATUM/UNITS: NGVD88



MONITORING WELL

PROJECT: UST 36737

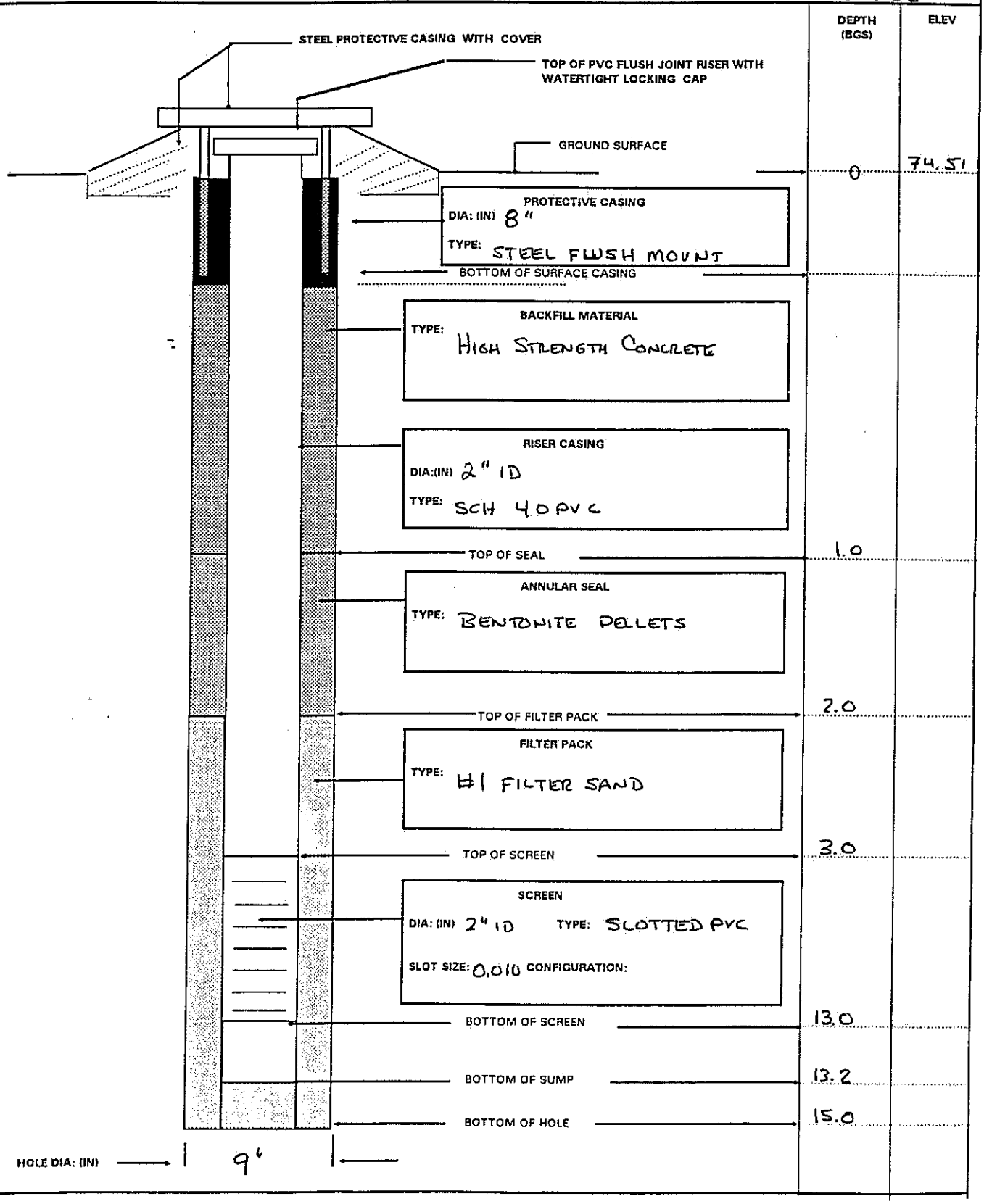
WELL NUMBER: 16-16		BEGIN: 1/13/00	END: 1/13/00
COORDINATES:	N: 679283.43 E: 825144.99	REFERENCE POINT:	ELEVATION: / DATUM/UNITS:
DATUM/UNITS:	NAD83	TOC	73.85 NGVD88



MONITORING WELL

PROJECT: USTs 36 & 37

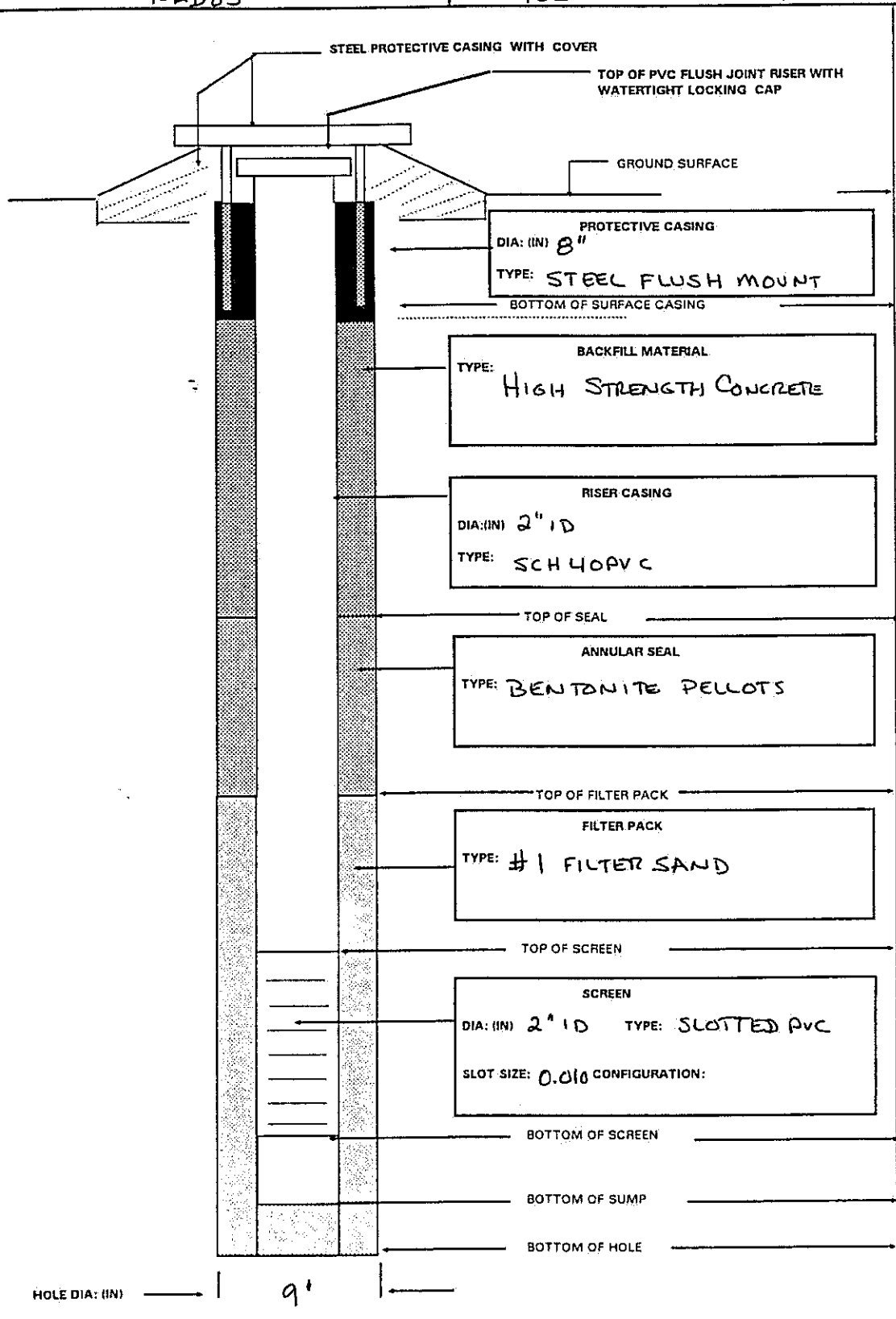
WELL NUMBER: 16-17	BEGIN: 1/13/00	END: 1/13/00
COORDINATES: N: 679339.59 E: 825158.30	REFERENCE POINT: TOC	ELEVATION: 74.35
DATUM/UNITS: NAD 83		DATUM/UNITS: NGVD 88



MONITORING WELL

PROJECT: USTs 36 & 37

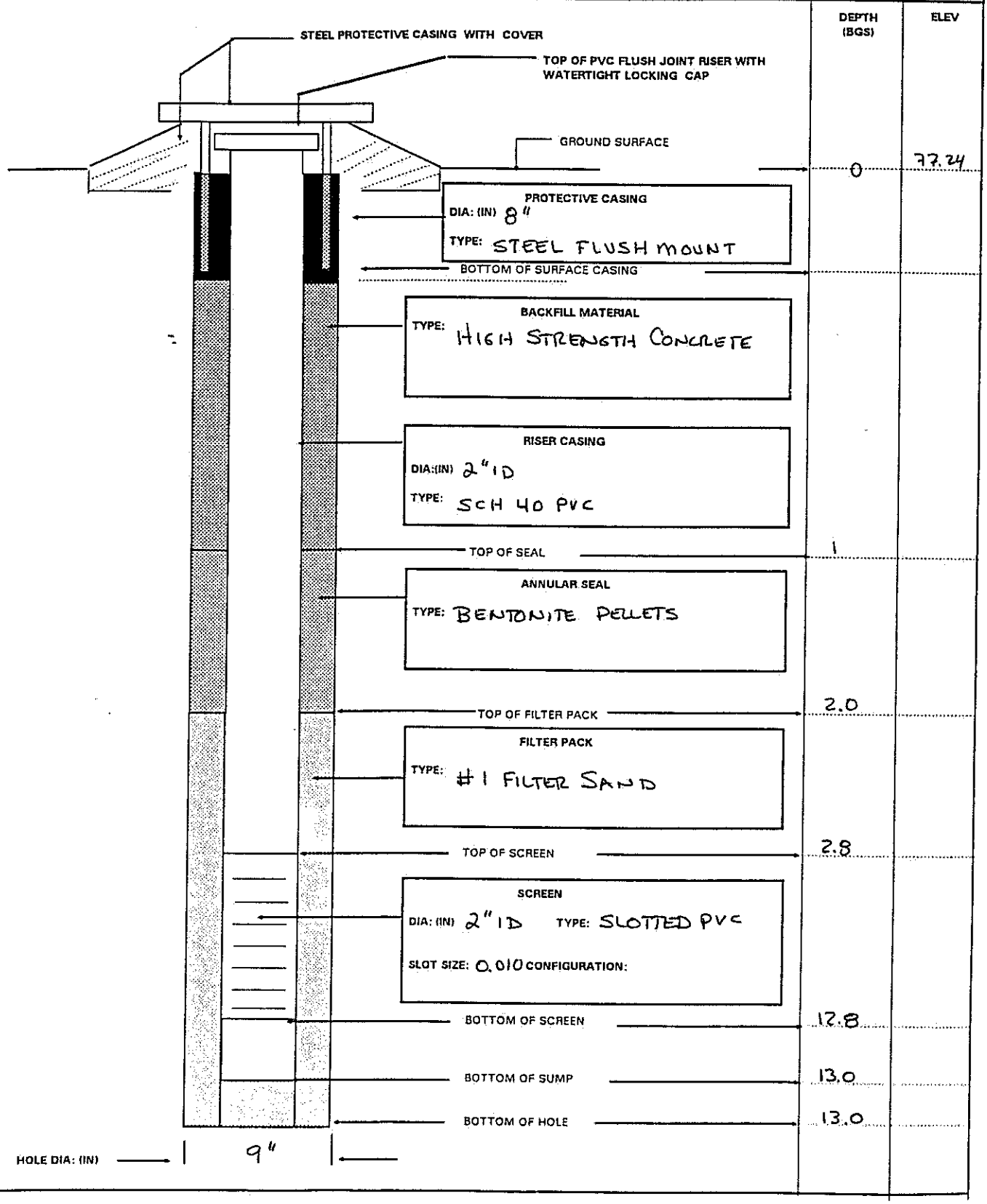
WELL NUMBER: 16-18	BEGIN: 1/13/00	END: 1/13/00
COORDINATES: N: 679371.74 E: 825189.06	REFERENCE POINT: TOC	ELEVATION: 74.82
DATUM/UNITS: NAD83		DATUM/UNITS: NGVD88



MONITORING WELL

PROJECT: USTs 36 & 37

WELL NUMBER: 16-19	BEGIN: 1/13/00	END: 1/13/00
COORDINATES: N: 679393.42 E: 825281.66	REFERENCE POINT: TOC	ELEVATION: 77.15
DATUM/UNITS: NAD83		DATUM/UNITS: NGVD88



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APPENDIX VIII

GROUNDWATER LABORATORY RESULTS

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TABLE VIII-A. Summary of Groundwater Analytical Results

Station:		In-Stream	16-01	16-02	16-03	16-04	16-05
Sample ID:		Water	1601W2	1602W2	160312	160412	160512
Screened Interval (ft BGS)	Federal	Quality	3.5 - 8.5	3.5 - 8.5	0.0 - 8.0	0.0 - 7.0	0.0 - 8.0
Collection Date:	MCLs[a]	Standards[b]	06-Sep-96	06-Sep-96	12-May-98	12-May-98	12-May-98
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
VOLATILE ORGANIC COMPOUNDS							
Benzene	5	71.28	5 U	0.42 J	221 J	2 U	63 =
Toluene	1000	200,000	5 U	5 U	325 J	2 U	1740 =
Ethylbenzene	700	28,718	0.041 J	2.4 J	791 J	3.3 =	359 =
Xylenes, Total	10,000	NRC	5 U	3.6 J	2830 J	6 U	1920 =
POLYNUCLEAR AROMATIC HYDROCARBONS							
2-Chloronaphthalene	NRC	NRC	10 U	10 U	20 U	20 U	20 U
Acenaphthene	NRC	NRC	8.7 J	10 U	20 U	20 U	20 U
Acenaphthylene	NRC	NRC	10 U	10 U	20 U	20 U	20 U
Anthracene	NRC	110,000	10 U	10 U	20 U	20 U	20 U
Benzo(*a*)anthracene	NRC	0.0311	10 U	10 U	20 U	20 U	20 U
Benzo(*a*)pyrene	0.2	0.0311	10 U	10 U	20 U	20 U	20 U
Benzo(*b*)fluoranthene	NRC	NRC	10 U	10 U	20 U	20 U	20 U
Benzo(*g,h,i*)perylene	NRC	NRC	10 U	10 U	20 U	20 U	20 U
Benzo(*k*)fluoranthene	NRC	0.0311	10 U	10 U	20 U	20 U	20 U
Chrysene	NRC	0.0311	10 U	10 U	20 U	20 U	20 U
Dibenzo(*a,h*)anthracene	NRC	0.0311	10 U	10 U	20 U	20 U	20 U
Fluoranthene	NRC	370	10 U	10 U	20 U	20 U	20 U
Fluorene	NRC	14,000	10 U	10 U	20 U	20 U	20 U
Indeno(*1,2,3-cd*)pyrene	NRC	0.0311	10 U	10 U	20 U	20 U	20 U
Naphthalene	NRC	NRC	10 U	10 U	77.1 =	20 U	164 =
Phenanthrene	NRC	NRC	10 U	10 U	20 U	20 U	20 U
Pyrene	NRC	11,000	10 U	10 U	20 U	20 U	20 U

NOTES:

September 1996 and May 1998 sampling was performed prior to the new CAP-Part A guidance that was published in May 1998; thus, the new SW-846 analytical methods were not used during that sampling event.

November 1998 and February 1999 sampling was performed in accordance with the CAP-Part A guidance that was published in May 1998.

[a] U.S. Environmental Protection Agency Safe Drinking Water Act MCL

[b] GA EPD water quality standards (Chapter 391-3-6.03)

NRC No regulatory criteria

Laboratory Qualifiers

U Indicates that the compound was not detected at the concentration reported.

UJ Indicates that the compound was not detected above an approximated sample quantitation limit.

J Indicates that the value for the compound is an estimated value.

= Indicates that the compound was detected at the concentration reported.

R Indicates that the sample results are unusable and the presence or absence of the compound could not be verified.

TABLE VIII-A. Summary of Groundwater Analytical Results (continued)

Station:		In Stream	16-06	16-07	16-08	16-09	16-10
Sample ID:		Water	160612	160712	160812	160912	161012
Screened Interval (ft BGS)	Federal	Quality	0.0 - 8.0	0.0 - 8.0	0.0 - 8.5	0.0 - 12.0	6.0 - 10.0
Collection Date:	MCLs[a]	Standards[b]	12-May-98	14-Nov-98	13-Nov-98	13-Nov-98	13-Nov-98
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
VOLATILE ORGANIC COMPOUNDS							
Benzene	5	71.28	2 U	83.3 =	2 U	2 U	2 U
Toluene	1,000	200,000	4.6 =	7.1 =	2 U	0.86 J	2 U
Ethylbenzene	700	28,718	4 =	69.5 =	2 U	19.1 =	2 U
Xylenes, Total	10,000	NRC	2 J	157 =	3 U	32 =	3 U
POLYNUCLEAR AROMATIC HYDROCARBONS							
2-Chloronaphthalene	NRC	NRC	20 U	10.5 U	10.1 U	10.5 U	11.8 U
Acenaphthene	NRC	NRC	20 U	10.5 U	10.1 U	27.6 =	11.8 U
Acenaphthylene	NRC	NRC	20 U	10.5 U	10.1 U	10.5 U	11.8 U
Anthracene	NRC	110,000	20 U	10.5 U	10.1 U	24.8 =	11.8 U
Benzo(*a*)anthracene	NRC	0.0311	20 U	10.5 U	10.1 U	17.8 =	11.8 U
Benzo(*a*)pyrene	0.2	0.0311	20 U	10.5 U	10.1 U	11 =	11.8 U
Benzo(*b*)fluoranthene	NRC	NRC	20 U	10.5 U	10.1 U	14.5 =	11.8 U
Benzo(*g,h,i*)perylene	NRC	NRC	20 U	10.5 U	10.1 U	3.7 J	11.8 U
Benzo(*k*)fluoranthene	NRC	0.0311	20 U	10.5 U	10.1 U	6.1 J	11.8 U
Chrysene	NRC	0.0311	20 U	10.5 U	10.1 U	19.8 =	11.8 U
Dibenzo(*a,h*)anthracene	NRC	0.0311	20 U	10.5 U	10.1 U	10.5 U	11.8 U
Fluoranthene	NRC	370	20 U	10.5 U	10.1 U	94.9 =	11.8 U
Fluorene	NRC	14000	20 U	10.5 U	10.1 U	17.6 =	11.8 U
Indeno(*1,2,3-cd*)pyrene	NRC	0.0311	20 U	10.5 U	10.1 U	3.2 J	11.8 U
Naphthalene	NRC	NRC	20 U	1.6 J	10.1 U	34.7 =	11.8 U
Phenanthrene	NRC	NRC	20 U	10.5 U	10.1 U	114 =	11.8 U
Pyrene	NRC	11,000	20 U	10.5 U	10.1 U	63.5 =	11.8 U

NOTES:

September 1996 and May 1998 sampling was performed prior to the new CAP-Part A guidance that was published in May 1998; thus, the new SW-846 analytical methods were not used during that sampling event.

November 1998 and February 1999 sampling was performed in accordance with the CAP-Part A guidance that was published in May 1998.

[a] U.S. Environmental Protection Agency Safe Drinking Water Act MCL.

[b] GA EPD water quality standards (Chapter 391-3-6.03)

NRC No regulatory criteria

Laboratory Qualifiers

U Indicates that the compound was not detected at the concentration reported.

UJ Indicates that the compound was not detected above an approximated sample quantitation limit.

J Indicates that the value for the compound is an estimated value.

= Indicates that the compound was detected at the concentration reported.

R Indicates that the sample results are unusable and the presence or absence of the compound could not be verified.

TABLE VIII-A. Summary of Groundwater Analytical Results (continued)

Station:		In-Stream	16-10	16-10	16-11	16-12
Sample ID:		Water	161052	161072	161112	161212
Screened Interval (ft BGS)	Federal	Quality	18.0 - 20.0	30.0 - 32.0	0.0 - 8.0	0.0 - 7.0
Collection Date:	MCLs[a]	Standards[b]	13-Nov-98	13-Nov-98	20-Feb-99	20-Feb-99
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
VOLATILE ORGANIC COMPOUNDS						
Benzene	5	71.28	1.7 J	2 U	5.9 =	0.5 J
Toluene	1,000	200,000	14.7 =	2 U	5.1 J	3.7 =
Ethylbenzene	700	28,718	1.3 J	2 U	1.7 J	1 J
Xylenes, Total	10,000	NRC	3.9 =	3 U	7.8 =	5.7 =
POLYNUCLEAR AROMATIC HYDROCARBONS						
2-Chloronaphthalene	NRC	NRC	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Acenaphthene	NRC	NRC	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Acenaphthylene	NRC	NRC	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Anthracene	NRC	110,000	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Benzo(*a*)anthracene	NRC	0.0311	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Benzo(*a*)pyrene	0.2	0.0311	6.3 J	12 R	11.2 UJ	10.2 UJ
Benzo(*b*)fluoranthene	NRC	NRC	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Benzo(*g,h,i*)perylene	NRC	NRC	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Benzo(*k*)fluoranthene	NRC	0.0311	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Chrysene	NRC	0.0311	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Dibenzo(*a,h*)anthracene	NRC	0.0311	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Fluoranthene	NRC	370	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Fluorene	NRC	14,000	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Indeno(*1,2,3-cd*)pyrene	NRC	0.0311	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Naphthalene	NRC	NRC	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Phenanthrene	NRC	NRC	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Pyrene	NRC	11,000	11.9 UJ	12 R	11.2 UJ	10.2 UJ

NOTES:

September 1996 and May 1998 sampling was performed prior to the new CAP-Part A guidance that was published in May 1998; thus, the new SW-846 analytical methods were not used during that sampling event.

November 1998 and February 1999 sampling was performed in accordance with the CAP-Part A guidance that was published in May 1998.

[a] U.S. Environmental Protection Agency Safe Drinking Water Act maximum contaminant level

[b] GA EPD water quality standards (Chapter 391-3-6.03)

NRC No regulatory criteria

Laboratory Qualifiers

U Indicates that the compound was not detected at the concentration reported.

UJ Indicates that the compound was not detected above an approximated sample quantitation limit.

J Indicates that the value for the compound is an estimated value.

= Indicates that the compound was detected at the concentration reported.

R Indicates that the sample results are unusable and the presence or absence of the compound could not be verified.

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Analytical data sheets associated with the CAP-Part A investigation were provided in the CAP-Part A Report (SAIC 1999).

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TABLE VIII-B. Summary of CAP-Part B Groundwater Analytical Results

Station:		In-Stream	16-13	16-14	16-15	16-16
Sample ID:		Water	161312	161412	161512	161612
Screened Interval (ft BGS)	Federal	Quality	2.8 - 12.8	2.8 - 12.8	3.6 – 13.6	2.8 - 12.8
Collection Date:	MCLs[a]	Standards[b]	13-Jan-00	13-Jan-00	31-Jan-00	31-Jan-00
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
VOLATILE ORGANIC COMPOUNDS						
Benzene	5	71.28	1 U	1 U	2.6 =	1 U
Toluene	1,000	200,000	1 U	1 U	0.38 J	1 U
Ethylbenzene	700	28,718	1 U	1 U	1.5 =	1 U
Xylenes, Total	10,000	NRC	3 U	3 U	8.7 =	3 U
POLYNUCLEAR AROMATIC HYDROCARBONS						
2-Chloronaphthalene	NRC	NRC	1 U	0.95 U	0.97 U	0.99 U
Acenaphthene	NRC	NRC	1 U	0.95 U	0.97 U	0.99 U
Acenaphthylene	NRC	NRC	1 U	0.95 U	0.97 U	0.99 U
Anthracene	NRC	110,000	1 U	0.95 U	0.97 U	0.99 U
Benzo(*a*)anthracene	NRC	0.0311	1 U	0.95 U	0.97 U	0.99 U
Benzo(*a*)pyrene	0.2	0.0311	1 U	0.95 U	0.97 U	0.99 U
Benzo(*b*)fluoranthene	NRC	NRC	1 U	0.95 U	0.97 U	0.99 U
Benzo(*g,h,i*)perylene	NRC	NRC	1 U	0.95 U	0.97 U	0.99 U
Benzo(*k*)fluoranthene	NRC	0.0311	1 U	0.95 U	0.97 U	0.99 U
Chrysene	NRC	0.0311	1 U	0.95 U	0.97 U	0.99 U
Dibenzo(*a,h*)anthracene	NRC	0.0311	1 U	0.95 U	0.97 U	0.99 U
Fluoranthene	NRC	370	1 U	0.95 U	0.97 U	0.99 U
Fluorene	NRC	14,000	1 U	0.95 U	0.97 U	0.99 U
Indeno(*1,2,3-cd*)pyrene	NRC	0.0311	1 U	0.95 U	0.97 U	0.99 U
Naphthalene	NRC	NRC	1 U	0.95 U	0.97 U	0.99 U
Phenanthrene	NRC	NRC	1 U	0.95 U	0.97 U	0.99 U
Pyrene	NRC	11,000	1 U	0.95 U	0.97 U	0.99 U
OTHER ANALYTES						
Iron	NRC	NRC	16,900 =	23,000 =	5,640 =	501 =

NOTES:

[a] U.S. Environmental Protection Agency Safe Drinking Water Act MCL

[b] GA EPD water quality standards (Chapter 391-3-6.03)

NRC No regulatory criteria

Laboratory Qualifiers

U Indicates that the compound was not detected at the concentration reported.

UJ Indicates that the compound was not detected above an approximated sample quantitation limit.

J Indicates that the value for the compound is an estimated value.

= Indicates that the compound was detected at the concentration reported.

R Indicates that the sample results are unusable and the presence or absence of the compound could not be verified.

TABLE VIII-B. Summary of CAP-Part B Groundwater Analytical Results (continued)

Station:		In-Stream	16-17	16-18	16-19
Sample ID:		Water	161712	161812	161912
Screened Interval (ft BGS)	Federal	Quality	3.0 – 13.0	2.8 - 12.8	2.8 - 12.8
Collection Date:	MCLs[a]	Standards[b]	31-Jan-00	31-Jan-00	31-Jan-00
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
VOLATILE ORGANIC COMPOUNDS					
Benzene	5	71.28	1.1 =	27 =	1 U
Toluene	1,000	200,000	0.40 J	0.40 J	1 U
Ethylbenzene	700	28,718	4.7 =	12 =	0.051 J
Xylenes, Total	10,000	NRC	14.3 =	2.7 J	3 U
POLYNUCLEAR AROMATIC HYDROCARBONS					
2-Chloronaphthalene	NRC	NRC	0.97 U	0.97 U	0.99 U
Acenaphthene	NRC	NRC	3.1 =	7.5 =	0.99 U
Acenaphthylene	NRC	NRC	0.97 U	0.97 U	0.99 U
Anthracene	NRC	110,000	0.97 U	0.70 J	0.99 U
Benzo(*a*)anthracene	NRC	0.0311	0.97 U	0.97 U	0.99 U
Benzo(*a*)pyrene	0.2	0.0311	0.97 U	0.97 U	0.99 U
Benzo(*b*)fluoranthene	NRC	NRC	0.97 U	0.97 U	0.99 U
Benzo(*g,h,i*)perylene	NRC	NRC	0.97 U	0.97 U	0.99 U
Benzo(*k*)fluoranthene	NRC	0.0311	0.97 U	0.97 U	0.99 U
Chrysene	NRC	0.0311	0.97 U	0.97 U	0.99 U
Dibenzo(*a,h*)anthracene	NRC	0.0311	0.97 U	0.97 U	0.99 U
Fluoranthene	NRC	370	0.97 U	0.99 =	0.99 U
Fluorene	NRC	14,000	1.2 =	3 =	0.99 U
Indeno(*1,2,3-cd*)pyrene	NRC	0.0311	0.97 U	0.97 U	0.99 U
Naphthalene	NRC	NRC	0.97 U	16.8 =	0.99 U
Phenanthrene	NRC	NRC	0.97 U	2.7 =	0.99 U
Pyrene	NRC	11,000	0.97 U	1 =	0.99 U
OTHER ANALYTES					
Iron	NRC	NRC	2,710 =	3,140 =	1,070 =

NOTES:

[a] U.S. Environmental Protection Agency Safe Drinking Water Act MCL

[b] GA EPD water quality standards (Chapter 391-3-6.03)

NRC No regulatory criteria

Laboratory Qualifiers

U Indicates that the compound was not detected at the concentration reported.

UJ Indicates that the compound was not detected above an approximated sample quantitation limit.

J Indicates that the value for the compound is an estimated value.

= Indicates that the compound was detected at the concentration reported.

R Indicates that the sample results are unusable and the presence or absence of the compound could not be verified.

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161312

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB002W

Matrix: (soil/water) WATER Lab Sample ID: 20656004

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5S321

Level: (low/med) LOW Date Received: 01/14/00

% Moisture: not dec. _____ Date Analyzed: 01/19/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	3.0	U

U

DATA VALIDATION COPY

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161312

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB002W

Matrix: (soil/water) WATER Lab Sample ID: 20656004

Sample wt/vol: 950.0 (g/mL) ML Lab File ID: 5C311

Level: (low/med) LOW Date Received: 01/14/00

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/18/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/19/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	1.0	U
91-58-7	2-Chloronaphthalene	1.0	U
208-96-8	Acenaphthylene	1.0	U
83-32-9	Acenaphthene	1.0	U
86-73-7	Fluorene	1.0	U
85-01-8	Phenanthrene	1.0	U
120-12-7	Anthracene	1.0	U
206-44-0	Fluoranthene	1.0	U
129-00-0	Pyrene	1.0	U
56-55-3	Benzo(a)anthracene	1.0	U
218-01-9	Chrysene	1.0	U
205-99-2	Benzo(b)fluoranthene	1.0	U
207-08-9	Benzo(k)fluoranthene	1.0	U
50-32-8	Benzo(a)pyrene	1.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	U
53-70-3	Dibenz(a,h)anthracene	1.0	U
191-24-2	Benzo(g,h,i)perylene	1.0	U

U

DATA VALIDATION COPY

TOTAL METALS
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: FSAB002W Method Type: SW-846

Sample ID: 20656004 Client ID: 161312

Contract: SAIC00200 Lab Code: GEL Case No.: SAS No.:

Matrix: WATER Date Received: 1/14/00 Level: LOW % Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-89-6	Iron	16900	µg/L		=	P	2.0	TJA61 Trace ICP1	12000

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

DATA VALIDATION

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161412

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSA3002W

Matrix: (soil/water) WATER Lab Sample ID: 20656003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5S320

Level: (low/med) LOW Date Received: 01/14/00

% Moisture: not dec. _____ Date Analyzed: 01/19/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	3.0	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161412

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB002W

Matrix: (soil/water) WATER Lab Sample ID: 20656003

Sample wt/vol: 1050 (g/mL) ML Lab File ID: 5C310

Level: (low/med) LOW Date Received: 01/14/00

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/18/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/19/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	0.95	U
91-58-7	2-Chloronaphthalene	0.95	U
208-96-8	Acenaphthylene	0.95	U
83-32-9	Acenaphthene	0.95	U
86-73-7	Fluorene	0.95	U
85-01-8	Phenanthrene	0.95	U
120-12-7	Anthracene	0.95	U
206-44-0	Fluoranthene	0.95	U
129-00-0	Pyrene	0.95	U
56-55-3	Benzo(a)anthracene	0.95	U
218-01-9	Chrysene	0.95	U
205-99-2	Benzo(b)fluoranthene	0.95	U
207-08-9	Benzo(k)fluoranthene	0.95	U
50-32-8	Benzo(a)pyrene	0.95	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.95	U
53-70-3	Dibenz(a,h)anthracene	0.95	U
191-24-2	Benzo(g,h,i)perylene	0.95	U

U

DATA VALIDATION

TOTAL METALS

INORGANIC ANALYSIS DATA PACKAGE

SDG No.: FSAB002W

Method Type: SW-846

Sample ID: 20656003

Client ID: 161412

Contract: SAIC00200 Lab Code: GEL Case No.: SAS No.:

Matrix: WATER Date Received: 1/14/00 Level: LOW % Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-89-6	Iron	23000	µg/L		=	P	2.0	TJA61 Trace ICP1	12000

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161512

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAE016W

Matrix: (soil/water) WATER Lab Sample ID: 21217003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1V718

Level: (low/med) LOW Date Received: 02/01/00

% Moisture: not dec. _____ Date Analyzed: 02/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	2.6	
108-88-3	Toluene	0.38	J
100-41-4	Ethylbenzene	1.5	
1330-20-7	Xylenes (total)	8.7	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161512

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB017W

Matrix: (soil/water) WATER Lab Sample ID: 21219001

Sample wt/vol: 1030 (g/mL) ML Lab File ID: 7E316

Level: (low/med) LOW Date Received: 02/01/00

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 02/02/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 02/03/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	0.97	U
91-58-7	2-Chloronaphthalene	0.97	U
208-96-8	Acenaphthylene	0.97	U
83-32-9	Acenaphthene	0.97	U
86-73-7	Fluorene	0.97	U
85-01-8	Phenanthrene	0.97	U
120-12-7	Anthracene	0.97	U
206-44-0	Fluoranthene	0.97	U
129-00-0	Pyrene	0.97	U
56-55-3	Benzo(a)anthracene	0.97	U
218-01-9	Chrysene	0.97	U
205-99-2	Benzo(b)fluoranthene	0.97	U
207-08-9	Benzo(k)fluoranthene	0.97	U
50-32-8	Benzo(a)pyrene	0.97	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.97	U
53-70-3	Dibenz(a,h)anthracene	0.97	U
191-24-2	Benzo(g,h,i)perylene	0.97	U

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INORGANIC ANALYSIS DATA PACKAGE

SDG No.: FSAB016W

Method Type: SW-846

Sample ID: 21217003

Client ID: 161512

Contract: SAIC00200

Lab Code: GEL

Case No.:

SAS No.:

Matrix: WATER

Date Received: 2/1/00

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-89-6	Iron	5640	µg/L			P	2.0	TJA61 Trace ICP2	20700A

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161612

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB016W

Matrix: (soil/water) WATER Lab Sample ID: 21217004

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1V717

Level: (low/med) LOW Date Received: 02/01/00

% Moisture: not dec. _____ Date Analyzed: 02/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	3.0	U

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161612

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB017W

Matrix: (soil/water) WATER Lab Sample ID: 21219002

Sample wt/vol: 1010 (g/mL) ML Lab File ID: 7E317

Level: (low/med) LOW Date Received: 02/01/00

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/02/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 02/03/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	0.99	U
91-58-7	2-Chloronaphthalene	0.99	U
208-96-8	Acenaphthylene	0.99	U
83-32-9	Acenaphthene	0.99	U
86-73-7	Fluorene	0.99	U
85-01-8	Phenanthrene	0.99	U
120-12-7	Anthracene	0.99	U
206-44-0	Fluoranthene	0.99	U
129-00-0	Pyrene	0.99	U
56-55-3	Benzo(a)anthracene	0.99	U
218-01-9	Chrysene	0.99	U
205-99-2	Benzo(b)fluoranthene	0.99	U
207-08-9	Benzo(k)fluoranthene	0.99	U
50-32-8	Benzo(a)pyrene	0.99	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.99	U
53-70-3	Dibenz(a,h)anthracene	0.99	U
191-24-2	Benzo(g,h,i)perylene	0.99	U

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DATA VALIDATED

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INORGANIC ANALYSIS DATA PACKAGE

SDG No.: FSAB016W Method Type: SW-846

Sample ID: 21217004 Client ID: 161612

Contract: SAIC00200 Lab Code: GEL Case No.: SAS No.:

Matrix: WATER Date Received: 2/1/00 Level: LOW % Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-89-6	Iron	501	ug/L			P	2.0	TJA61 Trace ICP2	20700A

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

RINSATE

EPA SAMPLE NO.

161616

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB016W

Matrix: (soil/water) WATER Lab Sample ID: 21217005

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1V716

Level: (low/med) LOW Date Received: 02/01/00

% Moisture: not dec. _____ Date Analyzed: 02/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	Benzene	1.0	U	U
108-88-3	Toluene	0.48	J	J
100-41-4	Ethylbenzene	1.0	U	U
1330-20-7	Xylenes (total)	3.0	U	U

RINSATE

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161616

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB017W

Matrix: (soil/water) WATER Lab Sample ID: 21219003

Sample wt/vol: 980.0 (g/mL) ML Lab File ID: 7E318

Level: (low/med) LOW Date Received: 02/01/00

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/02/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 02/03/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	1.0	U
91-58-7	2-Chloronaphthalene	1.0	U
208-96-8	Acenaphthylene	1.0	U
83-32-9	Acenaphthene	1.0	U
86-73-7	Fluorene	1.0	U
85-01-8	Phenanthrene	1.0	U
120-12-7	Anthracene	1.0	U
206-44-0	Fluoranthene	1.0	U
129-00-0	Pyrene	1.0	U
56-55-3	Benzo(a)anthracene	1.0	U
218-01-9	Chrysene	1.0	U
205-99-2	Benzo(b)fluoranthene	1.0	U
207-08-9	Benzo(k)fluoranthene	1.0	U
50-32-8	Benzo(a)pyrene	1.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	U
53-70-3	Dibenz(a,h)anthracene	1.0	U
191-24-2	Benzo(g,h,i)perylene	1.0	U

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INORGANIC ANALYSIS DATA PACKAGE

RINSATE

SDG No.: FSAB016W

Method Type: SW-846

Sample ID: 21217005

Client ID: 161616

Contract: SAIC00200

Lab Code: GEL

Case No.:

SAS No.:

Matrix: WATER

Date Received: 2/1/00

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-89-6	Iron	27.6	µg/L	B		P	2.0	TJA61 Trace ICP2	20700A

U FO1, FO6

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161712

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB016W

Matrix: (soil/water) WATER Lab Sample ID: 21217006

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1V715

Level: (low/med) LOW Date Received: 02/01/00

% Moisture: not dec. _____ Date Analyzed: 02/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	Benzene	1.1		U
108-88-3	Toluene	0.40	J	
100-41-4	Ethylbenzene	4.7		
1330-20-7	Xylenes (total)	14.3		

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161712

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB017W

Matrix: (soil/water) WATER Lab Sample ID: 21219004

Sample wt/vol: 1030 (g/mL) ML Lab File ID: 7E319

Level: (low/med) LOW Date Received: 02/01/00

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/02/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 02/03/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	0.97	U
91-58-7	2-Chloronaphthalene	0.97	U
208-96-8	Acenaphthylene	0.97	U
83-32-9	Acenaphthene	3.1	
86-73-7	Fluorene	1.2	
85-01-8	Phenanthrene	0.97	U
120-12-7	Anthracene	0.97	U
206-44-0	Fluoranthene	0.97	U
129-00-0	Pyrene	0.97	U
56-55-3	Benzo(a)anthracene	0.97	U
218-01-9	Chrysene	0.97	U
205-99-2	Benzo(b)fluoranthene	0.97	U
207-08-9	Benzo(k)fluoranthene	0.97	U
50-32-8	Benzo(a)pyrene	0.97	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.97	U
53-70-3	Dibenz(a,h)anthracene	0.97	U
191-24-2	Benzo(g,h,i)perylene	0.97	U

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INORGANIC ANALYSIS DATA PACKAGE

SDG No.: FSAB016W Method Type: SW-846

Sample ID: 21217006 Client ID: 161712

Contract: SAIC00200 Lab Code: GEL Case No.: SAS No.:

Matrix: WATER Date Received: 2/1/00 Level: LOW % Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-89-6	Iron	2710	µg/L			P	2.0	TJA61 Trace ICP2	20700A

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161812

Lab Name: GENERAL ENGINEERING LABCR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB016W

Matrix: (soil/water) WATER Lab Sample ID: 21217007

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1V714

Level: (low/med) LOW Date Received: 02/01/00

% Moisture: not dec. _____ Date Analyzed: 02/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	27.0	
108-88-3	Toluene	0.40	J
100-41-4	Ethylbenzene	12.0	
1330-20-7	Xylenes (total)	2.7	J

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161812

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB017W

Matrix: (soil/water) WATER Lab Sample ID: 21219005

Sample wt/vol: 1030 (g/mL) ML Lab File ID: 7E320

Level: (low/med) LOW Date Received: 02/01/00

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/02/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 02/03/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	16.8	
91-58-7	2-Chloronaphthalene	0.97	U
208-96-8	Acenaphthylene	0.97	U
83-32-9	Acenaphthene	7.5	
86-73-7	Fluorene	3.0	
85-01-8	Phenanthrene	2.7	
120-12-7	Anthracene	0.70	J
206-44-0	Fluoranthene	0.99	
129-00-0	Pyrene	1.0	
56-55-3	Benzo(a)anthracene	0.97	U
218-01-9	Chrysene	0.97	U
205-99-2	Benzo(b)fluoranthene	0.97	U
207-08-9	Benzo(k)fluoranthene	0.97	U
50-32-8	Benzo(a)pyrene	0.97	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.97	U
53-70-3	Dibenz(a,h)anthracene	0.97	U
191-24-2	Benzo(g,h,i)perylene	0.97	U

INORGANIC ANALYSIS DATA PACKAGE

SDG No.: FSAB016W Method Type: SW-846

Sample ID: 21217007 Client ID: 161812

Contract: SAIC00200 Lab Code: GEL Case No.: SAS No.:

Matrix: WATER Date Received: 2/1/00 Level: LOW % Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-89-6	Iron	3140	µg/L			P	2.0	TJA51 Trace ICP2	20700A

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161912

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB016W

Matrix: (soil/water) WATER Lab Sample ID: 21217008

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1V713

Level: (low/med) LOW Date Received: 02/01/00

% Moisture: not dec. _____ Date Analyzed: 02/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	Benzene	1.0	U	U
108-88-3	Toluene	1.0	U	U
100-41-4	Ethylbenzene	0.051	J	J
1330-20-7	Xylenes (total)	3.0	U	U

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161912

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB017W

Matrix: (soil/water) WATER Lab Sample ID: 21219006

Sample wt/vol: 1010 (g/mL) ML Lab File ID: 7E321

Level: (low/med) LOW Date Received: 02/01/00

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/02/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 02/03/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	0.99	U
91-58-7	2-Chloronaphthalene	0.99	U
208-96-8	Acenaphthylene	0.99	U
83-32-9	Acenaphthene	0.99	U
86-73-7	Fluorene	0.99	U
85-01-8	Phenanthrene	0.99	U
120-12-7	Anthracene	0.99	U
206-44-0	Fluoranthene	0.99	U
129-00-0	Pyrene	0.99	U
56-55-3	Benzo(a)anthracene	0.99	U
218-01-9	Chrysene	0.99	U
205-99-2	Benzo(b)fluoranthene	0.99	U
207-08-9	Benzo(k)fluoranthene	0.99	U
50-32-8	Benzo(a)pyrene	0.99	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.99	U
53-70-3	Dibenz(a,h)anthracene	0.99	U
191-24-2	Benzo(g,h,i)perylene	0.99	U

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INORGANIC ANALYSIS DATA PACKAGE

SDG No.: FSAB016W Method Type: SW-846

Sample ID: 21217008 Client ID: 161912

Contract: SAIC00200 Lab Code: GEL Case No.: SAS No.:

Matrix: WATER Date Received: 2/1/00 Level: LOW % Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run	
7439-89-6	Iron	1070	µg/L			P	2.0	TJA61 Trace ICP2	20700A	

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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1 of 2

CHAIN OF CUSTODY RECORD

COC NO.: D0554/

PROJECT NAME: Ft. Stewart USTs D.O. #55

PROJECT NUMBER: 01-1624-04-2352-200

PROJECT MANAGER: Patty Stoll

Sampler (Signature): Laura Lumley (Printed Name): Laura Lumley

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	PAH, Lead	Dissolved Iron	TPH	TCLP BTEX	TCLP Lead	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
220712	1/13/00	1005	water	2	2						4	20656001	20656001
220912	1/13/00	1245		2	2						4	002	002
161412	1/13/00	1450		2	2						5	003	003
161312	1/13/00	1540		2	2						5	004	004
801014	1/13/00	1720		2							2		20655001
801312	1/13/00	1635		2							2		002
801012	1/13/00	1720		2							2		003
770912	1/13/00	1440		2							2		004
771012	1/13/00	1550		2							2		005
771014	1/13/00	1550		2							2		006
771312	1/13/00	1720		2							2		007
010812	1/13/00	1035		2							2		008
010912	1/13/00	1325		2							2		009

RELINQUISHED BY: Laura Lumley	Date/Time 1/14/00 1200	RECEIVED BY: Dionne Francois	Date/Time 1/14/00 1450	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature: 4°C
COMPANY NAME: SAIC		COMPANY NAME: GEL		Cooler ID: # 847	FEDEX NUMBER:
RECEIVED BY:	Date/Time 1-14-00 1200	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL		COMPANY NAME:			
RELINQUISHED BY:	Date/Time 1-14-00 1458	RECEIVED BY:	Date/Time		
COMPANY NAME: GEL		COMPANY NAME:			

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CHAIN OF CUSTODY RECORD

COC NO.: D055509

OJECT NAME: Ft. Stewart USTs D.O. #55

OJECT NUMBER: 01-1624-04-2352-200

OJECT MANAGER: Patty Stoll

npler (Signature) (Printed Name)
Laura Lumley

REQUESTED PARAMETERS

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	PAH, Lead	Dissolved Iron	TPH	TCLP BTEX	TCLP Lead	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
01512	1/31/00	1210	water		N						2	2/2194	
01612	1/31/00	1012			N						2		
01612	1/31/00	1740			N						2		
01712	1/31/00	0950			N						2		
01812	1/31/00	1105			N						2		
01912	1/31/00	1142			N						2		

1/31/00.

RELINQUISHED BY: Laura Lumley	Date/Time 2/1/00 1045	RECEIVED BY: Patricia Moore	Date/Time 2-1-00 14:30	TOTAL NUMBER OF CONTAINERS: 12	Cooler Temperature: 3°C	
COMPANY NAME: SAIC		COMPANY NAME: GEL		Cooler ID: #10	FEDEX NUMBER:	
RECEIVED BY: Catherine C. Bien	Date/Time 2/1/00 1045	RELINQUISHED BY:	Date/Time			
COMPANY NAME: GEL		COMPANY NAME:				
RELINQUISHED BY: Catherine C. Bien	Date/Time 2/1/00.	RECEIVED BY:	Date/Time			
COMPANY NAME: GEL		COMPANY NAME:				

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1 of 2

CHAIN OF CUSTODY RECORD

COC NO.: D0551 1

PROJECT NAME: Ft. Stewart USTs D.O. #55

PROJECT NUMBER: 01-1624-04-2352-200

PROJECT MANAGER: Patty Stoll

Sampler (Signature): Laura Lumley (Printed Name): Laura Lumley

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	PAH, Lead	Dissolved Iron	TPH	TCLP BTEX	TCLP Lead	No. of Bottles/ Vials	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
711016	2/1/00	0900	water	2	2		1				5		2 1217
711612	1/31/00	1452		2	2		1				5		
161512	1/31/00	1210		2			1				3		
161612	1/31/00	1012		2			1				3		
161616	1/31/00	1740		2			1				3		
161712	1/31/00	0950		2			1				3		
161812	1/31/00	1105		2			1				3		
161912	1/31/00	1142		2			1				3		
711012	1/31/00	1530		2			1				3		
711312	1/31/00	1200		2			1				3		
711212	1/31/00	1355		2			1				3		
711112	1/31/00	1342		2			1				3		
711412	1/31/00	0935	↓	2			1				3		

RELINQUISHED BY: Laura Lumley	Date/Time 2/1/00 1045	RECEIVED BY: Patricia A Sewer	Date/Time 2-1-00 14:30
COMPANY NAME: SAIC		COMPANY NAME: GEL	
RECEIVED BY: Katherine C Bien	Date/Time 2/1/00 1045	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	
RELINQUISHED BY: Katherine C Bien	Date/Time 2/1/00	RECEIVED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler ID: # 589

Cooler Temperature: 3°c

FEDEX NUMBER:

Dissolved Iron samples are preserved w/ HNO_3 to pH < 2

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APPENDIX IX

CONTAMINATED SOIL DISPOSAL MANIFESTS

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No contaminated soil was disposed of during the removal of USTs 36 & 37; thus, there are no manifests.

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APPENDIX X

SITE RANKING FORM

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SITE RANKING FORM

Facility Name: USTs 36 & 37, Building 1510 **Ranked by:** S. Stoller

County: Liberty **Facility ID #:** 9-089016 **Date Ranked:** 8/10/00

SOIL CONTAMINATION (based on soil closure and CAP-Part A data)

A. Total PAHs –
Maximum Concentration found on the site
(Assume <0.660 mg/kg if only gasoline was stored on site)

☐	≤0.660 mg/kg	=	0
☐	>0.66 - 1 mg/kg	=	10
* ☒	>1 - 10 mg/kg	=	25
☐	>10 mg/kg	=	50

* *CAP-Part A soil sample 1602B1 (1996)*

B. Total Benzene -
Maximum Concentration found on the site

☐	≤0.005 mg/kg	=	0
* ☒	>0.005 - .05 mg/kg	=	1
☐	>0.05 - 1 mg/kg	=	10
☐	>1 - 10 mg/kg	=	25
☐	>10 - 50 mg/kg	=	40
☐	>50 mg/kg	=	50

* *CAP-Part A soil sample 161121 (1999)*

C. Depth to Groundwater
(bls = below land surface)

☐	>50' bls	=	1
☐	>25' - 50' bls	=	2
☐	>10' - 25' bls	=	5
☒	≤10' bls	=	10

Fill in the blanks: (A. 25) + (B. 1) = (26) x (C. 10) = (D. 260)

GROUNDWATER CONTAMINATION (based on CAP-Part A groundwater data)

E. Free Product (Nonaqueous-phase liquid hydrocarbons; See Guidelines For definition of "sheen").

☒	No free product	=	0
☐	Sheen - 1/8"	=	250
☐	>1/8" - 6"	=	500
☐	>6" - 1ft.	=	1,000
☐	For every additional inch, add another 100 points = 1,000 +		

F. Dissolved Benzene -
Maximum Concentration at the site
(One well must be located at the source of the release.)

☐	≤5 µg/L	= 0
* ☒	>5 - 100 µg/L	= 5
☐	>100 - 1,000 µg/L	= 50
☐	>1,000 - 10,000 µg/L	= 500
☐	>10,000 µg/L	= 1500

* *CAP-Part B sample 161812 (2000)*

Fill in the blanks: (E. 0) + (F. 5) = (G. 5)

Facility Name: USTs 36 & 37, Building 1510 **County:** Liberty **Facility ID #:** 9-089016

POTENTIAL RECEPTORS (MUST BE FIELD-VERIFIED)

Distance from nearest contaminant plume boundary to the nearest downgradient and hydraulically connected Point of Withdrawal for water supply. **If the point of withdrawal is not hydraulically connected, evidence as outlined in the CAP-A guidance document MUST be presented to substantiate this claim.**

H. Public Water Supply

☐	Impacted	= 2000
☐	≤500'	= 500
☐	>500' - ¼ mi	= 25
☐	¼ mi - 1 mi	= 10
☐	>1 mi - 2 mi	= 2
* ☒	> 2 mi	= 0

For lower susceptibility areas only:

☐	>1 mi	= 0

Note: If site is in lower susceptibility area, do not use the shaded areas.

* For justification that withdrawal point is not hydraulically connected, see attached text.

I. Non-Public Water Supply

☐	Impacted	= 1000
☐	≤100'	= 500
☐	>100' - 500'	= 25
☐	>500' - ¼ mi	= 5
☐	>¼ - ½ mi	= 2
☒	>½ mi	= 0

For lower susceptibility areas only:

☐	>¼ mi	= 0

J. Distance from nearest Contaminant Plume boundary to downgradient Surface Waters **OR UTILITY TRENCHES & VAULTS** (a utility trench may be omitted from ranking if its invert elevation is more than 5 feet above the water table)

☐	Impacted	= 500
* ☒	≤500'	= 50
☐	>500' - 1,000'	= 5
☐	>1,000'	= 2

* *Storm drain located 40 feet downgradient and invert is above the water table.*

K. Distance from any Free Product to basements and crawl spaces

☐	Impacted	= 500
☐	<500'	= 50
☐	>500' - 1,000'	= 5
☒	>1,000' or no free product.	= 0

Fill in the blanks: (H. 0) + (I. 0) + (J. 50) + (K. 0) = L. 50

(G. 5) x (L. 50) = M. 250

(M. 250) + (D. 260) = N. 510

P. **SUSCEPTIBILITY AREA MULTIPLIER**

☐ If site is located in a Low Ground-Water Pollution Susceptibility Area = 0.5

☒ All other sites = 1

Q. **EXPLOSION HAZARD**

Have any explosive petroleum vapors, possibly originating from this release, been detected in any subsurface structure (e.g., utility trenches, basements, vaults, crawl spaces, etc.)?

☐ Yes = 200,000

☒ No = 0

Fill in the blanks: (N. 510) x (P. 1) = (510) + (Q. 0)

= 510
ENVIRONMENTAL SENSITIVITY SCORE

ADDITIONAL GEOLOGIC AND HYDROLOGIC DATA

The following information is presented to provide supplemental information for Item H of the Site Ranking Form and detailed information relating to the geologic and hydrogeologic conditions at Fort Stewart, which support Fort Stewart's determination that the water withdrawal point(s) located at Fort Stewart is (are) not hydraulically connected to the surficial aquifer.

1.0 REGIONAL AND LOCAL GEOLOGY

Fort Stewart is located within the coastal plain physiographic province. This province is typified by nine southeastward-dipping strata that increase in thickness from 0 feet at the fall line, located approximately 150 miles inland from the Atlantic coast, to approximately 4,200 feet at the coast. State geologic records describe a probable petroleum exploration well (the No. 1 Jelks-Rogers) located in the region as encountering crystalline basement rocks at a depth of 4,254 feet BGS. This well provides the most complete record for Cretaceous, Tertiary, and Quaternary sedimentary strata in the region.

The Cretaceous section was found to be approximately 1,970 feet thick and dominated by clastics. The Tertiary section was found to be approximately 2,170 feet thick and dominated by limestone with a 175-foot-thick cap of dark green phosphatic clay. This clay is regionally extensive and is known as the Hawthorn Group. The interval from approximately 110 feet to the surface is Quaternary in age and composed primarily of sand with interbeds of clay or silt. This section is undifferentiated into separate formations (Herrick and Vochis 1963).

State geologic records contain information regarding a well drilled in October 1942, 1.8 miles north of Flemington at Liberty Field of Camp Stewart (now known as Fort Stewart). This well is believed to be an artesian well located approximately one-quarter mile north of the runway at Wright Army Airfield within the FSMR. The log for this well describes a 410-foot section, the lowermost 110 feet of which consisted predominantly of limestone sediments, above which 245 feet of dark green phosphatic clay typical of the Hawthorn Group were encountered. The uppermost portion of the section was found to be Quaternary-age interbedded sands and clays. The top 15 feet of these sediments were described as sandy clay (Herrick and Vochis 1963).

The surface soil located throughout the Fort Stewart garrison area consists of Stilson loamy sand. The surface layer of this soil is typically dark grayish-brown loamy sand measuring approximately 6 inches in depth. The surface layer is underlain by material consisting of pale yellow loamy sand and extends to a depth of approximately 29 inches. The subsoil is dominantly sandy clay loam and extends to a depth of 72 inches or more (Herrick and Vochis 1963).

2.0 REGIONAL AND LOCAL HYDROGEOLOGY

The hydrogeology in the vicinity of Fort Stewart is dominated by two aquifers referred to as the Principal Artesian and the surficial aquifers. The Principal Artesian Aquifer is the lowermost hydrologic unit and is regionally extensive from South Carolina through Georgia, Alabama, and most of Florida. Known elsewhere as the Floridan, this aquifer is composed primarily of Tertiary-age limestone, including the Bug Island Formation, the Ocala Group, and the Suwannee Limestone. These formations are approximately 800 feet thick, and groundwater from this aquifer is used primarily for drinking water (Arora 1984).

The uppermost hydrologic unit is the surficial aquifer, which consists of widely varying amounts of sand and clay ranging from 55 to 150 feet in thickness. This aquifer is primarily used for domestic lawn and agricultural irrigation. The top of the water table ranges from approximately 2 to 10 feet BGS (Geraghty and Miller 1993). The base of the aquifer corresponds to the top of the underlying dense clay of the Hawthorn Group. The Hawthorn Group was not encountered during drilling at this site but is believed to be located at 40 to 50 feet BGS; thus, the effective aquifer thickness would be approximately 35 to 45 feet. Soil surveys for Liberty and Long counties describe the occurrence of a perched water table within the Stilson loamy sands present within Fort Stewart (Looper 1980).

The confining layer for the Principal Artesian Aquifer is the phosphatic clay of the Hawthorn Group and ranges in thickness from 15 to 90 feet. The vertical hydraulic conductivity of this confining unit is on the order of 10^{-8} cm/sec. There are minor occurrences of aquifer material within the Hawthorn Group; however, they have limited utilization (Miller 1990). The Hawthorn Group has been divided into three formations: Coosawhatchie Formation, Markshead Formation, and Parachula Formation, which are listed from youngest to oldest.

The Coosawhatchie Formation is composed predominantly of clay but also has sandy clay, argillaceous sand, and phosphorite units. The formation is approximately 170 feet thick in the Savannah, Georgia, area. This unit disconformably overlies the Markshead Formation and is distinguished from the underlying unit by dark phosphatic clays or phosphorite in the lower part and fine-grained sand in the upper part.

The Markshead Formation is approximately 70 feet thick in the Savannah, Georgia, area and consists of light-colored phosphatic, slightly dolomitic, argillaceous sand to fine-grained sandy clay with scattered beds of dolostone and limestone.

The Parachula Formation consists of sand, clay, limestone, and dolomite and is approximately 10 feet thick in the Savannah, Georgia, area. The Parachula Formation generally overlies the Suwannee Limestone in Georgia.

Groundwater encountered at all the UST investigation sites is part of the surficial aquifer system. Based on the facts that all public and nonpublic water supply wells draw water from the Principal Artesian (Floridan) Aquifer and that the Hawthorn confining unit separates the Principal Artesian Aquifer from the surficial aquifer, it is concluded that there is no hydraulic interconnection between the surficial aquifer (and associated groundwater plumes, if applicable) located beneath former UST sites and identified water supply withdrawal points at Fort Stewart.

APPENDIX XI

COPIES OF PUBLIC NOTIFICATION LETTERS AND CERTIFIED RECEIPTS OF NEWSPAPER NOTICE

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AFFIDAVIT OF PUBLICATION
SAVANNAH MORNING NEWS

STATE OF GEORGIA
CHATHAM COUNTY

Personally appeared before me, JOAN T. JENKINS. to me known, who being sworn, deposes and says:

That she/he is the CLASSIFIED ADV. SUPV of Southeastern Newspaper Corporation, a Georgia corporation, doing business in Chatham County, Georgia under the trade name of Savannah Morning News, a daily newspaper published in said county;

That she/he is authorized to make affidavits of publication on behalf of said published corporation;

That said newspaper is of general circulation in said county and in the area adjacent thereto;

That he has reviewed the regular editions of the Savannah Morning News, published

on 7-16, 2000, 7-23 2000,

, 2000, ,2000,

and finds that the following advertisement, to-wit:

015 Miscellaneous Notices

PUBLIC NOTICE
Notification of Corrective Action Plan Underground Storage Tank Releases

FORT STEWART, Georgia

The Georgia EPD (GEPD) has required Fort Stewart Directorate of Public Works to prepare Corrective Action Plans Part A or Part B to investigate and/or clean up contamination at the underground storage tank sites listed at the end of this notification. These plans will be submitted to the GEPD on or before November 30, 2000. If you want to examine a copy of one or more of the plans, please contact: Environmental Branch (Attn: T. Rutland), Directorate of Public Works, Bldg. 1137, HQS 3D IN DIV (MECH) and Fort Stewart, 1550 Frank Cochran Dr., Fort Stewart, Ga. 31314-4927. A copy will be mailed at a nominal fee.

Comments to the plan will be accepted until December 31, 2000, and should be directed to GEPD at 404-362-2687. Following is the mailing address:

GEPD UST/MP, 4244 International Parkway, Suite 104, Atlanta, Ga. 30354

Fort Stewart, Part A or Part B Underground Storage Tank Sites
Site; Facility ID#; Building
61, 9-089184, 1161
15 and 16, 9-089012, 1721
93, 9-089112, 1130
36 and 37, 9-089016, 1510
100B, 9-089081, 1350
5 and 6, 9-089066, 1824

Joan T. Jenkins
(Deponent)

Appeared in each of said editions.

Sworn to and subscribed
Before me this 24 day
of July, 2000

Lillie D. Lang

LILLIE D. LANG
Notary Public, Chatham County, Ga.
My Commission Expires Apr. 8, 2001
Notary Public, Chatham County, Ga.

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APPENDIX XII

GUST TRUST FUND REIMBURSEMENT APPLICATION AND CLAIM FOR REIMBURSEMENT

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Fort Stewart is a federally owned facility and has funded the investigation for the USTs 36 & 37, Building 1510, Facility ID #9-089016, using Department of Defense Environmental Restoration Account Funds. Application for GUST Trust Fund reimbursement is not being pursued at this time.

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