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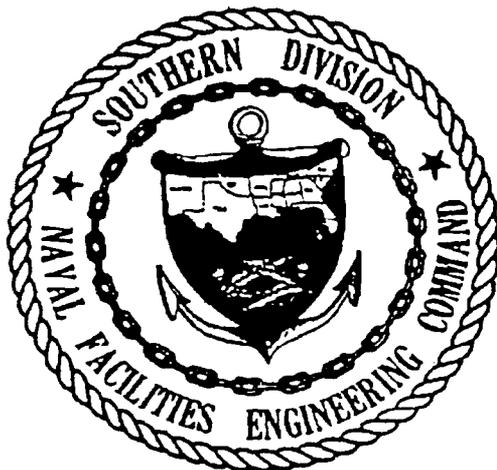


RCRA FACILITY INVESTIGATION/SITE INSPECTION  
TECHNICAL MEMORANDUM No. 5, VOLUME I  
SITE 11, OLD CAMDEN COUNTY LANDFILL

NAVAL INSTALLATION RESTORATION PROGRAM  
NAVAL SUBMARINE BASE  
KINGS BAY, GEORGIA

CONTRACT NO. N62467-89-D-0317

MARCH 1993



SOUTHERN DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORTH CHARLESTON, SOUTH CAROLINA  
29418

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**RCRA FACILITY INVESTIGATION/  
SITE INSPECTION  
TECHNICAL MEMORANDUM No. 5  
VOLUME I  
SITE 11, OLD CAMDEN COUNTY LANDFILL  
NAVAL SUBMARINE BASE  
KINGS BAY, GEORGIA**

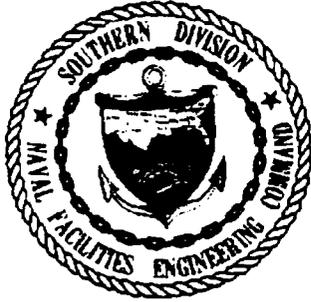
**Prepared for:**

**Southern Division  
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**March 1993**



## FOREWORD

In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the 1986 Superfund Amendments and Reauthorization Act (SARA), the 1976 Resource Conservation and Recovery Act (RCRA) as augmented by the 1984 Hazardous and Solid Waste Amendments (HSWA), and as directed in Executive Order 12580 of January 1987, the Department of Defense (DOD) conducts an Installation Restoration (IR) Program for evaluating and remediating problems related to releases and disposal of toxic and hazardous materials at DOD facilities.

The Naval Assessment and Control of Installation Pollutants (NACIP) program was developed by the Navy to implement the IR Program for all Naval and Marine Corps facilities. The NACIP program was originally conducted in three phases: (1) Phase I, Initial Assessment Study, (2) Phase II, Confirmation Study (including a Verification Step and a Characterization Step), and (3) Phase III, Planning and Implementation of Remedial Measures. The three-phase IR Program was modified and updated to be congruent with the CERCLA/SARA and RCRA/HSWA-driven DOD IR program.

The updated nomenclature for the RCRA/SARA process is as follows:

- Preliminary Assessment and Site Inspection
- Remedial Investigation
- Feasibility Study
- Planning and Implementation of Remedial Design

Three sites at the Naval Submarine Base (NSB) in Kings Bay, Georgia, were identified for investigation under the IR Program. A work plan for conducting a RCRA Facility Investigation/Site Inspection (RFI/SI) at each of the three sites has been completed and implemented. This technical memorandum discusses the RFI/SI field program conducted at the facility and summarizes findings and results based on information and data collected as a result of the November 1992 field effort, which included the fifth of six groundwater sampling events. Certain Appendix IX parameters have been deleted from the groundwater monitoring program based on results of laboratory analysis of environmental samples collected during the RFI/SI field program and during the first two groundwater sampling events.

Southern Division Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) has the responsibility for implementation of the Navy and Marine Corps IR Program in the southeastern and midwestern United States. Questions regarding this report should be addressed to the SOUTHNAVFACENGCOM Engineer-in-Charge, Mr. Ed Lohr, at (803) 743-0355.

## EXECUTIVE SUMMARY

ABB Environmental Services, Inc. (ABB-ES), under contract to Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), conducted site investigation activities at three of four former waste disposal sites at the Naval Submarine Base (NSB), in Kings Bay, Georgia. This technical memorandum is the last of five technical memoranda associated with the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) and Site Inspection (SI) that will continue into calendar year 1993. The RFI/SI field program and preparation of this report were completed under the Comprehensive Long-Term Environmental Action Navy (CLEAN) contract (contract number N62467-89-D-0317, Contract Task Order [CTO] Number 041) between SOUTHNAVFACENGCOM and ABB-ES.

Groundwater sampling event No. 5 at Site 11 included collection of 11 groundwater samples, including two duplicate samples. Samples were submitted to CH2M HILL Laboratories in Montgomery, Alabama, for analysis of a modified list of Appendix IX parameters. The following paragraphs summarize the analytical results for groundwater samples collected from Site 11 during the fifth groundwater sampling event.

VOCs detected in groundwater samples collected from Site 11 during the fifth sampling event include vinyl chloride, chloroethane, 1,2-dichloroethene, toluene, ethylbenzene, xylenes, chlorobenzene, and 1,4-dichlorobenzene. The concentrations of vinyl chloride in monitoring well KBA-11-2 exceeded the Federal Primary Drinking Water Standard Maximum Contaminant Level (MCL) of 2 micrograms per liter ( $\mu\text{g}/\text{l}$ ).

A Plan of Action for the investigation of the volatile organic contaminant plume at Site 11 was developed by ABB-ES in July 1992 (ABB-ES, 1992c) and field activities for the Phase I investigation were conducted on August 4 through 16. The results of the Phase I investigation have been submitted under separate cover (ABB-ES, 1992e). Based on analytical results of the Phase I investigation at Site 11, an Interim Corrective Measure Screening Investigation Work Plan was developed (ABB-ES, 1992f) and field activities for this investigation were conducted on October 12 through November 18, 1992. The results of the Interim Corrective Measure Screening Investigation have been submitted under separate cover (ABB-ES, 1992h).

Concentrations of inorganic constituents in groundwater samples from each monitoring well at Site 11 were generally less than concentrations detected in samples collected in September 1992 and were below any Federal Primary Drinking Water Standard MCLs for inorganic constituents. Both filtered and unfiltered groundwater samples were collected during the fifth sampling event at Site 11 and concentrations of inorganics were significantly lower for filtered groundwater samples than for unfiltered samples at Site 11. The results for filtered samples are generally considered to be a more accurate representation of groundwater quality at Site 11 because of the relatively high concentrations of suspended solids in groundwater (ranging from 100 to 827 mg/l).

### ACKNOWLEDGEMENTS

In preparing this report, the personnel at ABB Environmental Services, Inc. commend the support, assistance, and cooperation provided by the personnel at NSB Kings Bay, Georgia, and SOUTHNAVFACENGCOM. In particular, ABB-ES acknowledges the outstanding effort, dedication, and professionalism provided by the following people in the preparation of this report.

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John Garner	Engineer	Environmental Coordinator	NSB Kings Bay, GA

RCRA Facility Investigation/Site Inspection  
 Technical Memorandum No. 5

Naval Installation Restoration Program  
 Naval Submarine Base  
 Kings Bay, Georgia

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## GLOSSARY OF ACRONYMS

ABB-ES	ABB Environmental Services, Inc.
CRQL	contract required quantitation limit
FID	flame ionization detector
IAS	Initial Assessment Study
IDL	Instrument Detection Limit
IR	Installation Restoration
MCL	maximum contaminant level
μg/l	micrograms per liter
mg/l	milligrams per liter
NEESA	Naval Energy and Environmental Support Activity
NSB	Naval Submarine Base
ppm	parts per million
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SI	Site Inspection
SOUTHNAV- FACENCOM	Southern Division, Naval Facilities Engineering Command
SQL	Sample Quantitation Limit
TDS	total dissolved solids
TSS	total suspended solids
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

## 1.0 INTRODUCTION

1.1 PURPOSE. ABB Environmental Services, Inc. (ABB-ES), under contract to the Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), conducted site investigation activities at three of four former waste disposal sites at the Naval Submarine Base (NSB) in Kings Bay, Georgia. This Technical Memorandum is the last of five Technical Memoranda associated with the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) and Site Inspection (SI) that will continue into calendar year 1993. The RFI/SI field program and preparation of this report were completed under the Comprehensive Long-Term Environmental Action Navy contract (contract number N62467-89-D-0317, Contract Task Order Number 041) between SOUTHNAVFACENGCOM and ABB-ES.

An Initial Assessment Study (IAS) was conducted in 1985 (C.C. Johnson and Associates, 1985) at NSB Kings Bay. The IAS identified a total of 16 waste spill sites. None of the 16 sites required further action under the Navy Installation Restoration (IR) Program; however, four sites required further action under the Hazardous Waste Facility Permit. In February 1988, a RCRA and Hazardous and Solid Waste Amendments permit was issued to NSB Kings Bay by the Georgia Department of Natural Resources, Environmental Protection Division.

The overall purpose of the RFI/SI is to characterize three of the four previously identified sites with potential for contamination and/or contaminant migration. The three sites are identified as follows:

- Site 5 - Army Reserve Disposal Area, Towhee Trail
- Site 11 - Old Camden County Landfill
- Site 16 - Army Reserve Disposal Area, Motor Missile Magazines

The fourth site, Site 12 - Army Reserve Disposal Area, Future Dry Dock, is included in the RFI/SI but no sampling or analyses will be conducted. The NSB Kings Bay Public Works Department will conduct a records search and information review to be reported in the comprehensive RFI/SI Report. The RFI/SI Report will be prepared following completion of six groundwater sampling events scheduled to extend into calendar year 1993.

The information obtained during the RFI/SI will be used to eliminate sites from further consideration within the Navy IR Program (i.e., no further action) or present the necessary information (i.e., nature and distribution of contaminants) to plan further response actions including a Corrective Measures Study and/or RCRA permit modification.

This Technical Memorandum No. 5, Volume I, presents summarized findings and results based on information and data collected from Site 11 as a result of groundwater sampling event No. 5, which was performed on November 10 through 14, 1992. Technical Memorandum No. 5, Volume II, presents summarized findings and results based on information and data collected from Sites 5 and 16 as a result of groundwater sampling event No. 5.

## 2.0 FIELD PROGRAM

2.1 GROUNDWATER SAMPLING. Groundwater sampling was performed from November 10 through 14, 1992. Groundwater samples were collected from the nine wells installed at Site 11 during the RFI/SI. Analysis of the samples included a modified list of Appendix IX parameters. Laboratory services were provided by CH2M HILL Laboratories, Inc., in Montgomery, Alabama. Naval Energy and Environmental Support Activity (NEESA) Level C data quality objectives and deliverables were specified for the analytical program (NEESA, 1988). Results of groundwater sample analyses are discussed in Sections 3.0 and 4.0.

Upon opening each monitoring well, the headspace was screened for volatile organic compounds (VOCs) using a flame ionization detector (FID). Prior to sample collection, each well was purged of at least three well volumes. Samples were collected within 24 hours following purging. Decontaminated Teflon™ bailers were used to purge the monitoring wells and to collect samples. For unfiltered samples, groundwater was transferred from the bailer directly into labeled sample containers. For samples requiring filtration, groundwater was pumped from the bailer through a 0.45-micron filter using a Masterflex™ peristaltic pump with polyethylene tubing and then collected in a labeled sample container. ABB-ES personnel placed the filled containers on ice in ice chests immediately after collection. Chain-of-custody was initiated in the field at the time of sample collection. Samples were shipped via overnight courier service to the laboratory on the date of collection.

Appropriate preservatives were added to the empty sample containers by the laboratory before delivery of the containers to the project. Following sample collection, ABB-ES personnel checked pH values of an aliquot of all preserved samples except VOC samples. Samples for cyanide analysis were also checked for sulfide interference by testing an aliquot of the sample with lead acetate test paper.

Field parameters for groundwater samples included pH, conductivity, and temperature.

### 3.0 ANALYTICAL PROGRAM

This section summarizes the analytical program for groundwater samples collected from monitoring wells at Site 11 during groundwater sampling event No. 5 at NSB Kings Bay. In addition, it presents an assessment of data quality and useability.

3.1 CHEMICAL ANALYSES. Sampling activities during the fifth groundwater sampling event at NSB Kings Bay included collection of 11 groundwater samples, including two duplicate samples. All samples were collected in accordance with procedures outlined in the Quality Assurance Project Plan, Appendix A of the NSB Kings Bay Work Plan (ABB-ES, 1991). Samples were submitted to CH2M HILL Laboratories in Montgomery, Alabama, for chemical analyses. Table 3-1 summarizes the sampling and analysis program for samples collected from Site 11 during the fifth sampling event. Samples were analyzed in accordance with USEPA SW-846 methods (USEPA, 1986) and NEESA Level C documentation (NEESA, 1988) for a modified list of Appendix IX VOCs, inorganic analytes (including total cyanide and sulfide), total dissolved solids (TDS), and total suspended solids (TSS). Table 3-2 is the modified list of Appendix IX compounds and corresponding U.S. Environmental Protection Agency (USEPA) analytical method numbers.

3.2 DATA QUALITY ASSESSMENT. All groundwater samples collected during the RFI/SI were properly preserved, placed in coolers, and packed with bagged ice immediately after collection. All samples remained in the custody of the field operations leader until delivery to the courier service providing overnight shipment to the laboratory. All samples were shipped, complete with chain-of-custody forms, to CH2M HILL Laboratories within 24 hours for analysis. Upon arrival at CH2M HILL, the chain-of-custody and preservation of the samples were checked with the contents of each cooler by CH2M HILL personnel. After verification, the chain-of-custody form was signed by CH2M HILL personnel and the samples accepted for analysis.

Review of the field notebook and chain-of-custody forms did not indicate any non-conformance relative to field instrument calibration or sample handling. All required field quality control (QC) samples were collected in conformance with the requirements of the USEPA and ABB-ES Quality Assurance Plans and the June 1988 NEESA "Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program" (NEESA, 1988) (Document 20.2-047B). These field QC samples included field duplicates, equipment rinseate blanks, source water blanks, and VOC trip blanks for each VOC sample shipment.

The analytical results for environmental samples collected during groundwater sampling event No. 5 were evaluated and validated according to NEESA Level C QC criteria to determine data quality and useability. The data tables included in Appendix A reflect validation according to Level C criteria. These criteria are described in Section 7.3.2 of NEESA Document 20.2-047B (NEESA 1988). The following subsections discuss analytical performance and the evaluation of field and laboratory QC samples.

Table 3-1 Summary of Sampling and Analysis Program for Site 11

Location and Type of Sampling	Laboratory Analysis		
	A	B	C
<b>Site 11</b>			
Groundwater	9	18	9
<b>Field Duplicates</b>			
Groundwater	1	2	1
<b>Quality Control Samples</b>			
Trip Blanks	2	0	0
Rinseate Blanks	2	2	2
Field Blanks	2	3	2

A - Volatile Organic Compounds (VOCs) (Method 8240)  
 B - Inorganic constituents (including cyanide and sulfide)  
 C - Total Dissolved Solids (TDS) and Total Suspended Solids (TSS)

Table 3-2 Compounds and Analytical Methods for Groundwater Sampling Event No. 5 at Site 11

---

<b>Parameter:</b>	<b>Volatile Organic Compounds (38 total)</b>	
	<b>TCL List plus 4 additional compounds</b>	
<b>Method:</b>	<b>SW-846 Method 8240</b>	
Chloromethane		cis-1,3-Dichloropropene
Bromomethane		Trichloroethene
Vinyl Chloride		Dibromochloromethane
Chloroethane		1,1,2-Trichloroethane
Methylene Chloride		Benzene
Acetone		trans-1,3-Dichloropropene
Carbon Disulfide		Bromoform
Trichlorofluoromethane		2-Hexanone
1,1-Dichloroethene		4-Methyl-2-Pentanone
1,1-Dichloroethane		Tetrachloroethene
1,2-Dichloroethene (total)		1,1,2,2-Tetrachloroethane
Chloroform		Toluene
1,2-Dichloroethane		Chlorobenzene
2-Butanone		Ethylbenzene
1,1,1-Trichloroethane		Styrene
Carbon Tetrachloride		Xylene (total)
Vinyl Acetate		1,3-Dichlorobenzene
Bromodichloromethane		1,4-Dichlorobenzene
1,2-Dichloropropane		1,2-Dichlorobenzene

<b>Parameter:</b>	<b>Appendix IX Inorganic Analytes (19 total)</b>		
<b>Method:</b>	<b>SW-846 Methods (listed in parentheses)</b>		
Antimony (6010)	Copper (6010)		Thallium (7841)
Arsenic (7060)	Lead (7421)		Vanadium (6010)
Barium (6010)	Mercury (7470)		Zinc (6010)
Beryllium (6010)	Nickel (6010)		Tin (6010)
Cadmium (6010)	Selenium (7740)		Cyanide (9010)
Chromium (6010)	Silver (6010)		Sulfide (9030)
	Cobalt (6010)		

<b>Parameter:</b>	<b>Total Dissolved Solids (TDS)/ Total Suspended Solids (TSS)</b>
<b>Method:</b>	<b>Standard Methods-- Methods 2540C and 2540D</b>

---

**3.2.1 Analytical Performance** The data review and validation were performed under subcontract to Heartland Environmental Services, Inc., St. Peters, Missouri. Review of analytical data indicated the laboratory generally met applicable analytical QC criteria for all chemical analyses. Extraction and analysis holding times for all sample lots were met.

For VOC analyses, all holding times, tuning criteria, internal standard/surrogate recoveries, precision, and accuracy criteria were met. However, analytical method blanks contained detectable concentrations of the VOCs, acetone and methylene chloride. These chemicals are common laboratory solvents and are frequently observed artifacts in laboratory method blanks. Qualifications of sample results for VOC compounds associated with blank contamination are made according to NEESA Level C QC guidelines. Table 3-3 summarizes VOC method blank analytical results. Sample results for all compounds associated with acetone and methylene chloride contamination have been qualified as undetected because sample values were less than 10 times the method blank concentration (NEESA, 1988).

For inorganic analyses, all holding times, calibration criteria, precision, and accuracy criteria (except for one duplicate result) were met. One duplicate result for zinc was outside control limits for one groundwater sample, KBA-11-2F. The associated sample quantitation limit for zinc has been qualified as estimated and flagged "UJ." Several inorganics were detected in method blanks. Table 3-3 summarizes inorganic preparation and calibration blank analytical results. Inorganic results for environmental samples, in which concentrations of metals were also found in associated blanks, are designated undetected if the concentration in the sample is below the contract required quantitation limit (CRQL) and less than five times the blank value. For sample concentrations between five and 10 times that found in a blank exhibiting negative bias for an inorganic analyte, the sample results are qualified as estimated. No qualification is required if the sample value is more than five times the blank value and there is no negative bias, or more than 10 times the blank value if there is negative bias (NEESA, 1988). All sample results qualified as estimated are considered useable data.

**3.2.2 Evaluation of Field QC Samples** Three field blanks, two trip blanks, and two rinseate blanks were collected during the fifth groundwater sampling event at Site 11. One field blank, BS-13-FB, represents organic-free, deionized water used as a final rinse during equipment decontamination procedures, and a second field blank, BS-15-FB, represents regular deionized water used as an intermediate rinse during equipment decontamination procedures. The third field blank, BS-14-FB, is a filter blank that represents organic-free, deionized water passed through a 0.45-micron filter. The two equipment rinseate samples, BS-27-ER and BS-28-ER, were collected during decontamination procedures involving Teflon™ bailers.

No VOCs were detected in trip blanks, rinseate blanks, or source water blanks. Several inorganics were detected in field blanks and rinseate blanks as shown in Table 3-4. Concentrations for all analytes are below their respective CRQLs. Blanks containing inorganic analytes below the CRQL are below any regulatory limit in water, but are considered in the evaluation of environmental samples.

Review of the chemical concentrations in groundwater field duplicates exhibited agreement. Table 4-2 in Section 4.0 of this document summarizes compounds detected in duplicate groundwater samples collected at Site 11. During field duplicate comparisons, where an analyte was not detected in one groundwater

Table 3-3 Summary of Organic Analyses of Method Blanks and Inorganic Analyses of Preparation Blanks

Blank Analysis Results				
Method Blank ID	Compound	Concentration	CRQL <sup>a</sup>	Associated Samples
<b>Volatile Organic Chemical Aqueous Analysis (µg/l)</b>				
VBLKW1	Methylene chloride	3 J	5	KBA-11-1, KBA-11-2,
	Acetone	5 J	10	KBA-11-2D, KBA-11-3, KBA-11-4, KBA-11-5, KBA-11-7, KBA-11-8, KBA-11-9, BS-27-ER, BT-28-FB, BT-29-FB
VBLKW2	Methylene chloride	10	5	BS-28-ER, KBA-11-6
	Acetone	4 J	10	
<b>Inorganic Aqueous Analysis (µg/l)</b>				
23248	Barium	0.57 J	200	KBA-11-1, KBA-11-1F,
	Mercury	0.11 J	0.2	KBA-11-2, KBA-11-2F, KBA-11-2D, KBA-11-2DF,
	Arsenic	-2.21	10	KBA-11-8, KBA-11-8F, KBA-11-9, KBA-11-9F, BS-27-ER
23266	Antimony	-13.72 J	60	KBA-11-3, KBA-11-3F, KBA-11-4, KBA-11-4F, KBA-11-5, KBA-11-5F, KBA-11-6, KBA-11-6F, KBA-11-7, KBA-11-7F, BS-28-ER
23285	Cadmium	-8.52		BS-13-FB, BS-14-FB,
	Nickel	-5.59		BS-15-FB

Notes:

<sup>a</sup>Contract required quantitation limit

µg/l = micrograms per liter

J = indicates that the reported concentration is estimated because it is below the SQL

Table 3-4 Summary of Inorganic Analyses of Rinseate Blanks and Field Blanks

Compounds Detected	Rinseate Blanks ( $\mu\text{g/l}$ )		Field Blanks ( $\mu\text{g/l}$ )		
	BS-27-ER	BS-28-ER	BS-13-FB	BS-14-FB	BS-15-FB
Barium	0.86 U	1.0 U	2.8 J	0.65 U	2.6 J
Chromium	2.9 U	2.9 U	2.9 U	2.9 U	3.7 J
Lead	1.8 J	1.4 U	1.4 U	1.4 U	1.4 U
Zinc	9.6 U	9.6 U	9.6 U	9.6 U	10.1 J
Cyanide	0.98 J	0.84 U	0.84 U	0.84 U	0.84 U

Notes:

J = estimated value

U = not detected at the reported value

$\mu\text{g/l}$  = micrograms per liter

replicate, it was present at less than three times the quantitation limit in the duplicate. Variation in groundwater replicate results is common when an analyte is present in the replicated samples at or near the detection limit. Groundwater replication for inorganic analytes may also vary by factors of two to five times because of the variation in the amount of suspended solids in each sample and the nature of the inorganic constituents sorbed to those suspended solids.

#### 4.0 RESULTS OF INVESTIGATIONS

The purpose of Section 4.0 is to present the analytical results of groundwater samples collected during the fifth groundwater sampling event at Site 11, Old Camden County Landfill, in November 1992. Technical Memorandum No. 1 (ABB-ES, 1992a) presents discussions of the RFI/SI field program, including analyses of soil samples from Site 11 and groundwater sampling event No. 1. Technical Memoranda Nos. 2, 3, and 4 (ABB-ES, 1992b, d, and g) present results from the second, third, and fourth groundwater sampling events.

The following subsections discuss comparison of analytical data with data associated with previous sampling events at Site 11. Appendix A contains tables of validated analytical data for samples collected in November 1992 at Site 11. Analyses were performed by CH2M HILL Laboratories under subcontract to ABB-ES. Appendix B contains analytical data tables for compounds detected in groundwater samples collected during the first four sampling events.

4.1 SITE 11, OLD CAMDEN COUNTY LANDFILL. On November 10, 1992, groundwater level measurements were taken from nine monitoring wells at Site 11. Figure 4-1 is a groundwater potentiometric surface map developed from these measurements. The configuration of the potentiometric surface and the groundwater flow direction are generally unchanged from previous sampling events.

The headspace of monitoring wells at Site 11 were analyzed for VOCs using an FID; however, no VOCs were detected (Table 4-1). Field measurements of pH, specific conductance, and temperature were collected during purging of monitoring wells. Table 4-1 summarizes field measurements collected during purging of monitoring wells at Site 11. Purging continued until at least three well volumes were removed, and field parameters stabilized to within 10 percent. The final measurements of pH, specific conductance, and temperature are considered the measurements of record for the monitoring wells (USEPA, 1991).

Eleven groundwater samples, including two duplicate samples, were collected from nine monitoring wells at Site 11. Groundwater samples were analyzed for VOCs, TDS, TSS, and inorganic analytes. Both filtered and unfiltered groundwater samples were collected for inorganic analysis. Table 3-2 lists specific compounds analyzed in groundwater samples collected during sampling event No. 5. Table 4-2 summarizes analytical data for compounds detected in groundwater samples collected from Site 11. Section 5.0 of this document describes the analytical program for sampling event No. 6.

4.1.1 Volatile Organic Compounds in Groundwater VOCs were detected in groundwater samples collected from two monitoring wells, KBA-11-2 and KBA-11-3 and were also detected in these monitoring wells during the first four groundwater sampling events. As shown in Table 4-2, concentrations of chlorobenzene and 1,4-dichlorobenzene in monitoring well KBA-11-3 were 3 J micrograms per liter ( $\mu\text{g}/\text{l}$ ) and 28  $\mu\text{g}/\text{l}$ , respectively. Chlorobenzene and 1,4-dichlorobenzene were also detected in KBA-11-3 during previous sampling events.

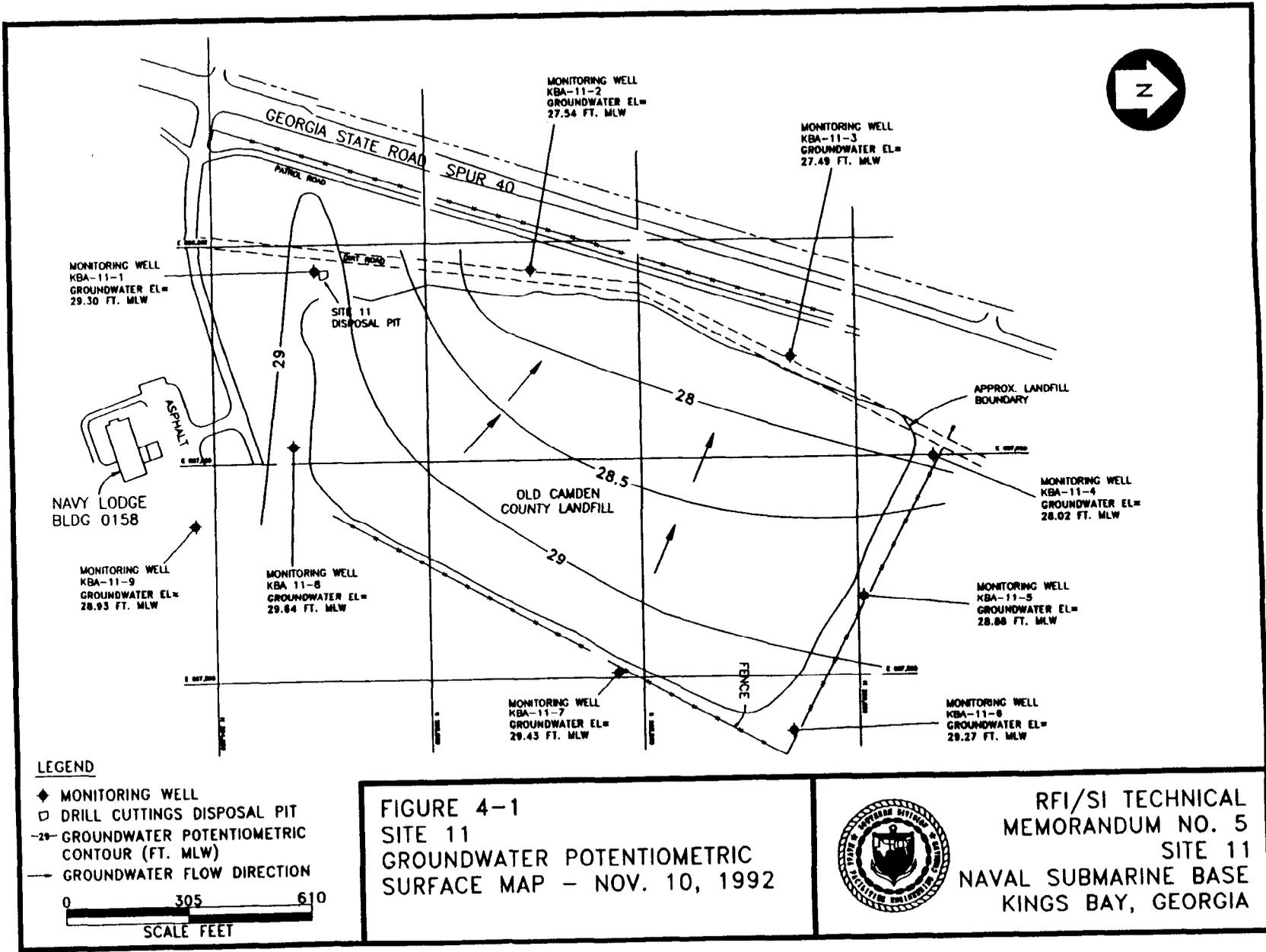


Table 4-1 Summary of Field Measurements for Monitoring Wells at Site 11

Monitoring Well No.	FID Headspace Data (ppm)	Field Data <sup>1</sup>	Well Volume No.				Total Purge Vol. (gal)
			1	2	3	4	
KBA-11-1	0	pH	5.26	4.78	4.78	4.75	4.0
		Cond.	41	44	50	53	
		Temp.	72.1	72.2	72.6	72.7	
KBA-11-2	0	pH	6.34	6.24	6.37	6.22	4.0
		Cond.	253	270	240	269	
		Temp.	71.8	72.5	71.9	72.4	
KBA-11-3	0	pH	6.33	6.23	6.23		3.9
		Cond.	512	600	570		
		Temp.	72.6	73.3	73.1		
KBA-11-4	0	pH	5.16	5.29	5.31		4.0
		Cond.	582	353	369		
		Temp.	73.2	73.1	73.0		
KBA-11-5	0	pH	5.50	5.38	5.35		3.9
		Cond.	44	44	44		
		Temp.	73.9	74.4	74.7		
KBA-11-6	0	pH	4.90	4.9	4.81		3.6
		Cond.	47	43	44		
		Temp.	74.6	74.8	75.2		
KBA-11-7	0	pH	5.08	5.12	4.96	4.98	4.0
		Cond.	46	51	44	40	
		Temp.	74.6	74.0	74.7	75.0	
KBA-11-8	0	pH	6.15	6.03	6.06	6.06	4.0
		Cond.	529	620	580	595	
		Temp.	75.9	76.1	76.0	75.9	
KBA-11-9	0	pH	5.51	5.57	5.56		4.3
		Cond.	69	64	66		
		Temp.	72.0	72.0	72.5		

Notes:

FID = flame ionization detector

ppm = parts per million

error = analyzed, but readings were erroneous because of instrument malfunction. Instrument replaced.

1) Units are standard units (s.u.) for pH, micromhos per centimeter ( $\mu\text{mhos/cm}$ ) for specific conductance, and degrees Fahrenheit ( $^{\circ}\text{F}$ ) for temperature.

Table 4-2 Summary of Compounds Detected in Groundwater Samples Collected from Site 11'

Compounds Detected		Monitoring Well Number										
		CRQL	KBA-11-1	11-2	11-2D	11-3	11-4	11-5	11-6	11-7	11-8	11-9
<b>APPENDIX IX VOCs (µg/L)</b>												
Vinyl Chloride		10	10 U	140	160	10 U						
Chloroethane <sup>2</sup>		10	10 U	3 J	3 J	10 U						
1,2-Dichloroethene		5	5 U	11	13	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene <sup>2</sup>		5	5 U	5 U	3 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene <sup>2</sup>		5	5 U	5 U	5 U	3 J	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene <sup>2</sup>		5	5 U	1 J	1 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Xylenes (total) <sup>2</sup>		5	5 U	4 J	2 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,4-Dichlorobenzene <sup>2</sup>		5	5 U	1 J	1 J	28	5 U	5 U	5 U	5 U	5 U	5 U
<b>APPENDIX IX Inorganics (µg/L)</b>												
Arsenic <sup>2</sup>	unfiltered	10	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	2.1 J	1.0 U	1.0 U	1.0 U	1.2 J	1.0 UJ
	filtered		1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 UJ					
Barium <sup>2</sup>	unfiltered	200	30.7 J	15.5 J	14.8 J	24.6 J	33.2 J	36.5 J	24.3 J	55.8 J	24.2 J	35.6 J
	filtered		19.7 J	5.1 J	5.3 J	9.9 J	12.4 J	5.0 J	10.2 J	8.6 J	18.4 J	5.4 J
Beryllium <sup>2</sup>	unfiltered	5	0.51 J	0.41 J	0.35 J	0.29 J	1.2 J	0.27 J	0.30 J	0.80 J	0.56 J	1.4 J
	filtered		0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.25 J
Chromium <sup>2</sup>	unfiltered	10	25.1	15.1	15.3	14.5	51.4	29.5	17.4	73.3	21.1	48.3
	filtered		2.9 U	9.0 J	4.2 J	2.9 U						
Cobalt <sup>2</sup>	unfiltered	50	3.3 U	3.3 U	3.3 U	3.3 U	4.2 J	3.3 U	3.3 U	3.3 U	4.1 J	3.3 U
	filtered		3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
Copper <sup>2</sup>	unfiltered	25	10.0 J	7.7 J	5.7 J	6.2 J	15.0 J	20.2 J	7.3 J	17.6 J	16.6 J	17.5 J
	filtered		2.3 U	2.3 U	2.9 J	2.6 J	2.3 U	2.3 U	2.3 U	2.9 J	4.0 J	2.3 U
Lead <sup>2</sup>	unfiltered	3	11.1	6.6	5.0	7.2	7.9	10.5	4.0	4.7	9.2	11.4
	filtered		1.4 U	1.4 U	1.4 U	1.4 U	2.4 J	1.4 U	1.4 U	1.4 U	10.1	1.8 J
Mercury <sup>2</sup>	unfiltered	0.2	0.17 U	0.24 U	0.11 U	0.14 J	0.22	0.17 J	0.08 U	0.31	0.20 U	0.38 U
	filtered		0.08 U	0.08 U	0.31 U	0.08 U	0.13 U	0.14 U				
Nickel <sup>2</sup>	unfiltered	40	8.1 J	7.4 J	5.7 J	5.3 U	11.5 J	14.4 J	5.3 U	8.9 J	7.7 J	5.3 U
	filtered		11.0 J	6.5 J	5.3 U	5.3 U	9.4 J	5.3 U	5.3 U	9.0 J	5.3 U	5.3 U

See notes at the end of the table.

Table 4-2 Summary of Compounds Detected in Groundwater Samples Collected from Site 11<sup>1</sup> (continued)

Compounds Detected		Monitoring Well Number										
		CRQL	KBA-11-1	11-2	11-2D	11-3	11-4	11-5	11-6	11-7	11-8	11-9
<b>APPENDIX IX Inorganics (µg/l)</b>												
Selenium <sup>2</sup>	unfiltered	5	2.1 U	2.1 U	2.6 J	3.0 J	4.3 J	2.1 U	2.1 U	2.1 U	2.1 U	4.2 J
	filtered		2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
Silver <sup>1</sup>	unfiltered	10	2.0 U	2.0 U	2.4 J	2.0 U						
	filtered		2.0 U	2.0 U	2.0 J	2.0 U						
Vanadium <sup>2</sup>	unfiltered	50	9.1 J	8.0 J	9.5 J	12.5 J	30.0 J	19.4 J	8.4 J	23.7 J	12.8 J	33.3 J
	filtered		2.6 U	4.3 J	5.1 J	2.6 U	2.6 U	2.6 U	2.6 U	2.7 J	2.6 U	3.9 J
Zinc <sup>2,4</sup>	unfiltered	20	28.9	29.6	12.8 J	17.3 J	43.3	69.3	27.4	19.0 J	19.7 J	24.6
	filtered		9.6 U	9.6 UJ	9.6 U	9.6 U	9.6 U	25.8	13.6 J	10.2 J	12.9 J	9.6 U
Cyanide <sup>2</sup>	unfiltered	10	1.3 J	3.1 J	3.2 J	4.6 J	0.84 U	0.84 U	0.84 U	0.98 J	5.2 J	2.7 J
	filtered		0.84 U	0.84 U	2.2 J	3.7 J	1.9 J	1.5 J	1.4 J	1.1 J	3.0 J	1.6 J
Sulfide	unfiltered	100	100 U	200	200	300	100 U	200	100 U	200	100 U	300
	filtered		100 U	100	100 U	300	100 U	100 U	100 U	100 U	200	100 U
<b>PHYSICAL PARAMETERS</b>												
Total Solids (mg/l)			128	409	317	891	2897	434	232	683	541	264
TDS (mg/l)			28	240	130	627	2070	81	16	10 U	321	10 U
TSS (mg/l)			100	169	187	264	827	353	216	673	220	254
% TSS			78	41	59	30	29	81	93	99	41	96

**Notes:**

CRQL = Contract Required Quantitation Limit

U = not detected above or below CRQL

µg/l = micrograms per liter

VOCs = volatile organic compounds

<sup>1</sup> Groundwater samples were analyzed for VOCs and inorganic constituents only.<sup>2</sup> Sample results flagged J as estimated because concentration is less than the CRQL.<sup>3</sup> Sample quantitation limits flagged UJ as estimated because the associated preparation blank exhibited negative bias for arsenic.<sup>4</sup> Sample quantitation limit flagged UJ as estimated because a duplicate analysis for zinc was outside control limits.

Vinyl chloride, chloroethane, 1,2-dichloroethene, toluene, and xylenes were detected in duplicate samples from monitoring well KBA-11-2 and were also detected in KBA-11-2 during previous sampling events. Ethylbenzene and 1,4-dichlorobenzene were detected at 1 J  $\mu\text{g}/\text{l}$  in samples collected from KBA-11-2, but were not detected in KBA-11-2 during previous sampling events.

Concentrations of vinyl chloride in duplicate samples collected from monitoring well KBA-11-2 were 140  $\mu\text{g}/\text{l}$  and 160  $\mu\text{g}/\text{l}$ . Vinyl chloride was detected in well KBA-11-2 during the first four sampling events at concentrations ranging from 15 to 150  $\mu\text{g}/\text{l}$ . The Federal Primary Drinking Water Standard Maximum Contaminant Level (MCL) and the Georgia Drinking Water Standard for vinyl chloride is 2  $\mu\text{g}/\text{l}$ .

Based on analytical results for samples collected from KBA-11-2 during the second sampling event (July 1992), SOUTHNAVFACENCOM and NSB Kings Bay elected to take immediate measures to evaluate the vinyl chloride contaminant plume. A Plan of Action for this investigation was developed by ABB-ES in July 1992 (ABB-ES, 1992c) and field activities for a Phase I investigation were conducted on August 4 through 16, 1992. Field activities included collection of groundwater samples and stratigraphic characterization using cone penetrometer testing. The results of the Phase I investigation have been submitted under separate cover (ABB-ES, 1992e). Based on analytical results of the Phase I investigation at Site 11, an Interim Corrective Measure Screening Investigation Work Plan was developed (ABB-ES, 1992f) and field activities for this investigation were conducted on October 12 through November 18, 1992. The results of the Interim Corrective Measure Screening Investigation have been submitted under separate cover (ABB-ES, 1992h).

**4.1.2 Inorganic Constituents in Groundwater** With few exceptions, concentrations of inorganic constituents in groundwater samples from each monitoring well at Site 11 were less than concentrations detected in samples collected during the fourth sampling event in September 1992. Decreased concentrations were observed in groundwater samples from both upgradient and downgradient monitoring wells. Therefore, the decrease in concentrations for these constituents may be caused by seasonal variations or decreased concentrations of TDS and TSS in groundwater samples collected during sampling event No. 5.

Both filtered and unfiltered groundwater samples were collected for inorganic analyses from the nine monitoring wells at Site 11. The purpose of collecting and analyzing filtered and unfiltered samples was to establish what fraction of the total concentration of inorganics in groundwater samples is attributable to suspended particulates. Groundwater samples from Site 11 were also analyzed for TDS and TSS to determine what percentage of the total solids in groundwater represent suspended particulates.

TDS and TSS results for groundwater samples are shown in Table 4-2. Total solids (the sum of TDS and TSS) in groundwater ranged from 128 milligrams per liter (mg/l) in KBA-11-1 to 2,897 mg/l in KBA-11-4. The fraction of total solids in groundwater that represents suspended solids ranged from 30 percent (264 mg/l) for KBA-11-3 to 99 percent (673 mg/l) for KBA-11-7. With two exceptions, the total amount of solids and suspended solids in the upgradient monitoring wells KBA-11-1, KBA-11-8, and KBA-11-9 were comparable to the solids found in downgradient wells. The concentration of TDS in two downgradient monitoring wells, KBA-11-3 (627 mg/l) and KBA-11-4 (2070 mg/l) and the concentration of TSS in KBA-11-4 (827 mg/l) exceeded concentrations detected in upgradient groundwater samples. With the exception of KBA-11-4, concentrations of TDS and TSS in all monitoring wells at Site 11 significantly decreased when compared to

concentrations detected in samples collected from these wells during the fourth sampling event. The fluctuation in concentrations of TDS and TSS may be attributable to seasonal variations in the aquifer.

The concentrations of inorganic constituents detected in unfiltered samples collected from downgradient monitoring wells were compared to concentrations detected in upgradient, unfiltered groundwater samples. The following paragraphs discuss general observations regarding the constituents and concentrations detected in filtered and unfiltered samples collected in November 1992. Table 4-2 summarizes inorganic constituents detected in groundwater samples collected during sampling event No.5.

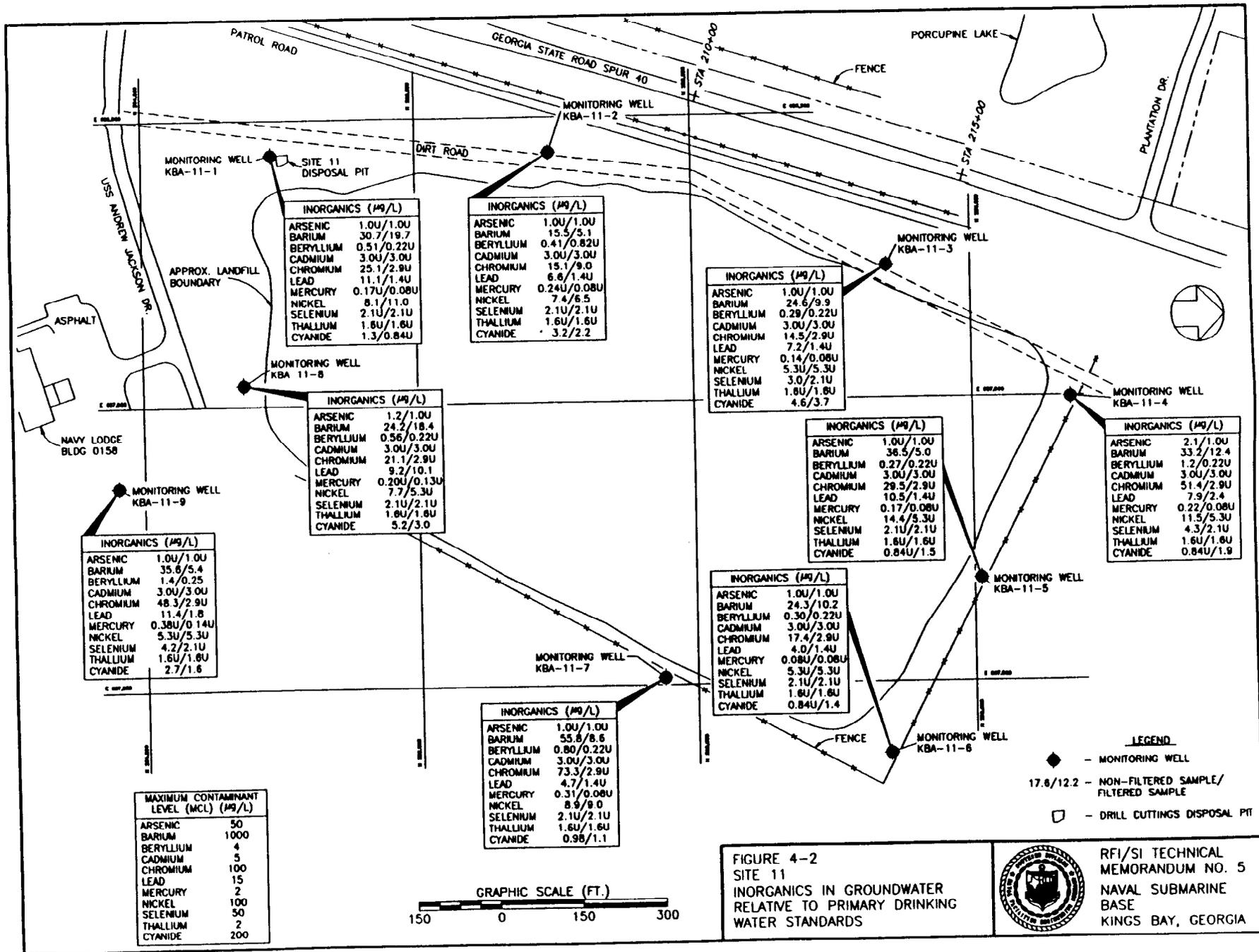
Arsenic, cobalt, nickel, selenium, and zinc were detected in an unfiltered sample collected from KBA-11-4 at concentrations exceeding upgradient concentrations. However, concentrations were less than three times corresponding upgradient concentrations. Comparisons of downgradient concentrations to three times upgradient concentrations are made based on guidance criteria for the determination of an observed release of a chemical constituent to the environment (USEPA, 1992). Arsenic, cobalt, selenium, and zinc were not detected in the filtered sample collected from KBA-11-4 and the concentration of lead in the filtered sample, 9.4 J  $\mu\text{g}/\text{l}$ , did not exceed concentrations detected in filtered samples collected from upgradient wells.

Zinc was detected in both the unfiltered sample and filtered sample collected from KBA-11-5 at concentrations exceeding upgradient concentrations. However, concentrations were less than three times corresponding upgradient concentrations. Copper and nickel were also detected in the unfiltered sample collected from KBA-11-5 at concentrations exceeding upgradient concentrations. However, concentrations were less than three times corresponding upgradient concentrations. Copper and nickel were not detected in the filtered sample collected from KBA-11-5.

Silver was detected in an unfiltered sample and filtered sample collected from KBA-11-2 at 2.4 J  $\mu\text{g}/\text{l}$  and 2.0 J  $\mu\text{g}/\text{l}$ , respectively. Silver was not detected in filtered and unfiltered samples collected from upgradient wells at Site 11 and was also not detected in replicate samples collected from well KBA-11-2. The concentrations of silver detected in KBA-11-2 are well below the CRQL of 10  $\mu\text{g}/\text{l}$  and are at the Instrument Detection Limit of 2.0  $\mu\text{g}/\text{l}$ .

In general, the results for the filtered groundwater samples are considered to be a more accurate representation of groundwater quality at Site 11 because of the relatively high percentage of suspended solids in unfiltered samples.

Concentrations of inorganic constituents in unfiltered groundwater samples collected from Site 11 were compared to Federal Primary Drinking Water Standard MCLs. Appendix C presents inorganic data for unfiltered groundwater samples collected at Site 11 during the first five sampling events. Data are presented in bar chart form for eleven of the twelve inorganic constituents regulated under the Safe Drinking Water Act. Figure 4-2 summarizes concentrations of inorganics having primary MCLs for the filtered and unfiltered groundwater samples collected at Site 11 during the fifth sampling event. Environmental data for one inorganic constituent, antimony, could not be accurately compared to the corresponding primary MCL of 6  $\mu\text{g}/\text{l}$  because this MCL is less than the method detection limit for antimony (10.7  $\mu\text{g}/\text{l}$ ). Antimony was not detected above the method detection



limit in any of the groundwater samples collected from Site 11. The status of antimony as a site-related contaminant at Site 11 will be evaluated through statistical analysis of the data obtained from the six groundwater sampling events.

## 5.0 SUMMARY

This section summarizes results from the fifth groundwater sampling event at Site 11 and outlines the groundwater monitoring analytical program for groundwater sampling event No. 6 at Site 11. The analytical program has been developed based on information obtained from analysis of soil samples collected during the RFI/SI field program and five groundwater sampling events conducted at NSB, Kings Bay, Georgia.

Groundwater samples collected during the fifth groundwater sampling event at Site 11 were analyzed for a modified list of Appendix IX constituents, including VOCs, inorganic constituents, TDS, and TSS.

VOCs detected in groundwater samples collected from Site 11 during the fifth sampling event include vinyl chloride, chloroethane, 1,2-dichloroethene, toluene, ethylbenzene, xylenes, chlorobenzene, and 1,4-dichlorobenzene. The concentrations of vinyl chloride in monitoring well KBA-11-2 exceeded the Federal and State Drinking Water MCL of 2  $\mu\text{g}/\text{l}$ .

A Plan of Action for the investigation of the volatile organic contaminant plume at Site 11 was developed by ABB-ES in July 1992 (ABB-ES, 1992c) and field activities for the Phase I investigation were conducted on August 4 through 16. The results of the Phase I investigation have been submitted under separate cover (ABB-ES, 1992e). Based on analytical results of the Phase I investigation at Site 11, an Interim Corrective Measure Screening Investigation Work Plan was developed (ABB-ES, 1992f) and field activities for this investigation were conducted on October 12 through November 18, 1992. The results of the Interim Corrective Measure Screening Investigation have been submitted under separate cover (ABB-ES, 1992h).

Concentrations of inorganic constituents in groundwater samples from each monitoring well at Site 11 were generally less than concentrations detected in samples collected in September 1992 and were below any Federal Primary Drinking Water Standard MCLs for inorganic constituents. Both filtered and unfiltered groundwater samples were collected during the fifth sampling event at Site 11 and concentrations of inorganics were significantly lower for filtered groundwater samples than for unfiltered samples at Site 11. The results for filtered samples are generally considered to be a more accurate representation of groundwater quality at Site 11 because of the relatively high concentrations of suspended solids in groundwater (ranging from 100 to 827  $\text{mg}/\text{l}$ ).

Table 5-1 is a summary of the sampling and analysis program for groundwater sampling event No. 6. Table 5-2 lists the compounds and analytical methods included in the analytical program for groundwater sampling event No. 6 at Site 11.

Table 5-1 Summary of Sampling and Analysis Program for Groundwater Sampling Event No. 6 at Site 11

Location and Type of Sampling	Laboratory Analysis		
	A	B	C
<b>Site 11</b>			
Groundwater	9	18	9
<b>Field Duplicates</b>			
Groundwater	1	2	1
<b>Quality Control Samples</b>			
Trip Blanks	2	0	0
Rinseate Blanks	2	2	2
Field Blanks	2	3	2

A - Volatile Organic Compounds (VOCs) (Method 8240)  
 B - Inorganic constituents (including cyanide and sulfide)  
 C - Total Dissolved Solids (TDS) and Total Suspended Solids (TSS)

Table 5-2 Compounds and Analytical Methods for Groundwater Sampling Event No. 6 at Site 11

**Parameter:** Volatile Organic Compounds (38 total)  
**TCL List plus 4 additional compounds**  
**Method:** SW-846 Method 8240

Chloromethane	cis-1,3-Dichloropropene
Bromomethane	Trichloroethene
Vinyl Chloride	Dibromochloromethane
Chloroethane	1,1,2-Trichloroethane
Methylene Chloride	Benzene
Acetone	trans-1,3-Dichloropropene
Carbon Disulfide	Bromoform
Trichlorofluoromethane	2-Hexanone
1,1-Dichloroethene	4-Methyl-2-Pentanone
1,1-Dichloroethane	Tetrachloroethene
1,2-Dichloroethene (total)	1,1,2,2-Tetrachloroethane
Chloroform	Toluene
1,2-Dichloroethane	Chlorobenzene
2-Butanone	Ethylbenzene
1,1,1-Trichloroethane	Styrene
Carbon Tetrachloride	Xylene (total)
Vinyl Acetate	1,3-Dichlorobenzene
Bromodichloromethane	1,4-Dichlorobenzene
1,2-Dichloropropane	1,2-Dichlorobenzene

**Parameter:** Appendix IX Inorganic Analytes (19 total)  
**Method:** SW-846 Methods (listed in parentheses)

Antimony (6010)	Copper (6010)	Thallium (7841)
Arsenic (7060)	Lead (7421)	Vanadium (6010)
Barium (6010)	Mercury (7470)	Zinc (6010)
Beryllium (6010)	Nickel (6010)	Tin (6010)
Cadmium (6010)	Selenium (7740)	Cyanide (9010)
Chromium (6010)	Silver (6010)	Sulfide (9030)
	Cobalt (6010)	

**Parameter:** Total Dissolved Solids (TDS)/ Total Suspended Solids (TSS)  
**Method:** Standard Methods-- Methods 2540C and 2540D

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**APPENDIX A  
ANALYTICAL DATA VALIDATION  
SUMMARY TABLES  
SAMPLE EVENT NO. 5  
NOVEMBER 1992**

## DEFINITION OF DATA QUALIFIERS

### Organic Data Qualifiers

- J - Indicates an estimated concentration because results are either below the concentration required detection level (CRQL) or quality control criteria were not met.
- U - Indicates that compound was analyzed but not detected.
- UJ - Indicates that quantitation level was estimated because QC criteria were not met.
- NJ - Presumptive evidence for the presence of a compound at an estimated value.
- E - Indicates that the analyte concentration exceeded the calibration range of the GC/MS and re-analysis of diluted sample within calibration range.
- D - Indicates that sample concentration was obtained by dilution to bring result within calibration range.
- X - Total concentration of two indistinguishable isomers (i.e., 3-Methylphenol and 4-Methylphenol).
- UR - Indicates that the reported detection limit is unusable because QA criteria were not met.

### Inorganic Data Qualifiers

- J - Indicates an estimated concentration because results are either below the concentration required detection level (CRQL) or quality control criteria were not met.
- U - Indicates that compound was analyzed but not detected.
- UJ - Indicates that quantitation level was estimated because QC criteria were not met.
- E - The reported concentration is estimated because of the presence of an interference.
- UR - Indicates that the reported detection limit is unusable because QC criteria were not met.

PROJECT: NSB KINGS BAY, GEORGIA		VOLATILE AQUEOUS ANALYSES (ug/l)					Validation/Summary Table	
SAMPLE LOCATION:	KBA-11-1	KBA-11-2	KBA-11-2D	KBA-11-3	KBA-11-4	KBA-11-5	KBA-11-6	
LAB NUMBER:	34467004	34467005	34467006	3446007	34464006	34464005	34464004	
DATE SAMPLED:	11/10/92	11/10/92	11/10/92	11/11/92	11/11/92	11/11/92	11/11/92	
DATE ANALYZED:	11/24/92	11/24/92	11/24/92	11/24/92	11/24/92	11/24/92	11/24/92	
DILUTION FACTOR:	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
VOLATILES -- METHOD 8240								
ANALYTE	CRQL							
Chloromethane	10	10 U	10 U	10 U	10 U	10 U	10 U	
Bromomethane	10	10 U	10 U	10 U	10 U	10 U	10 U	
Vinyl Chloride	10	10 U	140	160	10 U	10 U	10 U	
Chloroethane	10	10 U	3 J	3 J	10 U	10 U	10 U	
Methylene Chloride	5	5 U	5 U	5 U	13 U	13 U	5 U	
Acetone	10	31 U	10 U	10 U	10 U	10 U	17 U	
Carbon Disulfide	5	5 U	5 U	5 U	5 U	5 U	5 U	
Trichlorofluoromethane	5	5 U	5 U	5 U	5 U	5 U	5 U	
1,1-Dichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	
1,1-Dichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	
1,2-Dichloroethane (total)	5	5 U	11	13	5 U	5 U	5 U	
Chloroform	5	5 U	5 U	5 U	5 U	5 U	5 U	
1,2-Dichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	
2-Butanone	10	10 U	10 U	10 U	10 U	10 U	10 U	
1,1,1-Trichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	
Carbon Tetrachloride	5	5 U	5 U	5 U	5 U	5 U	5 U	
Vinyl Acetate	10	10 U	10 U	10 U	10 U	10 U	10 U	
Bromodichloromethane	5	5 U	5 U	5 U	5 U	5 U	5 U	
1,2-Dichloropropane	5	5 U	5 U	5 U	5 U	5 U	5 U	
cis-1,3-Dichloropropene	5	5 U	5 U	5 U	5 U	5 U	5 U	
Trichloroethene	5	5 U	5 U	5 U	5 U	5 U	5 U	
Dibromochloromethane	5	5 U	5 U	5 U	5 U	5 U	5 U	
1,1,2-Trichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	
Benzene	5	5 U	5 U	5 U	5 U	5 U	5 U	
trans-1,3-Dichloropropene	5	5 U	5 U	5 U	5 U	5 U	5 U	
Bromoform	5	5 U	5 U	5 U	5 U	5 U	5 U	
2-Hexanone	10	10 U	10 U	10 U	10 U	10 U	10 U	
4-Methyl-2-Pentanone	10	10 U	10 U	10 U	10 U	10 U	10 U	
Tetrachloroethene	5	5 U	5 U	5 U	5 U	5 U	5 U	
1,1,2,2-Tetrachloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	
Toluene	5	5 U	5 U	3 J	5 U	5 U	5 U	
Chlorobenzene	5	5 U	5 U	5 U	3 J	5 U	5 U	
Ethylbenzene	5	5 U	1 J	1 J	5 U	5 U	5 U	
Styrene	5	5 U	5 U	5 U	5 U	5 U	5 U	
Xylene (total)	5	5 U	4 J	2 J	5 U	5 U	5 U	
1,3-Dichlorobenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	
1,4-Dichlorobenzene	5	5 U	1 J	1 J	28	5 U	5 U	
1,2-Dichlorobenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	

KingsBay(TM5) [Site5&16] - 93/210.PLR

A-3

PROJECT: NSB KINGS BAY, GEORGIA		VOLATILE AQUEOUS ANALYSES (ug/l)			Validation/Summary Table		
SAMPLE LOCATION:	KBA-11-7	KBA-11-8	KBA-11-9				
LAB NUMBER:	34464003	34467003	34467002				
DATE SAMPLED:	11/11/92	11/10/92	11/10/92				
DATE ANALYZED:	11/24/92	11/24/92	11/24/92				
DILUTION FACTOR:	1.0	1.0	1.0				
VOLATILES --- METHOD 8240							
ANALYTE	CRQL						
Chloromethane	10	10 U	10 U	10 U			
Bromomethane	10	10 U	10 U	10 U			
Vinyl Chloride	10	10 U	10 U	10 U			
Chloroethane	10	10 U	10 U	10 U			
Methylene Chloride	5	12 U	9 U	5 U			
Acetone	10	10 U	10 U	29 U			
Carbon Disulfide	5	5 U	5 U	5 U			
Trichlorofluoromethane	5	5 U	5 U	5 U			
1,1-Dichloroethene	5	5 U	5 U	5 U			
1,1-Dichloroethane	5	5 U	5 U	5 U			
1,2-Dichloroethene (total)	5	5 U	5 U	5 U			
Chloroform	5	5 U	5 U	5 U			
1,2-Dichloroethane	5	5 U	5 U	5 U			
2-Butanone	10	10 U	10 U	10 U			
1,1,1-Trichloroethane	5	5 U	5 U	5 U			
Carbon Tetrachloride	5	5 U	5 U	5 U			
Vinyl Acetate	10	10 U	10 U	10 U			
Bromodichloromethane	5	5 U	5 U	5 U			
1,2-Dichloropropane	5	5 U	5 U	5 U			
cis-1,3-Dichloropropene	5	5 U	5 U	5 U			
Trichloroethene	5	5 U	5 U	5 U			
Dibromochloromethane	5	5 U	5 U	5 U			
1,1,2-Trichloroethane	5	5 U	5 U	5 U			
Benzene	5	5 U	5 U	5 U			
trans-1,3-Dichloropropene	5	5 U	5 U	5 U			
Bromoform	5	5 U	5 U	5 U			
2-Hexanone	10	10 U	10 U	10 U			
4-Methyl-2-Pentanone	10	10 U	10 U	10 U			
Tetrachloroethene	5	5 U	5 U	5 U			
1,1,2,2-Tetrachloroethane	5	5 U	5 U	5 U			
Toluene	5	5 U	5 U	5 U			
Chlorobenzene	5	5 U	5 U	5 U			
Ethylbenzene	5	5 U	5 U	5 U			
Styrene	5	5 U	5 U	5 U			
Xylene (total)	5	5 U	5 U	5 U			
1,3-Dichlorobenzene	5	5 U	5 U	5 U			
1,4-Dichlorobenzene	5	5 U	5 U	5 U			
1,2-Dichlorobenzene	5	5 U	5 U	5 U			

Kings Bay (TKS) [Site 5816] - 93/210.PLR

A-4

PROJECT: NSB KINGS BAY, GEORGIA		INORGANIC AQUEOUS ANALYSES (ug/l)						Validation/Summary Table	
SAMPLE LOCATION:	KBA-11-1	KBA-11-1F	KBA-11-2	KBA-11-2F	KBA-11-2D	KBA-11-2DF	KBA-11-3		
LAB NUMBER:	23248004	23248008	23248005	23248009	23248006	23248010	23266008		
DATE SAMPLED:	11/10/92	11/10/92	11/10/92	11/10/92	11/10/92	11/10/92	11/11/92		
ANALYTE	CRQL								
Antimony	60	10.7 U	10.7 U	10.7 U	10.7 U	10.7 U	10.7 U	10.7 UJ	
Arsenic	10	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	
Barium	200	30.7 J	19.7 J	15.5 J	5.1 J	14.8 J	5.3 J	24.8 J	
Beryllium	5	0.51 J	0.22 U	0.41 J	0.22 U	0.35 J	0.22 U	0.29 J	
Cadmium	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	
Chromium	10	25.1	2.9 U	15.1	9.0 J	15.3	4.2 J	14.5	
Cobalt	50	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	
Copper	25	10.0 J	2.3 U	7.7 J	2.3 U	5.7 J	2.9 J	6.2 J	
Lead	3	11.1	1.4 U	6.6	1.4 U	5.0	1.4 U	7.2	
Mercury	0.2	0.17 U	0.08 U	0.24 U	0.08 U	0.11 U	0.31 U	0.14 J	
Nickel	40	8.1 J	11.0 J	7.4 J	6.5 J	5.7 J	5.3 U	5.3 U	
Selenium	5	2.1 U	2.1 U	2.1 U	2.1 U	2.6 J	2.1 U	3.0 J	
Silver	10	2.0 U	2.0 U	2.0 U	2.0 U	2.4 J	2.0 J	2.0 U	
Thallium	10	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	
Vanadium	50	9.1 J	2.6 U	8.0 J	4.3 J	9.5 J	5.1 J	12.5 J	
Zinc	20	28.9	9.6 U	29.6	9.6 UJ	12.8 J	9.6 U	17.3 J	
Cyanide	10	1.3 J	0.84 U	3.1 J	0.84 U	3.2 J	2.2 J	4.6 J	
Tin	200	12.7 U	12.7 U	12.7 U	12.7 U	12.7 U	15.9 J	12.7 U	
Sulfide	100	100 U	100 U	200	100	200	100 U	300	
Total Dissolved Solids (mg/L)		28	---	240	---	130	---	627	
Total Suspended Solids (mg/L)		100	---	169	---	187	---	264	

PROJECT: NSB KINGS BAY, GEORGIA		INORGANIC AQUEOUS ANALYSES (ug/l)						Validation/Summary Table	
SAMPLE LOCATION:	KBA-11-3F	KBA-11-4	KBA-11-4F	KBA-11-5	KBA-11-5F	KBA-11-6	KBA-11-6F		
LAB NUMBER:	23266012	23266007	23266011	23266006	23266010	23266005	23266009		
DATE SAMPLED:	11/11/92	11/11/92	11/11/92	11/11/92	11/11/92	11/11/92	11/11/92		
ANALYTE	CRQL								
Antimony	60	10.7 UJ	10.7 UJ	10.7 UJ	10.7 UJ	10.7 UJ	10.7 UJ	10.7 UJ	
Arsenic	10	1.0 U	2.1 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
Barium	200	9.9 J	33.2 J	12.4 J	36.5 J	5.0 J	24.3 J	10.2 J	
Beryllium	5	0.22 U	1.2 J	0.22 U	0.27 J	0.22 U	0.30 J	0.22 U	
Cadmium	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	
Chromium	10	2.9 U	51.4	2.9 U	29.5	2.9 U	17.4	2.9 U	
Cobalt	50	3.3 U	4.2 J	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	
Copper	25	2.6 J	15.0 J	2.3 U	20.2 J	2.3 U	7.3 J	2.3 U	
Lead	3	1.4 U	7.9	2.4 J	10.5	1.4 U	4.0	1.4 U	
Mercury	0.2	0.08 U	0.22	0.08 U	0.17 J	0.08 U	0.08 U	0.08 U	
Nickel	40	5.3 U	11.5 J	9.4 J	14.4 J	5.3 U	5.3 U	5.3 U	
Selenium	5	2.1 U	4.3 J	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	
Silver	10	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	
Thallium	10	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	
Vanadium	50	2.6 U	30.0 J	2.6 U	19.4 J	2.6 U	8.4 J	2.6 U	
Zinc	20	9.6 U	43.3	9.6 U	69.3	25.8	27.4	13.6 J	
Cyanide	10	3.7 J	0.84 U	1.9 J	0.84 U	1.5 J	0.84 U	1.4 J	
Tin	200	12.7 U	18.7 J	12.7 U	12.7 U	12.7 U	12.7 U	12.7 U	
Sulfide	100	300	100 U	100 U	200	100 U	100 U	100 U	
Total Dissolved Solids (mg/L)		---	2070	---	81	---	16	---	
Total Suspended Solids (mg/L)		---	827	---	353	---	216	---	

PROJECT: NSB KINGS BAY, GEORGIA		INORGANIC AQUEOUS ANALYSES (ug/l)					Validation/Summary Table	
SAMPLE LOCATION:		KBA-11-7	KBA-11-7F	KBA-11-8	KBA-11-8F	KBA-11-9	KBA-11-9F	
LAB NUMBER:		23266003	23266004	23248003	23248012	23248002	23248011	
DATE SAMPLED:		11/11/92	11/11/92	11/10/92	11/10/92	11/10/92	11/10/92	
ANALYTE	CRQL							
Antimony	60	10.7 UJ	10.7 UJ	10.7 U	10.7 U	10.7 U	10.7 U	
Arsenic	10	1.0 U	1.0 U	1.2 J	1.0 UJ	1.0 UJ	1.0 UJ	
Barium	200	55.8 J	8.6 J	24.2 J	18.4 J	35.6 J	5.4 J	
Beryllium	5	0.80 J	0.22 U	0.56 J	0.22 U	1.4 J	0.25 J	
Cadmium	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	
Chromium	10	73.3	2.9 U	21.1	2.9 U	48.3	2.9 U	
Cobalt	50	3.3 U	3.3 U	4.1 J	3.3 U	3.3 U	3.3 U	
Copper	25	17.6 J	2.9 J	16.6 J	4.0 J	17.5 J	2.3 U	
Lead	3	4.7	1.4 U	9.2	10.1	11.4	1.8 J	
Mercury	0.2	0.31	0.08 U	0.20 U	0.13 U	0.38 U	0.14 U	
Nickel	40	8.9 J	9.0 J	7.7 J	5.9 U	5.3 U	5.3 U	
Selenium	5	2.1 U	2.1 U	2.1 U	2.1 U	4.2 J	2.1 U	
Silver	10	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	
Thallium	10	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	
Vanadium	50	23.7 J	2.7 J	12.8 J	2.6 U	33.3 J	3.9 J	
Zinc	20	19.0 J	10.2 J	19.7 J	12.9 J	24.6	9.6 U	
Cyanide	10	0.98 J	1.1 J	5.2 J	3.0 J	2.7 J	1.6 J	
Tin	200	12.7 U	12.7 U	12.7 U	12.7 U	12.7 U	12.7 U	
Sulfide	100	200	100 U	100 U	200	300	100 U	
Total Dissolved Solids (mg/L)		10 U	---	321	---	10 U	---	
Total Suspended Solids (mg/L)		673	---	220	---	254	---	

Note:

--- = analysis not requested or performed  
 KBA-XX-X = unfiltered groundwater sample  
 KBA-XX-XD = duplicate, unfiltered groundwater sample  
 KBA-XX-XF = filtered groundwater sample  
 KBA-XX-XDF = duplicate, filtered groundwater sample

PROJECT: NSB KINGS BAY, GEORGIA		VOLATILE AQUEOUS ANALYSES (ug/l)					Validation/Summary Table	
SAMPLE LOCATION:	BT-28-FB	BT-29-FB	BS-27-ER	BS-28-ER	BS-13-FB	BS-15-FB		
LAB NUMBER:	34467001	34464001	34467007	34464002	34465K07	34465K08		
DATE SAMPLED:	11/10/92	11/11/92	11/10/92	11/11/92	11/12/92	11/12/92		
DATA ANALYZED:	11/24/92	11/24/92	11/24/92	11/25/92	11/25/92	11/25/92		
DILUTION FACTOR:	1.0	1.0	1.0	1.0	1.0	1.0		
VOLATILES --- METHOD 8240								
ANALYTE	CRQL							
Chloromethane	10	10U	10U	10U	10U	10U	10U	
Bromomethane	10	10U	10U	10U	10U	10U	10U	
Vinyl Chloride	10	10U	10U	10U	10U	10U	10U	
Chloroethane	10	10U	10U	10U	10U	10U	10U	
Methylene Chloride	5	5U	12U	5U	10U	10U	10U	
Acetone	10	10U	10U	10U	5U	5U	5U	
Carbon Disulfide	5	5U	5U	5U	10U	10U	10U	
Trichlorofluoromethane	5	5U	5U	5U	5U	5U	5U	
1,1-Dichloroethene	5	5U	5U	5U	5U	5U	5U	
1,1-Dichloroethane	5	5U	5U	5U	5U	5U	5U	
1,2-Dichloroethene (total)	5	5U	5U	5U	5U	5U	5U	
Chloroform	5	5U	5U	5U	5U	5U	5U	
1,2-Dichloroethane	5	5U	5U	5U	5U	5U	5U	
2-Butanone	10	10U	10U	10U	5U	5U	5U	
1,1,1-Trichloroethane	5	5U	5U	5U	10U	10U	10U	
Carbon Tetrachloride	5	5U	5U	5U	5U	5U	5U	
Vinyl Acetate	10	10U	10U	10U	5U	5U	5U	
Bromodichloromethane	5	5U	5U	5U	10U	10U	10U	
1,2-Dichloropropane	5	5U	5U	5U	5U	5U	5U	
cis-1,3-Dichloropropene	5	5U	5U	5U	5U	5U	5U	
Trichloroethene	5	5U	5U	5U	5U	5U	5U	
Dibromochloromethane	5	5U	5U	5U	5U	5U	5U	
1,1,2-Trichloroethane	5	5U	5U	5U	5U	5U	5U	
Benzene	5	5U	5U	5U	5U	5U	5U	
trans-1,3-Dichloropropene	5	5U	5U	5U	5U	5U	5U	
Bromoforn	5	5U	5U	5U	5U	5U	5U	
2-Hexanone	10	10U	10U	10U	5U	5U	5U	
4-Methyl-2-Pentanone	10	10U	10U	10U	10U	10U	10U	
Tetrachloroethene	5	5U	5U	5U	5U	5U	5U	
1,1,2,2-Tetrachloroethane	5	5U	5U	5U	5U	5U	5U	
Toluene	5	5U	5U	5U	5U	5U	5U	
Chlorobenzene	5	5U	5U	5U	5U	5U	5U	
Ethylbenzene	5	5U	5U	5U	5U	5U	5U	
Styrene	5	5U	5U	5U	5U	5U	5U	
Xylene (total)	5	5U	5U	5U	5U	5U	5U	
1,3-Dichlorobenzene	5	5U	5U	5U	5U	5U	5U	
1,4-Dichlorobenzene	5	5U	5U	5U	5U	5U	5U	
1,2-Dichlorobenzene	5	5U	5U	5U	5U	5U	5U	

PROJECT: NSB KINGS BAY, GEORGIA		INORGANIC AQUEOUS ANALYSES (ug/l)					Validation/Summary Table		
SAMPLE LOCATION:		BS-27-ER	BS-28-ER	BS-13-FB	BS-14-FB	BS-15-FB			
LAB NUMBER:		23248007	23286002	23285008	23285012	23285009			
DATE SAMPLED:		11/10/92	11/11/92	11/14/92	11/12/92	11/12/92			
ANALYTE		CRQL							
Antimony	60	10.7 U	10.7 UJ	10.7 UJ	10.7 U	10.7 U			
Arsenic	10	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U			
Barium	200	0.86 U	1.0 U	3.7 U	0.65 U	2.6 J			
Beryllium	5	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U			
Cadmium	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U			
Chromium	10	2.9 U	2.9 U	2.9 U	2.9 U	3.7 J			
Cobalt	50	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U			
Copper	25	2.3 U	2.3 U	8.8 J	2.3 UJ	2.3 UJ			
Lead	3	1.8 J	1.4 U	1.4 U	1.4 U	1.4 U			
Mercury	0.2	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U			
Nickel	40	5.3 U	5.3 U	5.3 U	5.3 UJ	5.3 UJ			
Selenium	5	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U			
Silver	10	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U			
Thallium	10	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U			
Vanadium	50	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U			
Zinc	20	9.6 U	9.6 U	12.6 J	9.6 U	10.1 J			
Cyanide	10	0.84 J	0.84 U	0.84 U	0.84 U	0.84 U			
Tin	200	12.7 U	12.7 U	12.7 U	12.7 U	12.7 U			
Sulfide	100	100 U	100 U	100 U	100 U	100 U			
Total Dissolved Solids (mg/L)		10 U	10 U	38	---	40			
Total Suspended Solids (mg/L)		12	4 U	4 U	---	4 U			

**APPENDIX B  
ANALYTICAL DATA FOR  
GROUNDWATER  
SAMPLE EVENT NOs. 1, 2, 3, and 4  
FEBRUARY 1992  
MAY 1992  
JULY 1992  
SEPTEMBER 1992**

Table B-1 Groundwater Sampling Event No. 1, Summary of Laboratory Analysis of Groundwater Samples, Collected from Site 11<sup>1</sup>

Compounds Detected	Monitoring Well Number											
	KBA-	CRQL	11-1	11-2	11-3	11-3D	11-4	11-5	11-6	11-7	11-8	11-9
<b>APPENDIX IX VOCs (µg/L)</b>												
Vinyl Chloride <sup>2</sup>		10	10 U	18	10 U	10 U	10 U	10 U	10 U	10 U	2 J	10 U
1,2-Dichloroethene		5	5 U	7	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-Pentanone		10	10 U	10 U	10 U	10 U	10 U	10 U	3 J	10 U	10 U	10 U
Chlorobenzene		5	5 U	5 U	6	7	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene <sup>2</sup>		5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1 J	5 U
Xylene (total) <sup>2</sup>		5	5 U	5 U	5 U	5 U	5 U	2 J	2 J	5 U	5	3 J
1,4-Dichlorobenzene <sup>2</sup>		5	5 U	5 U	13	15	5 U	5 U	1 J	5 U	5 U	5 U
<b>APPENDIX IX SVOCs (µg/L)</b>												
1,4-Dichlorobenzene <sup>2,3</sup>		10	10 U	10 U	4 J	7 J	10 U					
Diethylphthalate <sup>2,3</sup>		10	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	9 J	10 U
bis(2-Ethylhexyl)-Phthalate <sup>2</sup>		10	10 U	10 U	31 UJ	10 U	10 U	10 U	10 U	94	10 U	10 U
<b>APPENDIX IX Inorganics (µg/L)</b>												
Antimony <sup>2,4</sup>		60	10.9 U	10.9 UJ	11.1 J	10.9 UJ	11.4 J	10.9 U				
Arsenic <sup>2</sup>		10	1.9 J	3.5 J	2.3 U	0.69 U	0.69 U	89.0	7.3 J	16.9	7.7 J	3.5 J
Barium <sup>2</sup>		200	61.6 J	228	155 J	280	192 J	617	262	285	102 J	135 J
Beryllium <sup>2</sup>		5	0.72 J	4.3 J	2.0 J	2.9 J	5.8	10.2	4.8 J	4.1 J	2.5 J	3.0 J
Cadmium <sup>2</sup>		5	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	3.5 J	2.9 U	2.9 U	2.9 U	2.9 U
Chromium <sup>2</sup>		10	44.4 J	247	113	177	297 J	620 J	261 J	354 J	139 J	121 J
Cobalt <sup>2</sup>		50	3.6 U	5.6 J	3.9 J	5.1 J	7.4 J	16.8 J	6.5 J	5.9 J	3.6 U	3.6 U
Copper		25	26.8 U	53.5 U	41.0 U	86.5 U	68.8	384	49.0	121	62.2	43.2
1Lead <sup>2</sup>		5	12.6 J	18.1 J	18.8 J	14.8 J	24.7 J	53.5 J	16.3 J	20.4 J	16.8 J	17.6 J
Mercury		0.2	0.16 U	0.60	0.60	0.67	1.4	2.9	1.0	1.9	0.58	0.28

See notes at end of table.

Table B-1 (continued) Groundwater Sampling Event No. 1, Summary of Laboratory Analysis of Groundwater Samples, Collected from Site 11<sup>1</sup>

Compounds Detected	Monitoring Well Number											
	KBA-	CRQL	11-1	11-2	11-3	11-3D	11-4	11-5	11-6	11-7	11-8	11-9
Nickel <sup>2</sup>		40	12.8 J	32.2 J	19.6 U	42.2	41.6	107	31.2 J	44.7	18.6 J	17.0 J
Selenium		5	6.9	25.6	24.5	26.0	14.6	9.4	13.8	10.4	11.4	6.4 U
Vanadium <sup>3</sup>		50	24.8 J	94.6	87.4	138	209	314	108	143	67.8	80.2
Zinc		20	20.1 U	53.3 U	54.8 U	102	86.1	269	211	82.1	93.6	38.1
Cyanide <sup>4</sup>		10	1.8 U	1.8 U	3.0 J	1.8 U	2.3 J	1.8 U	1.8 U	1.8 U	3.8 J	1.8 U
Sulfide		100	100 U	500	600	1000	1300	700	400	3400	300	200

## Notes:

CRQL = Contract Required Quantitation Limit

U = not detected above or below CRQL

<sup>1</sup> No Appendix IX pesticides, PCBs, herbicides, or dioxins/furans were detected in groundwater samples.Data Qualifiers<sup>2</sup> Samples results flagged J as estimated because concentrations are less than the CRQL.<sup>3</sup> Samples results for KBA-11-3 flagged J/UJ as estimated because surrogate recoveries were below QC limits.<sup>4</sup> Technical Memorandum No. 1ed quantitation limits flagged UJ as estimated because matrix spike recoveries were below QC limits.<sup>5</sup> Sample results flagged J as estimated because duplicate analysis was outside QC limits.

KingsBay(TMS) Site 11-93/209, PLR  
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 Table B-2 Summary of Laboratory Analysis of Groundwater Samples Collected from Site 11<sup>1</sup> -- May 1992

Compounds Detected	Monitoring Well Number										
	CRQL	KBA-11-1	11-2	11-2D	11-3	11-4	11-5	11-6	11-7	11-8	11-9
<b>APPENDIX IX VOCs (µg/L)</b>											
Vinyl Chloride	10	10 U	64	100	10 U						
Chloroethane <sup>2</sup>	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	2 J	10 U
1,2-Dichloroethene	5	5 U	16	22	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene <sup>2</sup>	5	5 U	5 U	1 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene <sup>2</sup>	5	5 U	1 J	1 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene <sup>2</sup>	5	5 U	5 U	1 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	5	5 U	5 U	5 U	6	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total) <sup>2</sup>	5	5 U	2 J	4 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3-Dichlorobenzene	5	5 U	5 U	5 U	15	5 U	5 U	5 U	5 U	5 U	5 U
1,4-Dichlorobenzene <sup>2</sup>	5	5 U	5 U	5 U	5 U	5 U	5 U	1 J	5 U	5 U	5 U
<b>APPENDIX IX SVOCs (µg/L)</b>											
1,4-Dichlorobenzene	10	10 U	10 U	10 U	13	10 U					
bis(2-Ethylhexyl-Phthalate) <sup>2</sup>	10	10 U	10 U	10 U	31	10 U	4 J	5 J	10 U	10 U	10 U
<b>APPENDIX IX Inorganics (µg/L)</b>											
Arsenic <sup>2</sup>	10	0.70UJ	0.70UJ	3.5 UJ	0.70 U	0.70 U	0.70 U	3.5 U	0.70UJ	1.7 J	0.70UJ
Barium <sup>2</sup>	200	95.7 J	26.2 J	25.9 J	54.2 J	30.2 J	71.7 J	34.6 J	26.2 J	43.4 J	43.8 J
Beryllium <sup>2</sup>	5	2.3 J	1.7 J	1.7 J	1.1 J	2.2 J	4.0 J	2.3 J	1.7 J	1.7 J	2.3 J
Cadmium <sup>2</sup>	5	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.3 J	1.0 UJ
Chromium	10	92.8	38.1	37.2	20.8	29.0	27.1	40.5	54.6	23.8	49.1
Copper <sup>2</sup>	25	21.7 J	6.4 J	6.2 J	4.4 J	3.1 J	6.2 J	7.9 J	10.3 J	13.7 J	14.2 J
Lead <sup>2</sup>	5	23.3	4.5	5.6 J	3.9 J	3.9 J	2.9 J	4.3 J	3.8 J	4.0 J	12.2
Mercury <sup>2</sup>	0.2	0.11 J	0.10 U								

See notes at end of table.

KingsBay(TMS) [Site 11] - 93/209.PLR

Table B-2 (continued) Summary of Laboratory Analysis of Groundwater Samples Collected from Site 11<sup>1</sup> -- May 1992

Compounds Detected	Monitoring Well Number										
	CRQL	KBA-11-1	11-2	11-2D	11-3	11-4	11-5	11-6	11-7	11-8	11-9
<b>APPENDIX IX VOCs (µg/L)</b>											
Selenium <sup>2</sup>	5	5.6	2.7 J	2.9 J	3.8 J	2.4 J	0.55 J	2.5 J	3.4 J	1.7 J	5.4
Thallium <sup>2</sup>	10	0.80 U	0.80 U	0.80 U	1.6 J	0.80 U					
Vanadium <sup>2,4</sup>	50	29.9 J	20.2 J	24.5 J	44.3 J	59.4	64.5	25.7 J	25.0 J	33.2 J	42.8 J
Zinc	20	7.6 U	7.5 U	10.3 U	19.5 U	10.9 U	555	9.3 U	6.5 U	23.4 U	8.7 U
Cyanide <sup>3</sup>	10	1.8 UJ	6.1 J	6.1 J	1.8 UJ	10.8 J	1.8 UJ	1.8 UJ	1.8 UJ	26.2 J	1.8 UJ
Sulfide	100	500	2600	1000	200	300	1500	100 U	200	2900	300

Notes:  
 CRQL = Contract Required Quantitation Limit  
 U = not detected above or below CRQL  
<sup>1</sup> No Appendix IX pesticides, PCBs, herbicides, or dioxins/furans were detected in groundwater samples.

Data Qualifiers  
<sup>2</sup> Samples results flagged J as estimated because concentrations are less than the CRQL.  
<sup>3</sup> Samples quantitation limits flagged UJ as estimated and sample results flagged J as estimated because matrix spike recoveries were below QC limits.  
<sup>4</sup> Samples quantitation limits flagged UJ as estimated and sample results flagged J as estimated because the corresponding preparation blank exhibited negative bias for cadmium and vanadium.

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Table B-3 Summary of Laboratory Analysis of Groundwater Samples Collected from Site 11<sup>1</sup> -- July 1992

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Compounds Detected		Monitoring Well Number											
		CRQL	KBA-11-1	11-2	11-2D	11-3	11-3D	11-4	11-5	11-6	11-7	11-8	11-9
<b>APPENDIX IX VOCs (µg/L)</b>													
Vinyl Chloride		10	10 U	63	150	10 U	---	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane <sup>2</sup>		10	10 U	10 U	5 J	10 U	---	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene		5	5 U	5	10	5 U	---	5 U	5 U	5 U	5 U	5 U	5 U
Toluene <sup>2</sup>		5	5 U	5 U	2 J	5 U	---	5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene <sup>2</sup>		5	5 U	5 U	5 U	4 J	---	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total) <sup>2</sup>		5	5 U	5 U	2 J	5 U	---	5 U	5 U	5 U	5 U	5 U	5 U
1,3-Dichlorobenzene		5	5 U	5 U	5 U	13	---	5 U	5 U	5 U	5 U	5 U	5 U
1,4-Dichlorobenzene <sup>2</sup>		5	5 U	5 U	5 U	5 U	---	5 U	5 U	1 J	5 U	5 U	5 U
<b>APPENDIX IX Inorganics (µg/L)</b>													
Arsenic <sup>2</sup>	non-filtered	10	1.00 U	2.4 J	2.4 J	2.7 J	2.6 J	3.3 J	6.7 J	1.1 J	1.9 J	3.7 J	3.6 J
	filtered		1.00 U	1.4 J	---	1.00 U	---	1.00 U	1.4 J	1.00 U	1.00 UJ	2.0 J	2.5 J
Barium <sup>2</sup>	non-filtered	200	61.4 J	30.2 J	24.0 J	49.0 J	57.6 J	27.4 J	158 J	41.5 J	65.5 J	30.8 J	44.2 J
	filtered		37.9 J	5.8 J	---	14.9 U	---	12.2 U	8.4 U	12.2 U	12.1 J	15.4 J	7.4 J
Beryllium <sup>2</sup>	non-filtered	5	0.32 J	0.49 J	0.26 J	0.45 J	0.73 J	0.80 J	2.4 J	0.54 J	0.75 J	0.54 J	0.91 J
	filtered		0.20 U	0.24 U	---	0.20 U	---	0.20 U	0.20 U	0.20 U	0.24 U	0.24 U	0.24 U
Cadmium <sup>2</sup>	non-filtered	5	3.0 J	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U				
	filtered		2.7 U	2.7 U	---	2.7 U	---	2.7 U	3.1 J	2.7 U	2.7 U	2.7 U	2.7 U
Chromium <sup>3,5</sup>	non-filtered	10	32.9	27.2	27.9	34.3	38.7	43.6	157	38.5	77.2	29.3	44.8
	filtered		1.9 UJ	1.9 U	---	2.7 J	---	1.9 UJ	1.9 UJ	1.9 UJ	1.9 U	3.5 U	4.6 U
Cobalt <sup>2</sup>	non-filtered	50	1.6 J	4.6 U	5.6 U	1.6 U	1.6 J	2.8 J	6.1 J	1.6 U	5.9 U	6.7 U	6.5 U
	filtered		1.6 U	4.1 U	---	1.6 U	---	1.6 U	2.0 J	1.8 J	3.4 U	5.9 U	4.6 U
Copper <sup>2,4</sup>	non-filtered	25	128 J	27.8	16.1 U	27.6 J	72.6 J	72.3 J	239 J	114 J	19.6 J	81.4	69.1
	filtered		17.1 J	9.1 U	---	9.1 UJ	---	10.2 UJ	6.8 UJ	8.0 UJ	1.8 U	4.7 U	24.0 J

See notes at end of table.

Table B-3 (continued) Summary of Laboratory Analysis of Groundwater Samples Collected from Site 11<sup>1</sup> -- July 1992

KingsBay(TMS) [Site 11] - 93/209.PLR

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Compounds Detected		CRQL	Monitoring Well Number										
			KBA-11-1	11-2	11-2D	11-3	11-3D	11-4	11-5	11-6	11-7	11-8	11-9
<b>APPENDIX IX VOCs (µg/L)</b>													
Lead <sup>3</sup>	non-filtered	5	24.6 J	8.5 J	10.3 J	12.4 J	87.2 J	23.9 J	33.1 J	6.7 J	16.1 J	4.1 J	8.8 J
	filtered		0.94 U	2.5 J	---	0.94 U	---	0.94 U	1.0 J	1.2 J	0.98 J	1.6 J	1.1 J
Mercury <sup>2</sup>	non-filtered	0.2	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.19 J	0.46	0.16 U	0.16 U	0.16 U	0.19 J
	filtered		0.16 U	0.16 U	---	0.16 U	---	0.16 U					
Nickel <sup>1</sup>	non-filtered	40	89.1	23.9 J	23.6 J	10.7 U	61.4	42.3	68.2	66.3	10.7 U	78.7	18.1 J
	filtered		10.7 U	10.7 U	---	10.7 U	---	10.7 U					
Selenium <sup>2</sup>	non-filtered	5	2.0 J	1.9 U	2.2 J	6.4	5.5	5.2	1.9 U	3.5 J	2.9 J	4.2 J	4.3 J
	filtered		1.9 U	1.9 U	---	1.9 U	---	1.9 U					
Silver <sup>2</sup>	non-filtered	10	1.5 U	1.7 J	1.5 U								
	filtered		1.5 U	1.5 U	---	1.5 U	---	1.5 U					
Vanadium <sup>2</sup>	non-filtered	50	8.6 J	13.4 J	11.6 J	26.2 J	30.2 J	26.0 J	82.5	14.6 J	23.8 J	15.2 J	32.0 J
	filtered		1.3 U	4.1 J	---	2.9 J	---	1.8 J	2.2 J	1.3 U	1.4 J	1.8 J	4.5 J
Zinc <sup>2,4</sup>	non-filtered	20	208 J	48.5 U	43.2 U	37.3 J	128 J	237 J	320 J	178 J	22.0 U	101	74.0
	filtered		14.1 J	74.3	---	25.7 J	---	9.4 J	49.4 J	77.0 J	14.7 U	16.5 U	33.9 U
Cyanide <sup>2</sup>	non-filtered	10	2.2 U	2.2 U	2.2 U	4.4 J	2.2 U						
	filtered		2.2 U	2.2 U	---	2.2 U	---	2.2 U					
Sulfide	non-filtered	100	200 U	300	200	200	200	200	100 U	200	200	300	100
	filtered		100 U	200	---	100 U	---	100 U	100				

Notes:

CRQL = Contract Required Quantitation Limit

U = not detected above or below CRQL

--- = Analysis not required/performed

<sup>1</sup> Groundwater samples were analyzed for VOCs and inorganic constituents only.

<sup>2</sup> Sample results flagged J as estimated because concentration is less than the CRQL.

<sup>3</sup> Sample quantitation limits flagged UJ as estimated because associated preparation blank exhibited negative bias for chromium.

<sup>4</sup> Sample results flagged J and UJ as estimated because duplicate analysis for copper and zinc exceeded QC limits.

<sup>5</sup> Sample results flagged J as estimated because matrix spike recovery for lead was outside QC limits.

Table B-4 (continued) Summary of Laboratory Analysis of Groundwater Samples Collected from Site 11<sup>1</sup> -- September 1992

Compounds Detected		CRQL	Monitoring Well Number										
			KBA-11-1	11-2	11-2D	11-3	11-4	11-5	11-6	11-7	11-8	11-9	11-9D
<b>APPENDIX IX VOCs (µg/L)</b>													
Cobalt <sup>4</sup>	unfiltered	50	1.6 U	1.6 U	1.6 U	3.2 J	1.6 U	4.0 J	2.6 J	2.6 J	3.2 J	2.6 J	1.8 J
	filtered		1.6 U	2.0 U	---	1.6 UJ	2.9 U	---					
Copper <sup>4</sup>	unfiltered	25	48.5	35.2	10.2 J	14.8 J	17.2 J	107	19.3 J	173	28.6	27.4	23.5 J
	filtered		6.0 J	3.0 J	---	1.8 U	1.8 U	6.3 J	5.7 J	14.2 J	3.9 J	52.4	---
Lead <sup>2</sup>	unfiltered	5	11.2 J	11.9 J	6.7 UJ	10.1 J	13.3 J	22.0 J	19.4 J	11.1 J	5.0 UJ	11.6 J	7.5 UJ
	filtered		1.4 U	6.4	---	5.4	2.9 J	3.1	4.6	3.8	1.4 U	3.5	---
Mercury <sup>4</sup>	unfiltered	0.2	0.72	0.60	0.61	0.61	4.1	0.72	0.72	0.91	0.55	0.49	0.61
	filtered		0.03 UJ	0.03 UJ	---	0.03 UJ	---						
Nickel <sup>4</sup>	unfiltered	40	10.7 U	34.0 J	10.7 U	10.9 J	10.7 U	37.6 J	10.7 U	83.0	23.4 J	11.3 J	13.0 J
	filtered		10.7 U	10.7 U	---	10.7 U	---						
Selenium <sup>4,5</sup>	unfiltered	5	2.1 UJ	2.7 J	2.1 UJ	5.9 J	3.9 J	2.1 UJ	2.1 UJ	2.1 UJ	2.1 UJ	2.7 J	2.1 UJ
	filtered		2.1 U	2.1 U	---	2.1 U	---						
Silver <sup>4,5</sup>	unfiltered	10	1.9 J	3.4 J	2.8 J	3.0 J	2.7 J	4.8 J	4.1 J	1.5 J	10.1 J	1.9 J	2.8 J
	filtered		1.5 U	1.5 U	---	1.5 U	2.5 J	---					
Vanadium <sup>4</sup>	unfiltered	50	12.3 J	15.7 J	10.0 J	54.8	28.6 J	70.0	30.1 J	45.6 J	11.6 J	61.3	41.3 J
	filtered		2.0 U	5.2 U	---	2.0 U	1.3 U	2.0 U	1.3 U	1.3 U	1.3 U	8.8 U	---
Zinc <sup>4,7</sup>	unfiltered	20	53.8 J	64.0 J	32.9 J	44.7 J	36.4 J	278 J	39.0 J	291 J	39.8 J	56.5 J	41.4 J
	filtered		15.5 J	11.4 J	---	8.4 J	8.4 J	66.5 J	11.4 J	27.4 J	52.6 J	32.4 J	---
Cyanide <sup>4</sup>	unfiltered	10	2.2 U	2.2 U	2.2 U	4.2 J	2.2 U	2.2 U					
	filtered		2.2 U	2.2 U	---	3.2 J	2.2 U	---					
Sulfide	unfiltered	100	100 U	200	100 U	200	200	200	300	500	200	100 U	200
	filtered		100 U	300	---	200	100 U	200	100 U	100 U	300	100 U	---

See notes at end of table.

Table B-4 Summary of Laboratory Analysis of Groundwater Samples Collected from Site 11<sup>1</sup> -- September 1992

Compounds Detected	Monitoring Well Number												
	CRQL	KBA-11-1	11-2	11-2D	11-3	11-4	11-5	11-6	11-7	11-8	11-9	11-9D	
<b>APPENDIX IX VOCs (µg/L)</b>													
Vinyl Chloride (Method 8240)	10	10 U	48 J	71 J	10 U	----							
(Method 8010)	1	1.0 U	15 J	100 J	1.0 U	----	----	----	----	1.0 U	----	----	
Chloroethane <sup>2</sup> (Method 8240)	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	----
(Method 8010)	1	1.0 U	1.0 U	3.3	1.0 U	----	----	----	----	1.0 U	----	----	
1,2-Dichloroethene (Method 8240)	5	5 U	5 U	8 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	----
(Method 8010)	1	1.0 U	1.0 U	4.8	1.0 U	----	----	----	----	1.0 U	----	----	
Toluene <sup>2</sup> (Method 8240)	5	5 U	5 U	1 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	----
(Method 8010)	1	1.0 U	1.0 U	1.1	1.0 U	----	----	----	----	1.0 U	----	----	
Chlorobenzene <sup>2</sup> (Method 8240)	5	5 U	5 U	5 U	4 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	----
(Method 8010)	1	1.0 U	1.0 U	1.0 U	3.1	----	----	----	----	1.0 U	----	----	
Chloroform (Method 8240)	5	5 U	4 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	----
(Method 8010)	1	1.0 U	1.0 U	1.0 U	1.0 U	----	----	----	----	1.0 U	----	----	
1,4-Dichlorobenzene (Method 8240)	5	5 U	5 U	5 U	15	5 U	5 U	2 J	5 U	5 U	5 U	5 U	----
(Method 8010)	1	1.0 U	1.0 U	1.0 U	1.0 U	----	----	----	----	1.0 U	----	----	
<b>APPENDIX IX Inorganics (µg/L)</b>													
Arsenic <sup>1</sup> unfiltered	10	2.2 J	3.2 J	2.7 J	4.3 J	3.2 J	8.2 J	3.0 J	10.3	3.8 J	7.5 J	3.5 J	
filtered		1.0 U	1.2 J	---	1.0 U	1.0 U	1.0 J	1.0 U	1.0 U	2.5 J	1.0 U	---	
Barium <sup>2</sup> unfiltered	200	50.3 J	26.4 J	19.0 J	97.7 J	32.1 J	122 J	69.6 J	95.6 J	22.2 J	91.9 J	52.4 J	
filtered		27.0 U	5.7 U	---	11.2 U	10.0 U	5.9 U	8.1 U	8.4 U	13.0 U	4.5 U	---	
Beryllium <sup>2</sup> unfiltered	5	0.61 J	0.42 J	0.24 U	0.91 J	0.69 J	1.9 J	1.3 J	1.4 J	0.38 J	2.4 J	1.4 J	
filtered		.024 U	0.24 U	---	0.24 U	0.24 U	0.24 U	0.24 J	0.24 U	0.24 U	0.24 U	---	
Cadmium <sup>2</sup> unfiltered	5	2.7 U	2.7 U	2.7 U	3.5 J	2.7 U	2.7 U	3.2 J	2.7 U	7.1	2.7 U	2.7 U	
filtered		2.7 U	2.8 J	---	2.7 U	3.9 J	2.7 U	---					
Chromium <sup>3</sup> unfiltered	10	38.7	27.6	21.9	70.1	40.0	129	76.0	132	18.9	100	68.1	
filtered		2.6 J	1.9 U	---	1.9 U	4.4 J	---						

See notes at end of table.

Kingsbay(TMS)Site[1]-93/209.PLR

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Table B-4 (continued) Summary of Laboratory Analysis of Groundwater Samples Collected from Site 11<sup>1</sup> -- September 1992

Compounds Detected	Monitoring Well Number											
	CRQL	KBA-11-1	11-2	11-2D	11-3	11-4	11-5	11-6	11-7	11-8	11-9	11-9D
<b>APPENDIX IX VOCs (<math>\mu\text{g/L}</math>)</b>												
<b>PHYSICAL PARAMETERS</b>												
Total Solids (mg/l)		431	718	947	2100	1414	1293	1117	1143	831	612	---
TDS (mg/l)		79	298	282	1090	870	233	122	53	595	144	---
TSS (mg/l)		352	420	665	1010	544	1060	995	1090	236	468	---
%TSS		82	58	70	48	38	82	89	95	28	76	---

## Notes:

CRQL = Contract Required Quantitation Limit

U = not detected above or below CRQL

--- = Analysis not required/performed

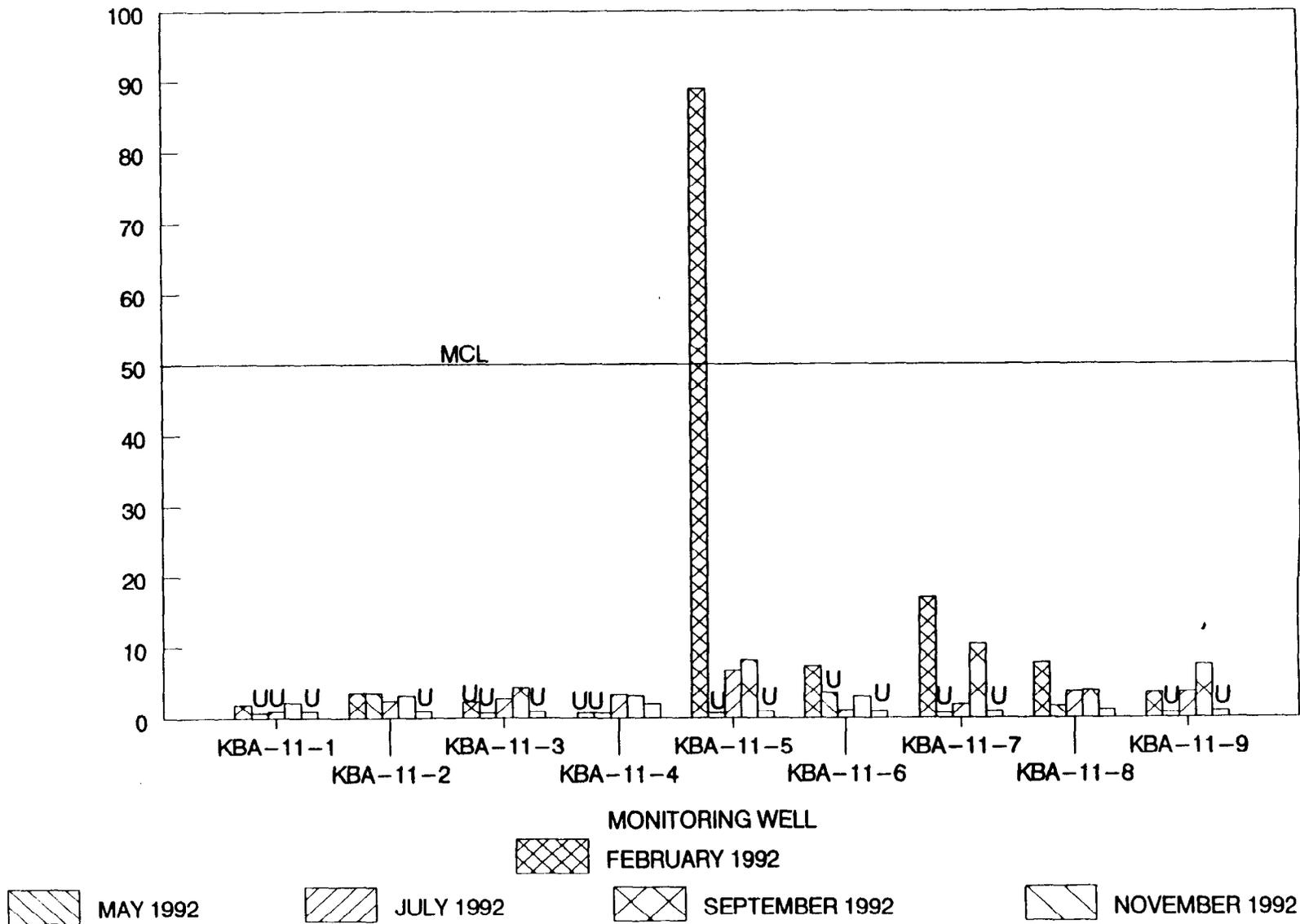
 $\mu\text{g/l}$  = micrograms per liter

VOCs = volatile organic compounds

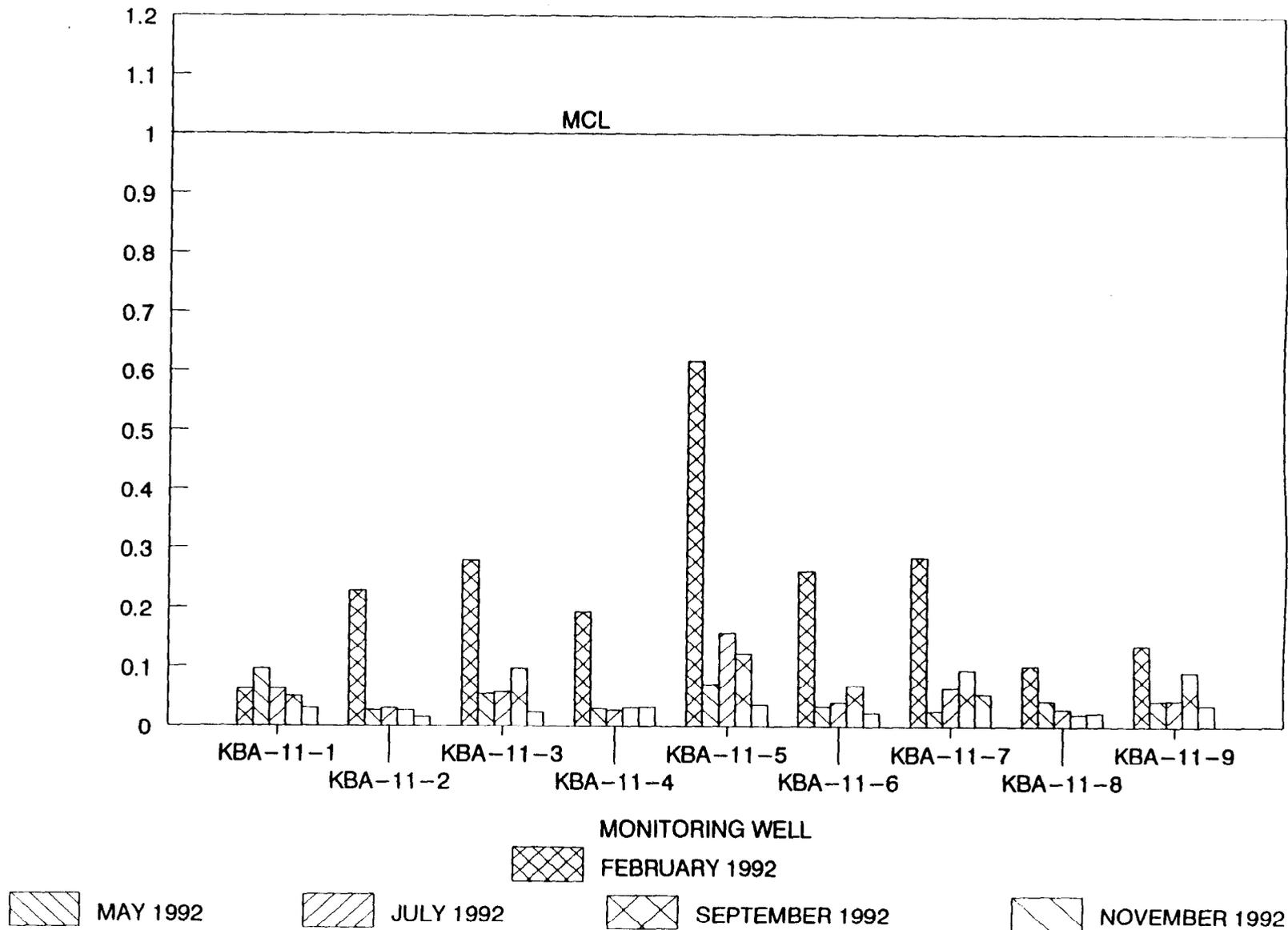
<sup>1</sup> Groundwater samples were analyzed for VOCs and inorganic constituents only.<sup>2</sup> Sample results flagged J as estimated due to differences in duplicate results.<sup>3</sup> Sample quantitation limits flagged J as estimated due to a noncompliant tuning standard.<sup>4</sup> Sample results flagged J as estimated because concentration is less than the CRQL.<sup>5</sup> Sample results and sample quantitation limits flagged J and UJ as estimated because matrix spike recovery for lead, selenium, and silver were below QC limits.<sup>6</sup> Sample quantitation limits flagged UJ as estimated because the associated preparation blank exhibited negative bias for mercury.<sup>7</sup> Sample results flagged J as estimated because duplicate analysis for zinc was outside QC limits.

**APPENDIX C  
BAR-CHART GRAPHICS  
OF GROUNDWATER  
INORGANIC DATA**

### NSB KINGS BAY, GEORGIA SITE 11 - ARSENIC IN GROUNDWATER

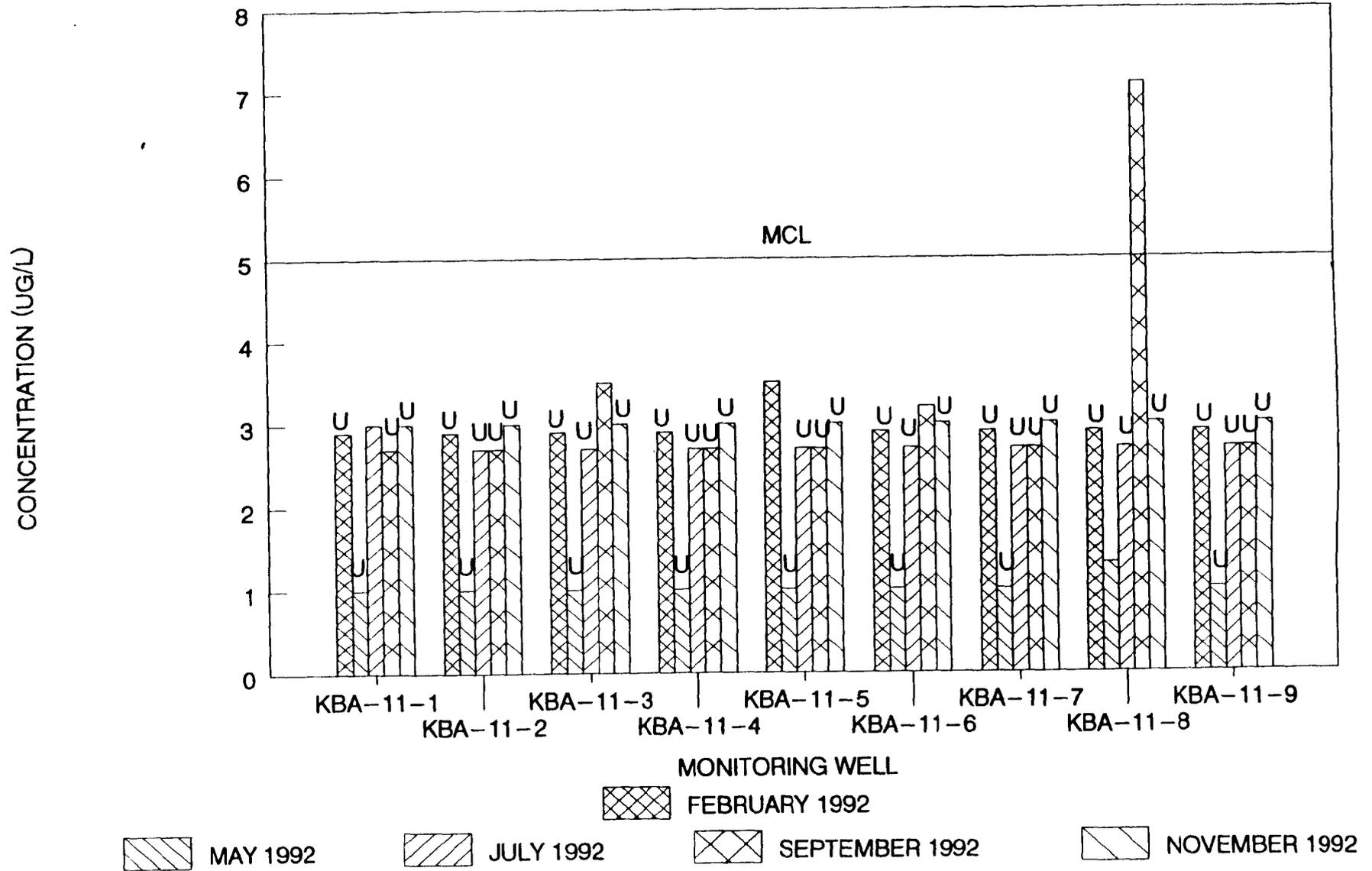


### NSB KINGS BAY, GEORGIA SITE 11 - BARIUM IN GROUNDWATER



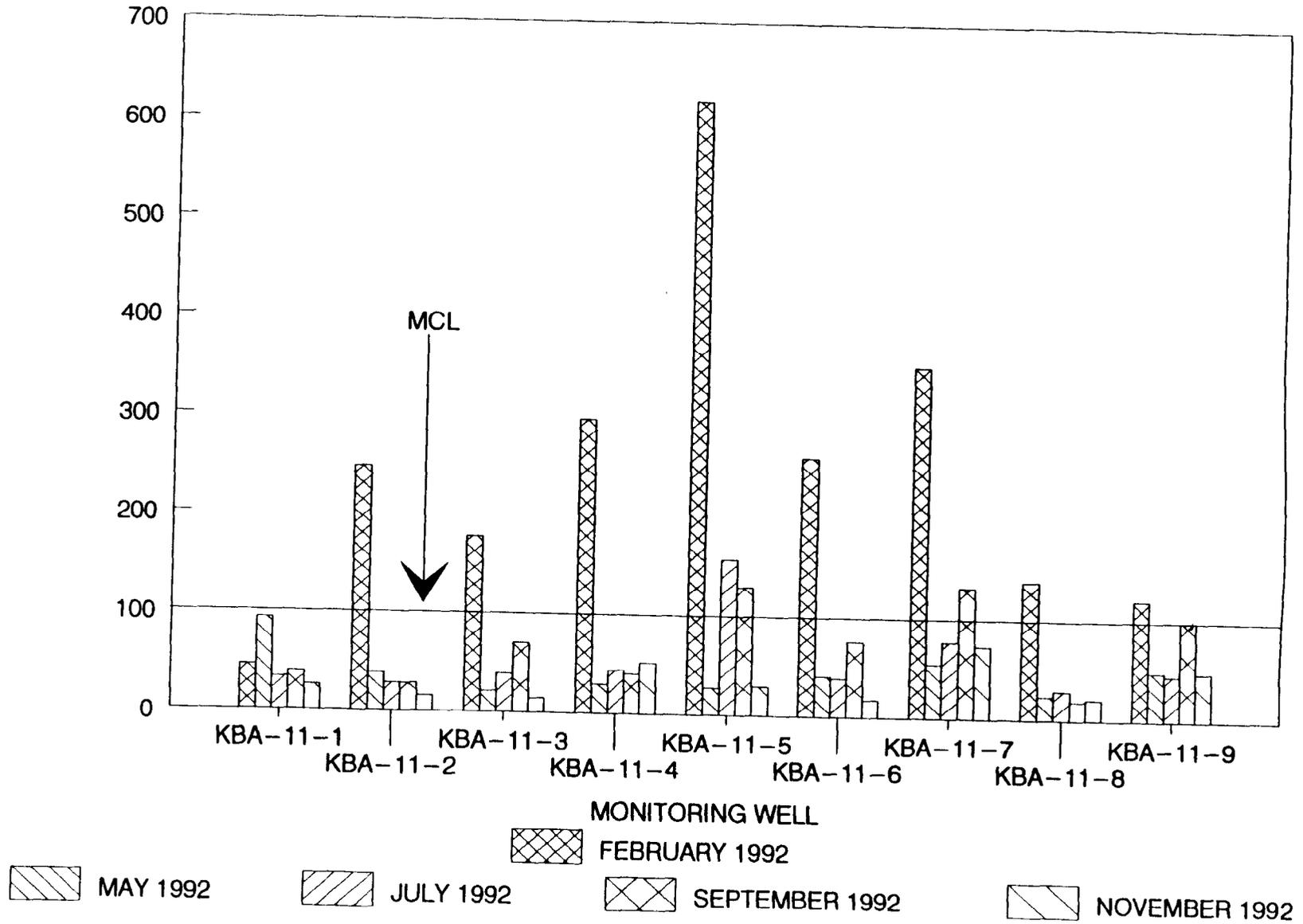
# NSB KINGS BAY, GEORGIA

## SITE 11 - CADMIUM IN GROUNDWATER

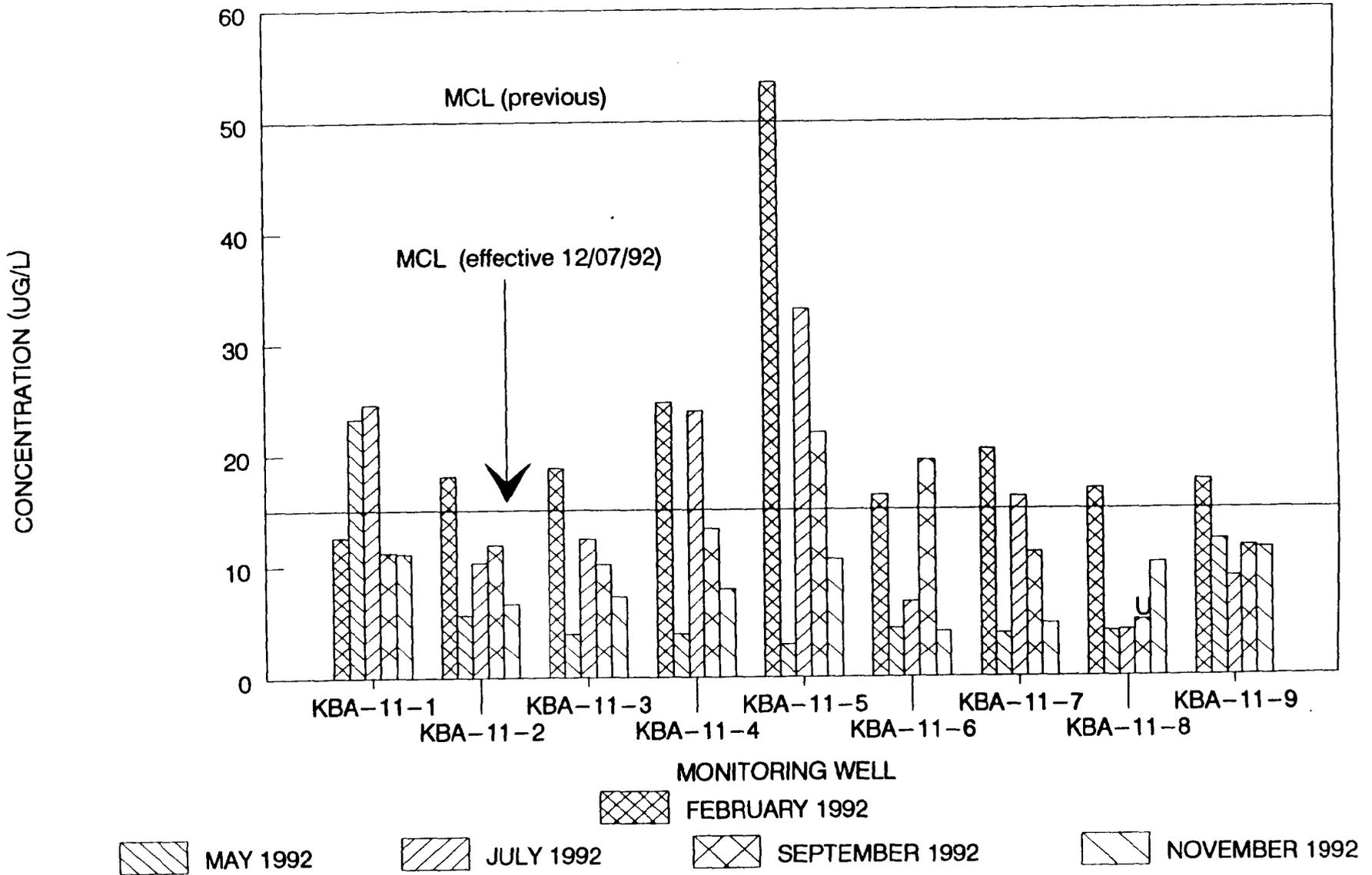


# NSB KINGS BAY, GEORGIA

## SITE 11 - CHROMIUM IN GROUNDWATER

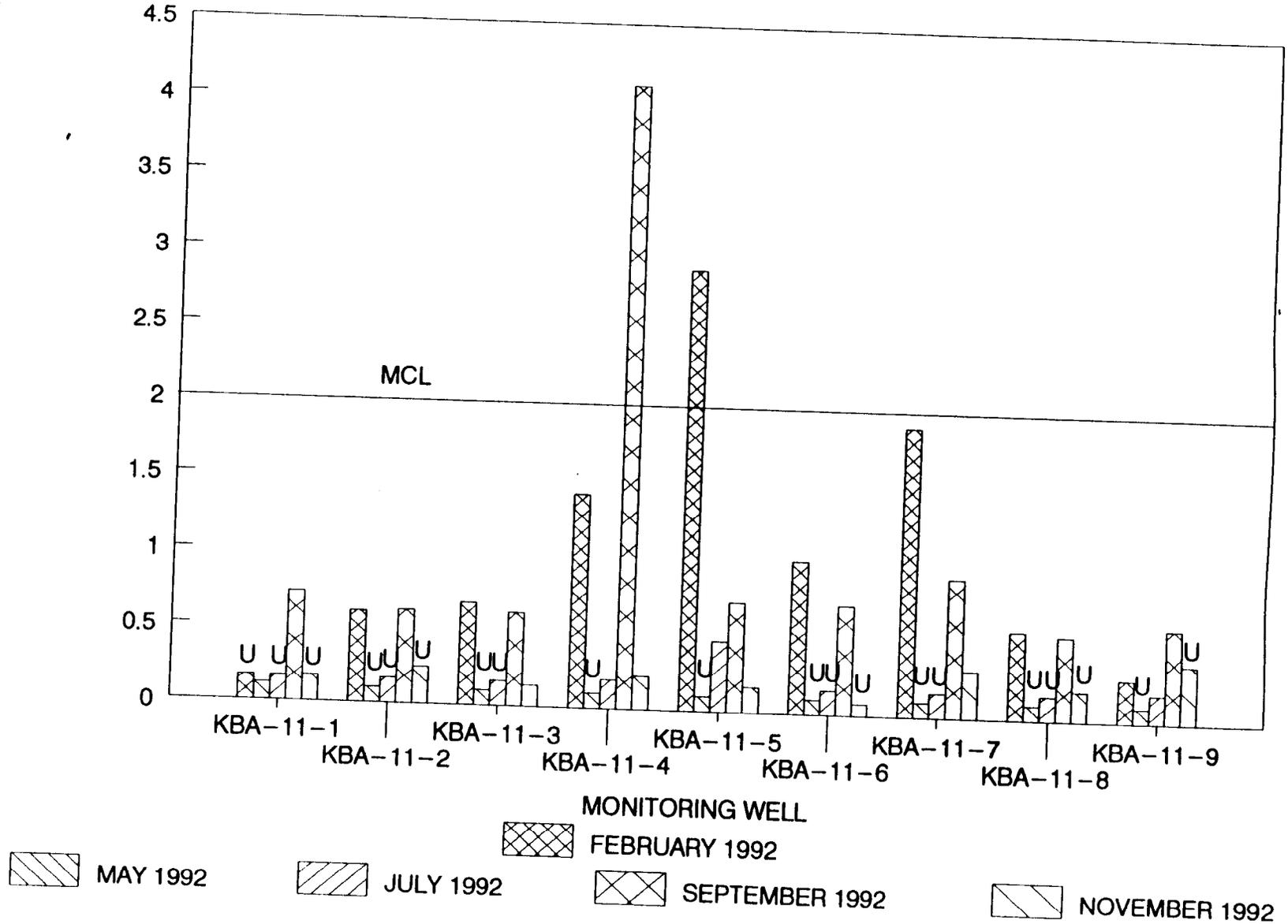


### NSB KINGS BAY, GEORGIA SITE 11 - LEAD IN GROUNDWATER



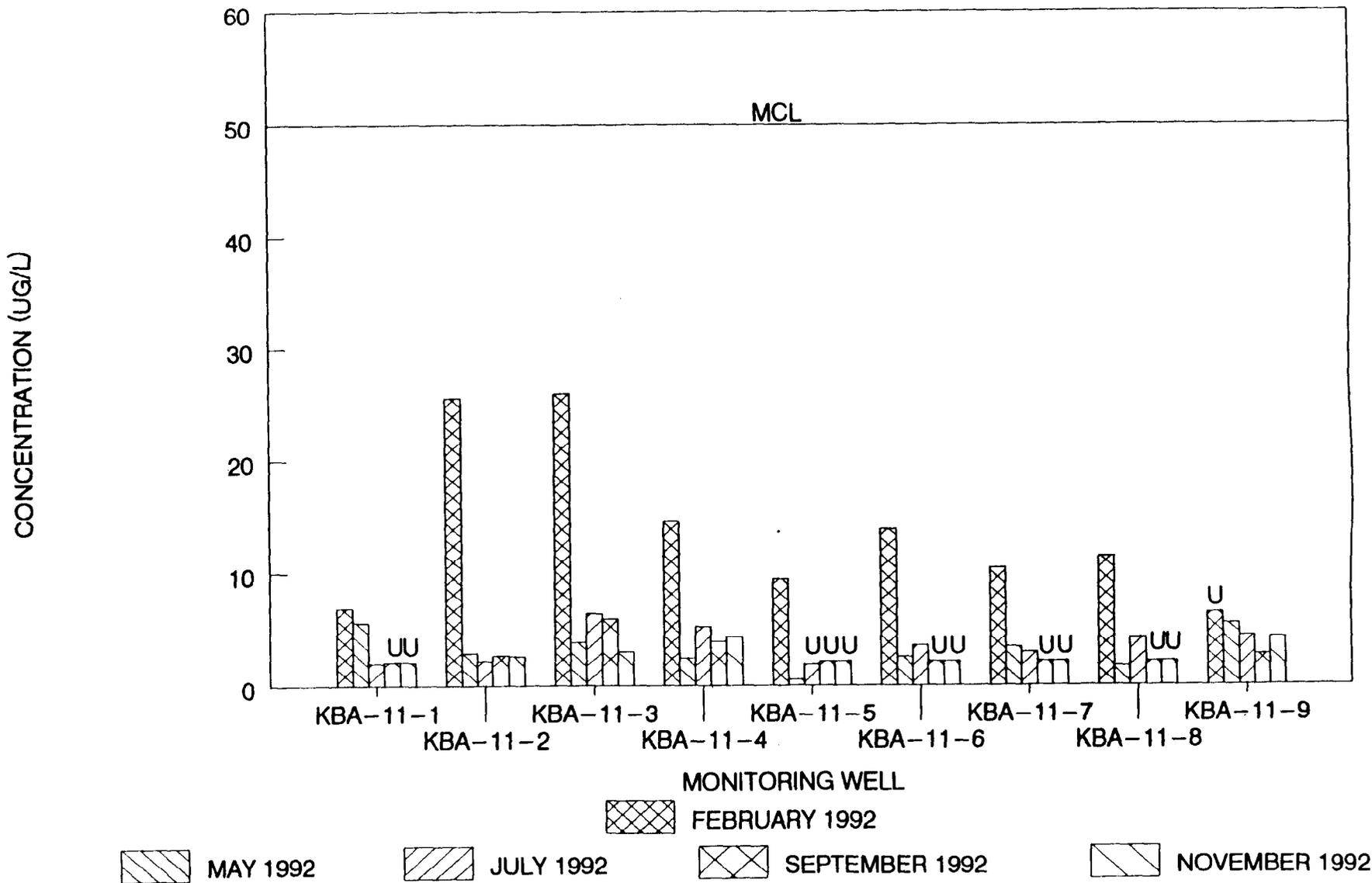
# NSB KINGS BAY, GEORGIA

## SITE 11 - MERCURY IN GROUNDWATER



# NSB KINGS BAY, GEORGIA

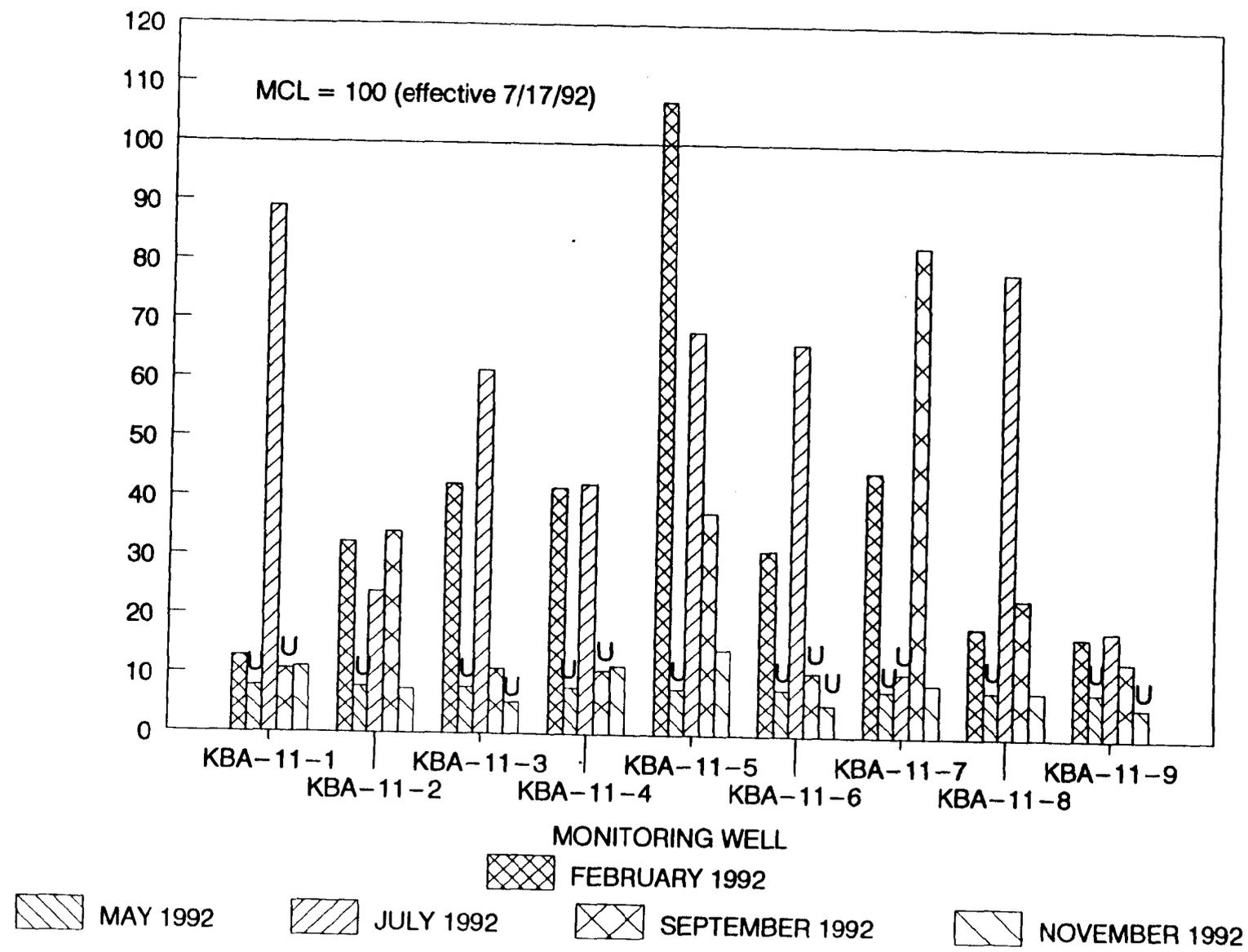
## SITE 11 - SELENIUM IN GROUNDWATER



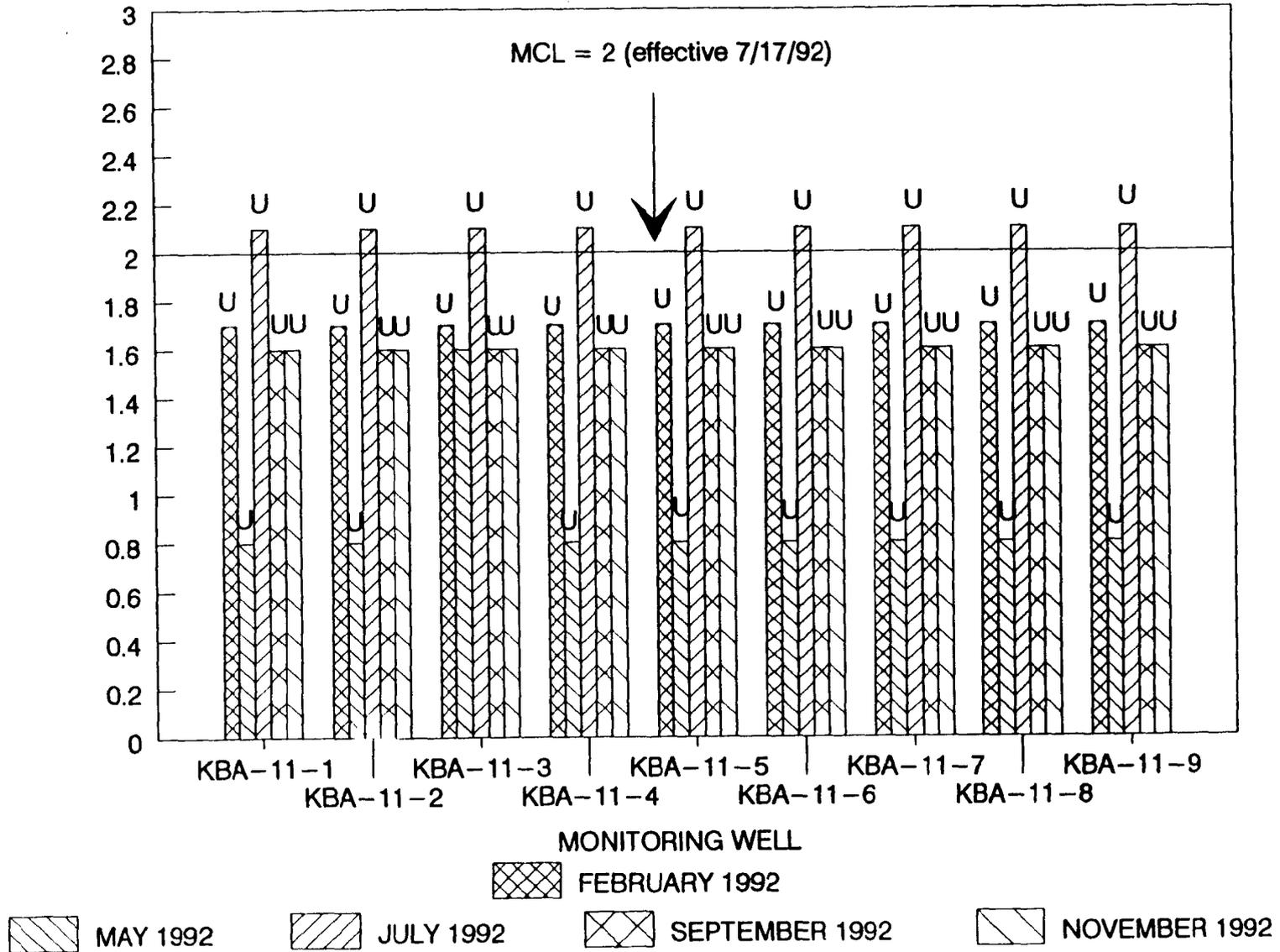
KingsBay(TMS) [Site11]-93/209.PLR

CONCENTRATION (UG/L)  
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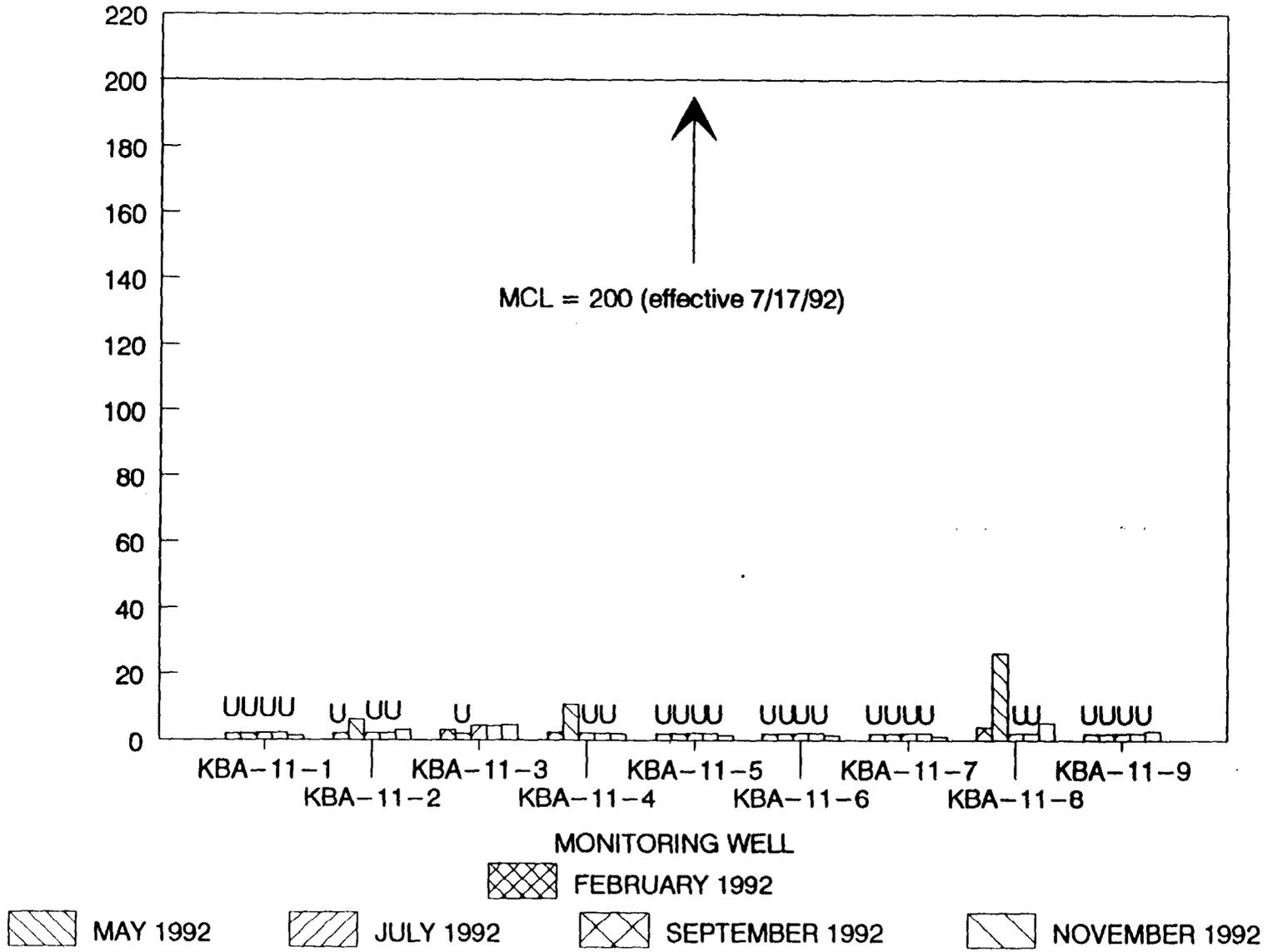
### NSB KINGS BAY, GEORGIA SITE 11 - NICKEL IN GROUNDWATER



### NSB KINGS BAY, GEORGIA SITE 11 – THALLIUM IN GROUNDWATER



### NSB KINGS BAY, GEORGIA SITE 11 - CYANIDE IN GROUNDWATER



# NSB KINGS BAY, GEORGIA

## SITE 11 - BERYLLIUM IN GROUNDWATER

