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01.06 - 10/01/98-02336

FINAL

BRINSON CREEK
ADMINISTRATIVE ORDER ON CONSENT
SITE CHARACTERIZATION REPORT

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

CONTRACT TASK ORDER 0375

OCTOBER 1, 1998

Prepared for:

DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES
ENGINEERING COMMAND
Norfolk, Virginia

Under the:

LANTDIV CLEAN Program
Contract N62470-89-D-4814

Prepared by:

BAKER ENVIRONMENTAL, INC.
Coraopolis, Pennsylvania

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INTRODUCTION

This Site Characterization Report was prepared by Baker Environmental, Inc. (Baker) to meet the requirements of an Administrative Order on Consent, provided in Appendix A, issued by the North Carolina Department of Environment and Natural Resources (NC DENR) Division of Waste Management. The order was issued to resolve issues concerning potentially hazardous sandblast grit used as fill material at a City of Jacksonville, North Carolina wastewater treatment construction site, located along Brinson Creek. Refer to Figures 1 and 2 for location of the site. The Administrative Order on Consent requires that Marine Corp Base (MCB), Camp Lejeune submit a report that verifies the extent and characterization of soil contamination at the Brinson Creek Site (refer to Order Item 3). The objective of this Site Characterization report is to meet the requirements stipulated in the Administrative Order on Consent.

As stipulated, this report provides NC DENR, Division of Waste Management with the following:

- Description of sample collection procedures
- Sample locations and depths
- Analytical methods
- Analytical results

BACKGROUND

This section presents a brief site description and history of waste management activities that have occurred at the Brinson Creek Site. This information was obtained from the Environmental Management Department (EMD) of MCB, Camp Lejeune and the City of Jacksonville, Department of Public Works.

Site Description

The Brinson Creek Site consists of a fill area that is approximately 300 feet long by 17 feet wide, and extends to a depth of 12 feet. The site is located on the north side of Brinson Creek and is northeast of the Camp Geiger wastewater treatment plant located on the south side of Brinson Creek. (Refer to Figures 1 and 2).

The Brinson Creek Site is situated on City of Jacksonville right-of-way (ROW), where the 18-inch Brinson Creek trunk main was constructed. Photographs of the fill area and surrounding area are provided in Attachment B. The Site is located in an area of ponded water between manhole # 22 and manhole # 24 along the alignment of the 18-inch Brinson Creek trunk main (refer to Figure 2).The exact location and dimensions of the site were based upon the following information:

- City of Jacksonville, NC, Department of Public Works, Construction Contract Progress Payment Request Summary for the 1990 Annexation Contract #3 Brinson Creek Trunk Main Project.

- City of Jacksonville, NC, Department of Public Works, Daily Inspection Sheets for the 1990 the Annexation Contract #3 Brinson Creek Trunk Main Project.

- City of Jacksonville, NC, Department of Public Works, As Built Drawing (Sheet 7) for the 1990 the Annexation Contract #3 Brinson Creek Trunk Main Project (Provided in Attachment C). The profile view of the sheet 7 as built drawing shows a depression between manhole # 22 and manhole #24 that is approximately 300 feet long.

- Discussions with MCB Camp Lejeune's Environmental Management Department (EMD).

- A Baker and EMD site visit conducted on January 27, 1998.

Site History

During August 1992, a contractor hired by Marine Corps Systems Command (MARCORSYSCOM) for the Enhanced Applique Armor Kit (EAAK) conversion project, improperly transferred drums of contaminated residual sandblast grit which was subsequently used as fill material for an unrelated non-federal construction project.

The contractor was hired to sandblast paint and other protective coatings from Assault Amphibious Vehicles as part of the EAAK conversion project. As specified by terms of the contract, the grit residue was to be tested and disposed of as hazardous waste. On the basis of inadequate testing, in June 1992 the contractor informed MARCORSYSCOM that the residuum was not hazardous and sought to dispose of the grit by other means. MARCORSYSCOM informed the contractor to submit a proposal to transport the material to an appropriate disposal facility. The contractor failed to do so and instead contracted with a local firm to remove the grit from site. This grit, mixed with other fill, was used as fill material in an off-base project for the City of Jacksonville. The fill was placed in a trench approximately 17 feet wide, 12 feet deep, and 300 feet long in order to buttress a sewer pipeline adjacent to a local waterway, Brinson Creek.

The contractor reported that they tested the sandblast grit prior to disposal and found it to be below the North Carolina requirement for disposal as hazardous materials. Investigation disclosed that the contractor's test was for only lead and that a Toxicity Characteristics Leaching Procedure (TCLP) analysis would have surfaced the chromium. Camp Lejeune's EMD reported the results of a later test of debris similar to that which was dumped in Brinson Creek and those results revealed the paint debris was contaminated at a level of 1.09 milligram per liter (mg/L) of chromium and 0.6 mg/L lead.

As a result of these disposal activities an Administrative Order on Consent was issued by the NC DENR Division of Waste Management (effective March 31, 1998) with the consent of MCB Camp Lejeune to resolve issues concerning the sandblast grit disposal area. In response to the AOC, a Sample Strategy Plan (SSP) was prepared and submitted on May 18, 1998 to the NC DENR Division of Waste Management. The SSP was subsequently reviewed and approved by the NC DENR.

FIELD PROGRAM

The field work was performed in accordance with the SSP in order to characterize and assess the extent of the sandblast grit disposed of at the Brinson Creek Site as required by Order Items 2 and 3 of the Administrative Order on Consent. Field operations at the Brinson Creek Site commenced on July 13, 1998 and concluded on July 20, 1998. This section provides a description of sample locations, sample depths, sample collection methods, analytical methods, and Investigation Derived Waste (IDW) disposal procedures.

Description of Sample Locations

According to the Administrative Order on Consent, the sandblast grit was mixed with sand and deposited as backfill in a trench 17 feet wide by 300 feet long and extended to a depth of 12 feet below ground surface (bgs). The trench had been excavated during construction of the Brinson Creek Trunk Main, an 18" diameter sanitary sewer line. For the purpose of this investigation, it was assumed the sanitary sewer line had been placed in the middle of the trench. Therefore, half the disposal area was assumed to be on the north side of the sewer line and half on the south side of the sanitary sewer line.

To adequately sample the disposal area, six grid blocks were identified in the field along the alignment of the sewer main (Refer to Figure 4). The alignment of the sewer line was determined by running a guide string between the center of manhole # 22 and the center of manhole # 24. Three grid blocks were marked on the north side of the sanitary sewer main (grid blocks 1, 2 and 3) and three grid blocks were staked on the south side of the sanitary sewer main (grid blocks 4, 5 and 6). Each grid block was 100 feet long in the direction parallel to the sewer main by 10 feet in a direction perpendicular to the alignment. Soil boring locations were placed within the limits of the disposal area. The alignment of the sanitary sewer line was used as a baseline for marking the grid blocks and soil boring locations.

Within each grid block a total of five uniformly spaced soil borings were advanced and an aliquot of soil was collected at a pre-determined depth from each of the five borings. Upon collecting the last aliquot from a grid block, the five aliquots were homogenized in a decontaminated stainless steel bowl. A sample was then collected from this homogenized material and shipped to the analytical laboratory.

This process was repeated for all six of the grid blocks. One homogenized sample was collected from each grid block. A total of seven samples, six samples and one duplicate, were shipped to the analytical laboratory.

The depths from which the aliquots were collected is summarized in Table 1. Locations of the soil borings from which the aliquots were collected is shown in Figure 4.

Sample Collection Activities

The fill area is located beneath an area of shallow ponded water and soils at the bottom of the pond are to soft to support the weight of a truck or track-mounted drill rig. As an alternative, a manually operated discrete interval sampling tool was mounted on a boat and used to advance soil borings and collect soil aliquots at the prescribed depths. The bottom of the boat was outfitted with a sampling portal that prevented the boat from sinking but allowed the insertion of sampling tools. Two people were required to advance a borehole using this method. One person was required to maneuver and stabilize the boat during borehole advancement. The second person was needed to advance the borehole to depth and collect the soil aliquot.

The discreet interval sampling tool consists of a 35 pound slide hammer assembly, probe rods, and a Geoprobe Macro-Core™ soil sampler. The hammer would strike an anvil, located at the bottom of the slide bar, that was secured to the probe rods by way of a threaded connection. The impact of the weight striking the anvil advanced the probe rods to depth. To recover the rods and soil aliquot the slide bar and anvil were inverted. The hammer was repetitively pushed upward against the anvil which pulled the probe rods out of the ground.

The Geoprobe Macro-Core™ sampling device consisted of a 1.375 inch outer diameter stainless steel sampling tube that was fitted with a two foot acetate liner. At the end of the sampling tube was a retractable drive point. When the desired interval was reached, the drive point was retracted into the top of the sampling tube. As the tube was advanced with the drive point retracted, soil was forced into the acetate liner of the sampling tube. Upon collection of the aliquot the sampling tube and probe rods were retrieved, and the plastic liner containing the aliquot was removed from the sampling spoon and capped. A single aliquot was collected from each borehole in a grid block. All five aliquots from a grid block were then homogenized in a stainless steel mixing bowl. A new acetate liner was used for the collection of each aliquot.

It should be noted that the sampling tube is not equipped with a plastic basket that prevents sample material from slipping out of the sampling tube during retrieval. When very soft, saturated soils were encountered, such as in the seven to nine foot depth interval, sample recovery was zero percent. Although some sample volume was usually lost during tool retrieval, recoveries typically were between 25% to 50%.

Upon collection, all samples were cooled to four degrees centigrade and shipped to Quanterra Environmental Services, Inc. of Knoxville, Tennessee. Upon completion of the laboratory analyses, analytical results were validated by Heartland Environmental, Inc. of St. Charles, Missouri.

Analytical Program

Due to the nature of the fill material and to characterize the sandblast grit at the Brison Creek Site as either hazardous or nonhazardous, TCLP Metals (SW1311//SW 6010B) were performed on each of the seven soil samples (six samples and one duplicate). Rinseates were collected from a clean acetate liner and a decontaminated sampling spoon and analyzed for Contract Lab Protocol (CLP) metals.

Surveying

A preliminary survey was performed at the site using a Trimble Global Positioning System (GPS) unit. In addition to gathering coordinates for soil boring locations, survey data was collected on the major attributes of the site that included the limits of the pond, sanitary sewer line alignment, manholes, access roads, livestock pen and debris piles.

IDW Handling

Field activities at the Brinson Creek AOC Site resulted in the generation of a limited volume of soil cuttings. During field operations this material was temporarily stored in a 5-gallon high-density polyethylene bucket with a lid. Following the conclusion of sampling activities a sample of the cuttings were collected and sent to Quanterra Environmental Services, Inc. for characterization. The entire volume of IDW was required for laboratory characterization.

The results of the IDW laboratory analysis indicated the cuttings were not hazardous.

PHYSICAL CHARACTERISTICS OF THE STUDY AREA

Surface Features

The Brinson Creek Site is located between manhole # 22 and manhole #24 of the Brinson Creek Trunk Main. Approximately 75 % of the site is submerged under a small pond that is approximately two feet deep. The area of ponded water is surrounded by thick wetland vegetation. Although a topographic survey was not performed, it appears the pond is fed by storm water runoff from the surrounding property and seasonally from Brinson Creek, which is located on the south side of the site. The level of water in the pond appears to fluctuate by as much as two feet during wet and dry seasons. Photographs of the pond are included in Attachment B.

To the north of the Brinson Creek Site, there are there are three debris piles and an active livestock pen (refer Figure 3). Surface runoff from this area appears to flow into the pond. Photographs of the debris piles and livestock pen are included in Attachment B.

Subsurface Features

In general, in the western half of the Brinson Creek Site, soils between the bottom of the pond and 12 feet bgs consisted of sand interspersed with discontinuous layers of sandy clay and clayey sand. However, at the seven to nine foot interval of grid blocks 2 and 5 gravel bedding material was encountered. Soils in the eastern half of the Brinson Creek between the bottom of the pond and 12 feet below ground surface (bgs) consist of peat and peat with some sand. No sand blast grit material or paint chips were observed in any of aliquots that were collected. A brief description of each aliquot is provided in Table 3-1.

ANALYTICAL RESULTS

A total of seven subsurface soil samples, six samples and one duplicate, were collected. Each of the seven samples consisted of five aliquots of soil, collected from a grid block, that were homogenized into a single sample. One homogenized sample was collected from each grid block and shipped to a fixed-base lab for TCLP metals analysis. No metals were detected in any of the soil samples or rinseates submitted for analysis. None of the data reviewed by the validator was rejected. These results are consistent with field observations. No paint chips or sandblast grit were encountered in any of the aliquots.

CONCLUSIONS

The following conclusions can be drawn from field observations and analytical data:

- No sand blast grit material or paint chips were observed in any of the aliquots collected during Baker's investigation which was performed in the area that this material was reportedly disposed. Based on Baker's field observations, it does not appear that sand blast grit was disposed at this site.

- Baker observed sandy material in the samples obtained during the investigation. The quantity of sandy material encountered was not sufficient to confirm the disposition of sand blast grit in this area. Nevertheless multiple samples of the subsurface material were collected and analyzed. The results of the analysis indicated that the subsurface material located at this site is not hazardous as defined by 40 CFR 261.20 and 261.24.

TABLES

TA. .E 1

SAMPLE SUMMARY
BRINSON CREEK AOC SITE
CHARACTERIZATION SAMPLING, CTO - 0375
MARINE CORP BASE, CAMP LEJEUNE, NORTH CAROLINA

Sample ID	Grid Block	Boring/Aliquot Identification	Sample Interval (feet bgs)	Percent Recovery	Depth of Ponded Water (feet)	Sample Description
SD01-98C	Grid Block 1	GD1SB01	0 - 2	50	-	Light brown fine grain sand with some silt.
		GD1SB02	2.5 - 4.5	10	.5	Gray clay with some sand.
		GD1SB03	5 - 7	100	.5	Gray fine grain sand.
		GD1SB04	7.5 - 9.5	50	-	Gray clay with trace silt/sand.
		GD1SB05	9.5 - 11.5	100	.5	Brown fine grain sand.
SD02-98C	Grid Block 2	GD2SB01	0 - 2	25	1.5	Peat
		GD2SB02	2 - 4	0	1.5	
		GD2SB03	5 - 7	25	1.5	Brown fine grain sand.
		GD2SB04	7 - 9	25	1.5	Gravel bedding material.
		GD2SB05	10 - 12	50	1.5	Brown fine grain sand.
SD03-98C	Grid Block 3	GD3SB01	0 - 2	25	1.5	Peat.
		GD3SB02	2 - 4	25	1.5	Peat.
		GD3SB03	5 - 7	10	1.5	Peat.
		GD3SB04	7 - 9	0	1.5	
		GD3SB05	10 - 12	25	1.5	Peat.
SD04-98C	Grid Block 4	GD4SB01	0 - 2	100	-	Gray clay with some sand.
		GD4SB02	2.5 - 4.5	75	0.5	Gray fine grain sand with some silt and clay.
		GD4SB03	5 - 7	10	0.5	Peat with some sand.
		GD4SB04	7.5 - 9.5	0	-	
		GD4SB05	10 - 12	50	0.5	Gray fine grain sand.
SD05-98C	Grid Block 5	GD5SB01	0 -2	25	2	Brown fine grain sand and some peat.
		GD5SB02	2 - 4	25	2	Brown fine grain sand and some peat.
		GD5SB03	5 - 7	25	2	Brown fine grain sand and some peat.
		GD5SB04	7 - 9	25	2	Brown fine grain sand, some peat and trace bedding material.
		GD5SB05	10 - 12	25	2	Brown fine grain sand and some peat.
SD06-98C	Grid Block 6	GD6SB01	0 -2	25	2	Fine sand with some peat.
		GD6SB02	2 - 4	25	2	Peat.
		GD6SB03	5 - 7	25	2	Peat.
		GD6SB04	7 - 9	0	2	
		GD6SB05	10 - 12	0	2	

bgs = below ground surface

Percent Recovery = Amount of sampling spoon that was filled with sample.

FIGURES

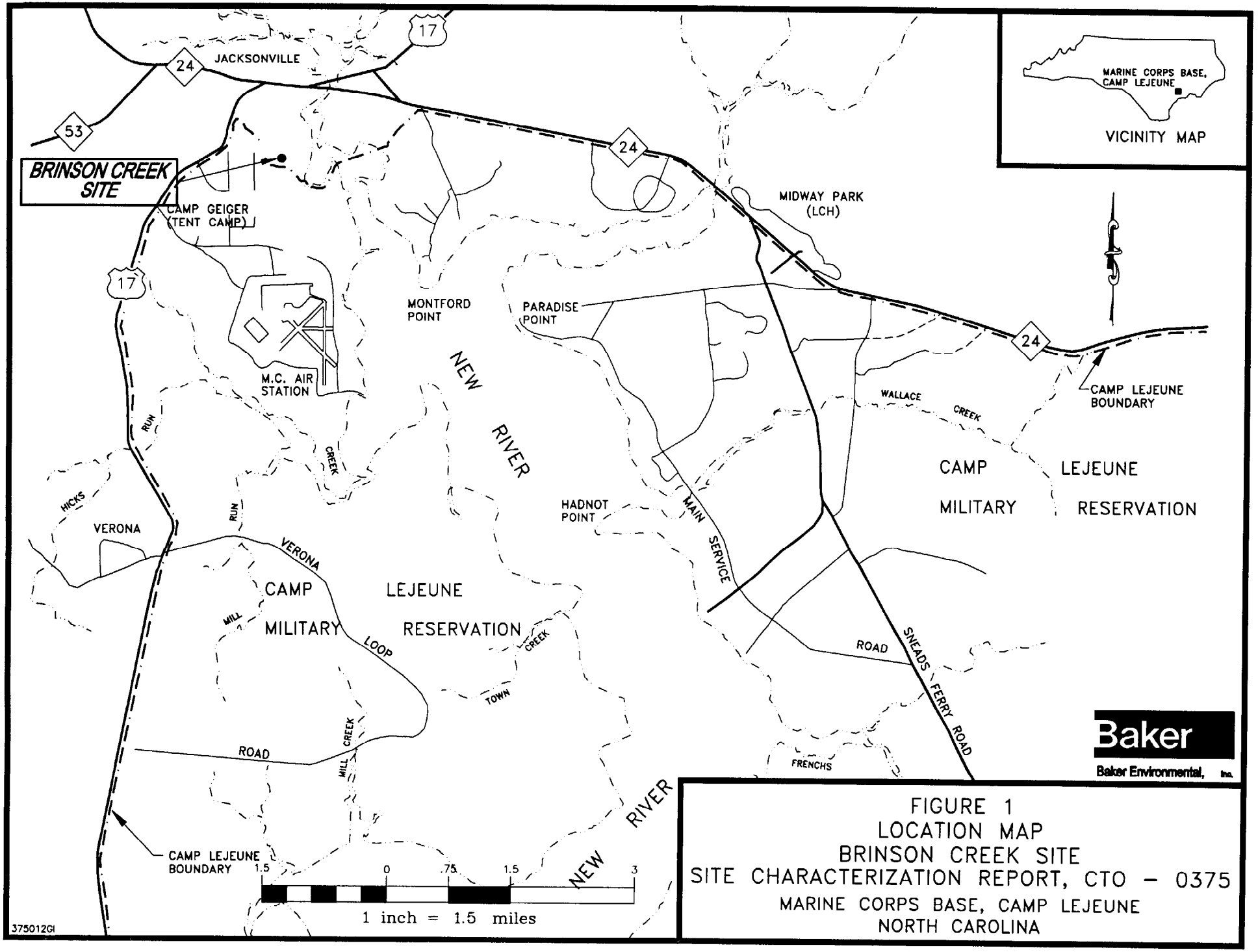
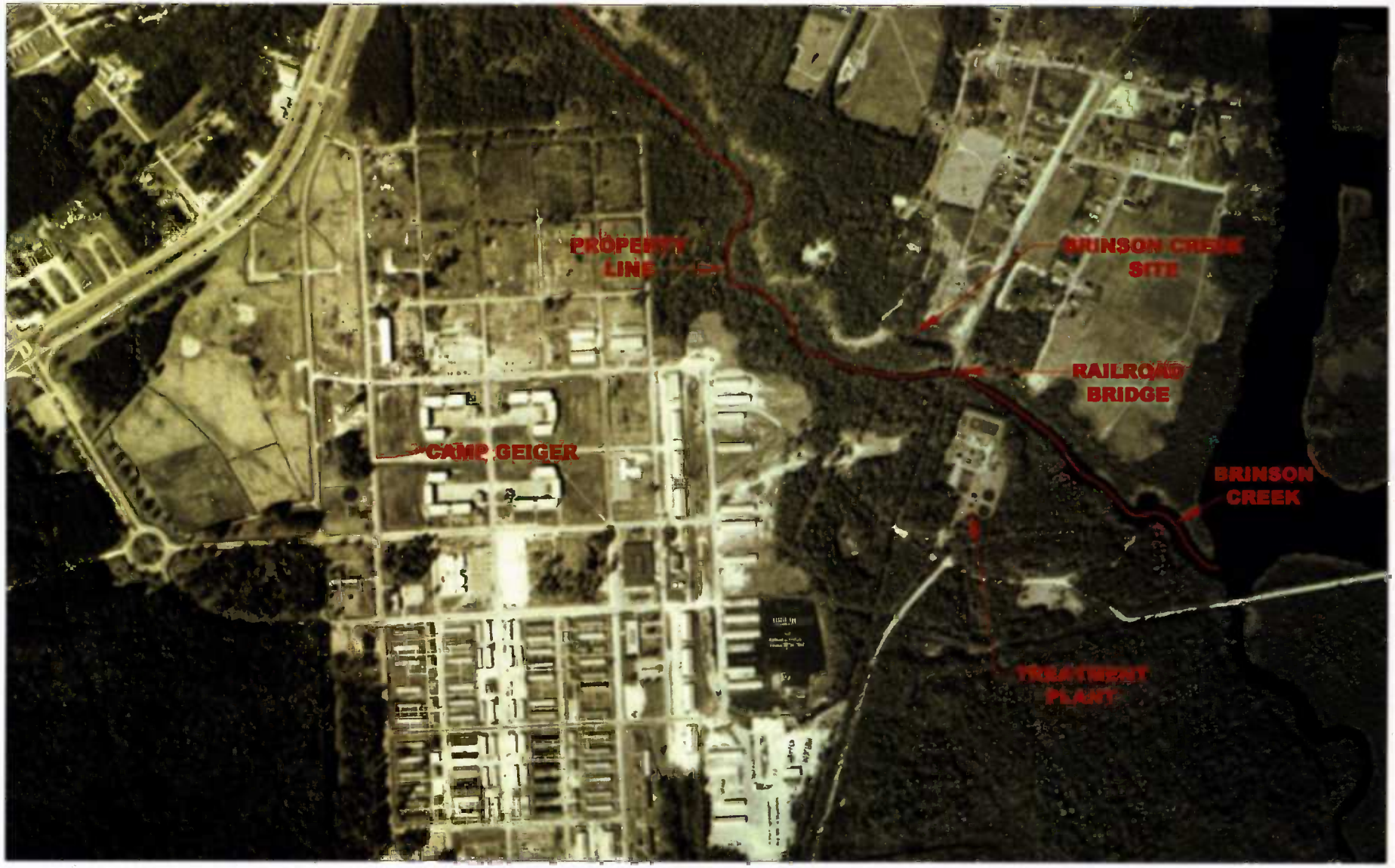


FIGURE 1
LOCATION MAP
BRINSON CREEK SITE
SITE CHARACTERIZATION REPORT, CTO – 0375
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

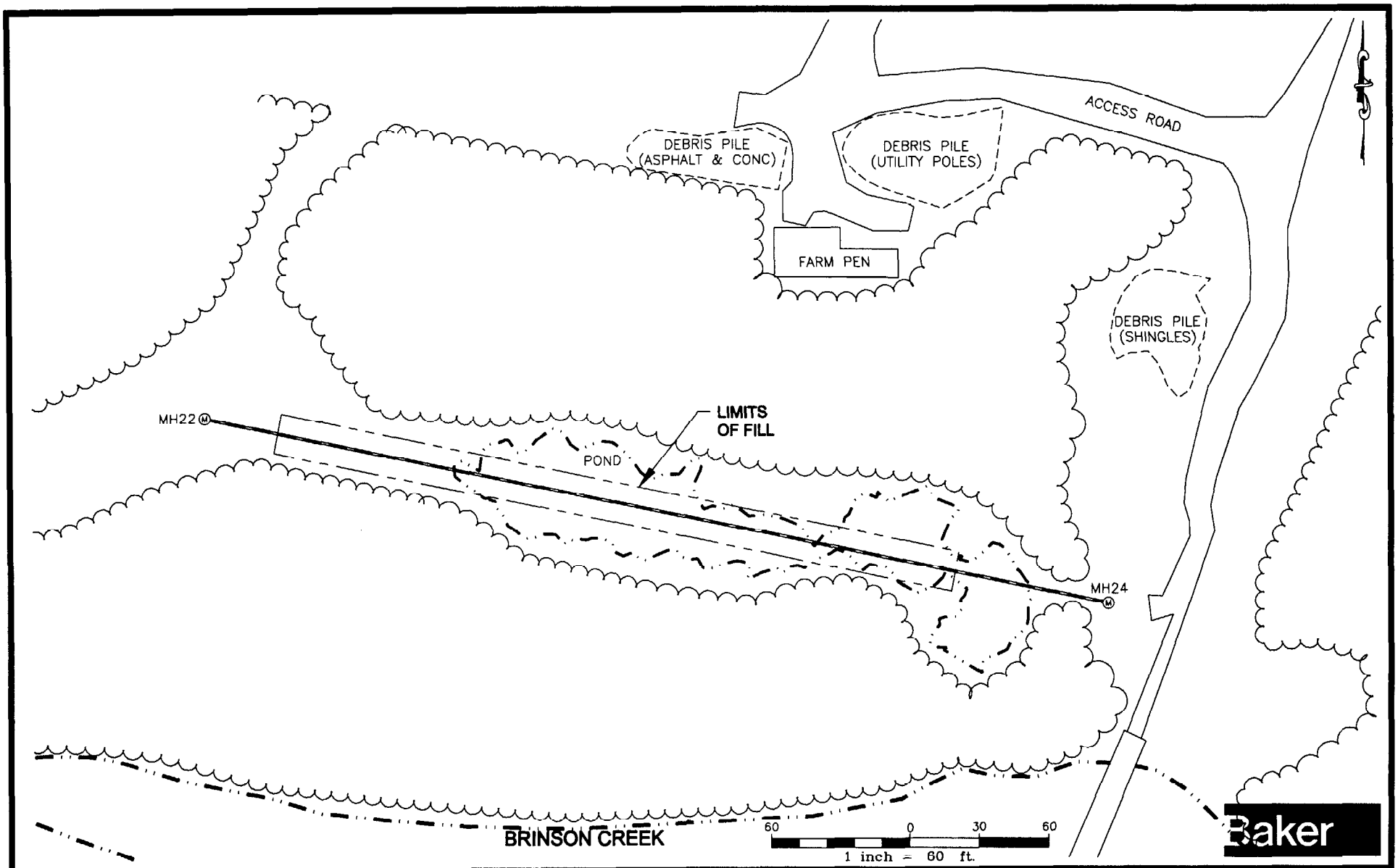


Baker

FIGURE 2
AERIAL PHOTOGRAPH, MARCH 6, 1993
BRINSON CREEK SITE
SITE CHARACTERIZATION REPORT, CTO-0375
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

375013GI

02336B01Y

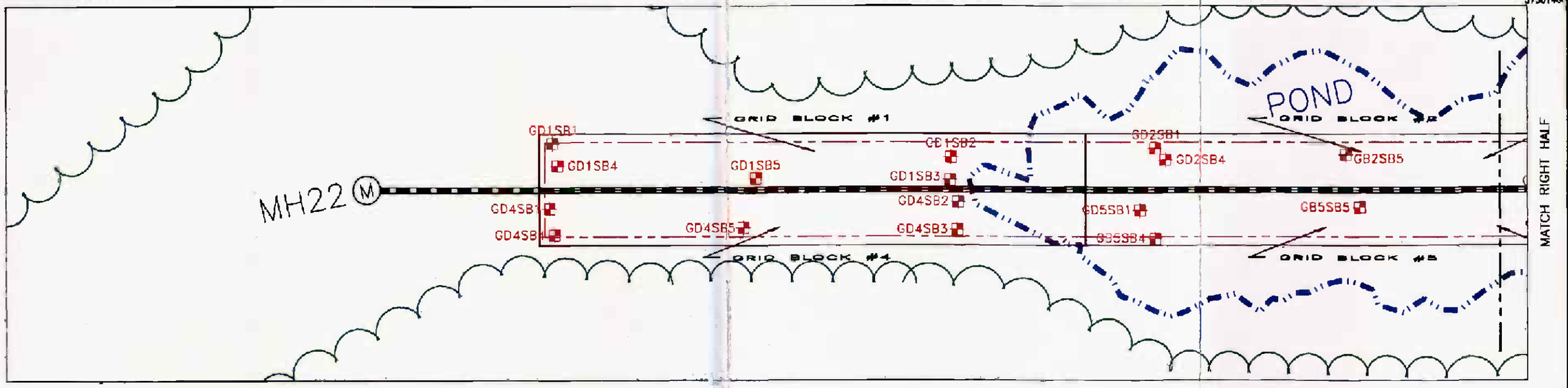


LEGEND

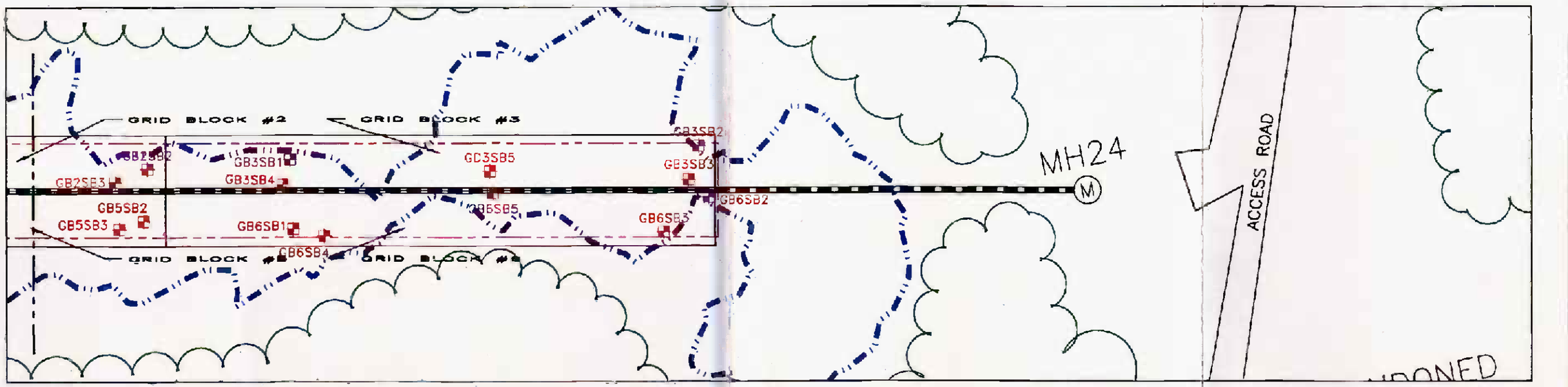
- POND
- TREELINE
- DEBRIS PILE
- Ⓜ MANHOLE
- 18" SANITARY SEWER
- LIMITS OF BRINSON CREEK SITE (FILL AREA)

375011GI

FIGURE 3
SITE PLAN
BRINSON CREEK SITE
SITE CHARACTERIZATION REPORT, CTO – 0375
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



LEFT HALF



RIGHT HALF

LEGEND

- POND
- TREELINE
- MANHOLE
- 18" SANITARY SEWER
- LIMITS OF BRINSON CREEK SITE (FILL AREA)
- 6B6SB4 ACTUAL BORING LOCATION
- LIMITS OF GRID BLOCK

Baker

20 0 10 20

1 inch = 20 ft.

FIGURE 4
SOIL BORING LOCATIONS
BRINSON CREEK SITE
SITE CHARACTERIZATION REPORT, CTO-0375
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

02336B02Y

ATTACHMENTS

ATTACHMENT A
ADMINISTRATIVE ORDER OF CONSENT

NCDENR

JAMES B. HUNT JR.
GOVERNOR

GRETCHEN C. McDEVITT
SECRETARY

NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WASTE MANAGEMENT

March 31, 1998

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ▶ 7

To	From MICK SENUS
Dept./Agency	Phone # 910/451-5068
Fax # 912/269-2002	Fax #

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

CERTIFIED MAIL
Return Receipt Request

Commanding General
AC/S EMD (Attn: Mr. Neal Paul)
Marine Corps Base
PSC Box 20004
Camp LeJeune, North Carolina 28542-0004

RE: Administrative Order on Consent
United States Marine Corps Camp LeJeune
NC6 170 022 580

Dear Mr. Paul:

Enclosed is the United States Marine Corps Camp LeJeune's signed Administrative Order on Consent (Order). Please note that the docket number is 98-052. The Order outlines the specific concerns to be addressed.

Thank you for your assistance in this matter. If you have any questions, please contact Harold McCarty, Acting Head of the Programs Branch at 919-733-2178 extension 247.

Sincerely,

William L. Meyer, Director
North Carolina Division of Waste Management

Enclosure: Administrative Order on Consent

c: Doug Holyfield
Larry Perry
Dick Denton
Kathleen Waylette
Central Files

rc: Helen Cotton
Doug Roberts
Shelia Askew

401 OBERLIN ROAD, SUITE 150, RALEIGH, NC 27605
PHONE 919-733-4996 FAX 919-715-3605

North Carolina Department of Environment
and Natural Resources
Division of Waste Management
Hazardous Waste Section

In Re: United States Marine Corps	)	ADMINISTRATIVE ORDER
Camp LeJeune	)	ON CONSENT
	)	Docket # 98-052
NC6 170 022 580		

PRELIMINARY STATEMENT

With the consent of the United States Marine Corps (USMC Camp LeJeune), owners of property in Onslow County, North Carolina, upon which is or was located certain hazardous wastes, the North Carolina Department of Environment and Natural Resources, through its Division of Waste Management, issues this Administrative Order on Consent (AOC) to amicably resolve issues concerning those hazardous wastes.

BACKGROUND

1. On December 18, 1980, the United States Environmental Protection Agency (EPA) authorized North Carolina to operate a state hazardous waste program in accordance with the provisions of the Resource Conservation and Recovery Act (42 U.S.C. 6901 et seq.), the North Carolina Solid Waste Management Act (NC General Statutes 130A), and the rules promulgated thereunder in the North Carolina Administrative Code at Title 15A, subchapter 13A.

2. Pursuant to the Resource Conservation and Recovery Act (RCRA), the North Carolina Solid Waste Management Act (herein referred to as the "Act"), and rules promulgated thereunder (herein referred to as the "Rules"), the Secretary of the North Carolina Department of Environment and Natural Resources (DENR) is authorized to enforce standards for generation, transportation, treatment, storage, and disposal of hazardous wastes. The Director of the Division of Waste Management, William L. Meyer, is delegated that authority by the Secretary.

RELEVANT STATUTES AND REGULATIONS

1. Wastes which are subject to regulation as hazardous wastes under title 40 Code of Federal Regulations (CFR) part 262 through 265, 268, and part 270, 271 and 124 are identified in title 40 CFR 261.1(a) which is adopted by reference in 15A NCAC 13A .0106. The hazardous wastes so identified are subject to the notification requirements of section 3010 of RCRA.

2. Pursuant to title 40 CFR 261.2(b), as adopted by reference in 15A NCAC 13A .0106, materials are a solid waste if they are abandoned by being (1) disposed of; (2) burned or incinerated; or (3) accumulated, stored, or treated (but not recycled) before or in lieu of being abandoned by being disposed of, burned, or incinerated.

3. Pursuant to title 40 CFR 261.3(a), as adopted by reference in 15A NCAC 13A .0106, a solid waste is hazardous if:
   - (a). It is not excluded from regulation as a hazardous waste under section 261.4(b); and
   - (b). It meets any of the following criteria:
     - (i). It exhibits the characteristics of hazardous waste identified in Subpart C.
     - (ii). It is listed in Subpart D and has not been excluded from the lists in Subpart D under Sections 260.20 and 260.22.
     - (iii). It is a mixture of a solid waste and a hazardous waste that is listed in Subpart D solely because it exhibits one or more of the characteristics of hazardous waste identified in Subpart C, unless the resultant mixture no longer exhibits any characteristics of hazardous waste identified in Subpart C.
     - (iv). It is a mixture of solid waste and one or more hazardous wastes listed in Subpart D and has not been excluded from this paragraph under Sections 260.20 and 260.22.

4. Pursuant to GS 130A-290(6), "Disposal" is the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste into or on any land or water so that the solid waste or any constituent part of the solid waste may enter the environment or be emitted into the air or discharged into any waters, including groundwater.

STIPULATIONS OF FACT

1. The City of Jacksonville owns property located at Brinson Creek, in Jacksonville, Onslow County, North Carolina (herein referred to as the "Site").

2. USMC Camp LeJeune is a person as defined in NCGS 130A-290(22) and 15A NCAC 13A.0102, ~~and generated the hazardous waste disposed of at the Site.~~

3. In a letter to Flint Worrell, Waste Management Specialist for the Division, Mr. N. R. Robins, Special Agent in Charge with the Department of the Navy's Criminal Investigation Service (NCIS) Field Office at Camp LeJeune advised the state of the Navy's investigation of the management of sandblast material at the Site. Tito Contractors, Inc. was contracted by the Navy to sandblast and remove hazardous paint materials from approximately 150 assault vehicles. Sand and grit generated by this process is or was contaminated with lead and/or chromium. As stated in the correspondence, sometime between May and August 1992, R&W Construction

transported the sand and grit generated by this action from Camp LeJeune to a City of Jacksonville wastewater treatment project. Investigations revealed that R&W spread the material in an area approximately 17 feet wide by 12 feet deep that extended over a distance of about ~~300 yards~~ along Brinson Creek. Tito had apparently tested the material only for lead content and did not test for chromium. Later tests of similar debris performed by Camp LeJeune indicated the paint debris had a lead content of 0.6 mg/l and a chromium content of 1.09 mg/l under the Toxicity Characteristic Leaching Procedure. Tito is said to be unable or unwilling to account for the filtering devices used during Phase I of the two phase project. The investigation indicated that the filtering devices should have been heavily contaminated with lead and chromium as well.

Replace w/ 300 feet

4. Following a Comprehensive Environmental Response, Compensation, and Liability Act investigation, USMC Camp LeJeune notified the Division on March 10, 1997 of a potential human health risk that may be present in the Brinson Creek - Camp Geiger area. Concentrations of mercury and arsenic were detected in fish tissue. Arsenic and lead were found in crab tissue. ~~The investigation identified as a potential source the sand blasting grit improperly transported and disposed of in the Brinson Creek area.~~

5. Hazardous wastes involved at the Site include sand blasting debris potentially containing hazardous waste including hazardous waste codes D007 and D008.

~~6. USMC Camp LeJeune is the generator of the above hazardous wastes and is responsible for the proper treatment, storage and disposal of the hazardous waste.~~

7. The Division has jurisdiction under RCRA, the Act, and the Rules to require remediation of the Site.

ORDER

The Division hereby issues to, and with the consent of, USMC Camp LeJeune the following AOC:

1. The provision of this AOC shall henceforth govern the remedial actions of USMC Camp LeJeune with regard to this Site.

2. USMC Camp LeJeune shall comply with 40 CFR 262.11, as adopted by reference in 15A NCAC 13A .0107. An immediate determination and analysis of all solid wastes generated and disposed of at the Site shall be completed to ensure proper characterization and disposition of the wastes.

3. Within thirty (30) days of the effective date of this AOC, USMC Camp LeJeune shall submit to the Hazardous Waste Section (Section) a comprehensive sampling and analysis work plan for investigating the potential lead, chromium and any other applicable hazardous waste contamination at the Site due to the disposal of sand blasting debris.

Within sixty (60) days of receipt of the sampling and analysis work plan approval, USMC Camp LeJeune shall submit the sampling and analysis report which verifies the extent and characterization of the soil contamination (inorganic and organic) at the Site; specifically, the 17 feet wide by 12 feet deep area extending a distance of ~~300 yards~~ Reduce w/ 300 ft along Brinson Creek that was impacted by the improper disposal of the sandblasting debris. This report shall specify the sampling and analysis procedures used, sampling locations, and the depths used to assess the horizontal and vertical extent of contamination as well as sampling and analysis results.

4. Within forty-five (45) days of submitting the comprehensive sampling and analysis report in item 3, USMC Camp LeJeune shall submit a remediation plan. The remediation plan shall describe the remediation of the Site including any necessary soil removal, storage and transportation to an off-site disposal facility, and sampling to evaluate the adequacy of the clean-up. If USMC Camp LeJeune cannot effectively achieve remediation target levels at the site within one hundred-eighty (180) days after receiving the Division's approval of the remediation plan, USMC Camp LeJeune shall submit to the Division: 1) a justification for additional time to remediate the Site including a new proposed remediation schedule, or 2) shall submit a closure plan in accordance with 40 CFR 265.112, codified at 15A NCAC 13A .0110, a post-closure plan in accordance with 40 CFR 265.118, codified at 15A NCAC 13A .0110, and begin performing groundwater monitoring in accordance with 40 CFR 265.90-94, codified at 15A NCAC 13A .0110. If a revised schedule is proposed and the Division does not agree that compliance with the schedule will effectively remediate the Site within a timely manner, USMC Camp LeJeune shall immediately submit the closure and post-closure plans and begin performing groundwater monitoring as described above.

5. USMC Camp LeJeune shall comply with 15A NCAC 13A .0109(a). USMC Camp LeJeune shall no longer store or dispose of any more hazardous waste at the site. USMC Camp LeJeune shall manage all hazardous waste previously on the site in accordance with the approved remediation plan or USMC Camp LeJeune shall comply with the closure, post-closure, and groundwater monitoring provisions stated in item 4.

6. During the interim, pending shipment of the hazardous waste, USMC Camp LeJeune shall comply with 40 CFR 262.34(a), as adopted by reference in 15A NCAC 13A .0107.

   (a). If hazardous waste is placed in containers, USMC Camp LeJeune shall comply with Subpart I of 40 CFR Part 265 or if hazardous waste is placed in tanks, USMC Camp LeJeune shall comply with Subpart J of 40 CFR Part 265 with the exception of 265.197(c) and 265.200.

   (b). USMC Camp LeJeune shall mark clearly, so as to be visible for inspection on each container of hazardous waste, the date upon which each period of accumulation begins.

   (c). While being accumulated on-site, USMC Camp LeJeune shall label or mark clearly with the words "Hazardous Waste" each hazardous waste container and tank.

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ► 2

To	From MICK SENUS
Dept./Agency	Phone # 910/451-5068
Fax # 412/269-2002	Fax #

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

DESIGNATED PROJECT COORDINATORS

Documents including reports, approvals, disapprovals, and other correspondence which must be submitted under this AOC shall be sent to the following addresses and to any other addresses which USMC Camp LeJeune and the Division designate in writing:

(1). Submittals to the Division or the Section shall be addressed to:

James A. Carter, Chief
Hazardous Waste Section (Attn: Larry Perry)
P.O. Box 29603
Raleigh, NC 27611-9603

(2) Submittals to USMC Camp LeJeune will be addressed to:

Commanding General
AC/S EMD (Attn: Mr. Neal Paul)
Marine Corps Base
PSC Box 20004
Camp LeJeune, North Carolina 28542-0004

DELAY IN PERFORMANCE

If any event occurs which causes delay in the achievement of the requirements of this AOC, USMC Camp LeJeune shall have the burden of demonstrating that the delay was caused by circumstances beyond the reasonable control of USMC Camp LeJeune which could not be overcome by its due diligence. USMC Camp LeJeune shall promptly notify the Division orally and shall, within seven (7) calendar days of oral notification to the Division, advise the Division in writing of the anticipated length and cause of the delay and the timetable by which USMC Camp LeJeune intends to obtain compliance. If the Division agrees that the delay has been or will be caused by circumstances beyond the reasonable control of USMC Camp LeJeune, the time for performance will be extended for a period equal to the delay resulting from such circumstances. Neither increased costs of performance of the terms of this AOC nor changed economic circumstances shall be considered as circumstances beyond the control of USMC Camp LeJeune.

DISPUTE RESOLUTION

If USMC Camp LeJeune objects to any disapproval or other decision made by the Division pursuant to this AOC, USMC Camp LeJeune may notify the Division in writing of its objections within fourteen (14) calendar days of receipt of the decision and request reconsideration, amendment or other modification. If, within fourteen (14) days following receipt of the request, the Division and USMC Camp LeJeune have not reached mutual agreement regarding the objections raised, the Division will provide a written response to USMC Camp LeJeune's request.

The above AOC is effective on this the 31 day of March, 1998.

DIVISION OF WASTE MANAGEMENT

for William L. Meyer, Division Director — 31 March 1998 Date

USMC CAMP LEJEUNE

Scott A. Brewer — 2/6/98 Date

Scott A. Brewer
Deputy Assistant Chief of Staff
Environmental Management Department
Marine Corps Base, Camp Lejeune

and solely for the purposes of Site access,

CITY OF JACKSONVILLE, NORTH CAROLINA

3-18-98 Date

C:\ORDER\USMC2.BIL

ATTACHMENT B
PHOTOGRAPHS

PHTOGRAPH OF MANHOLE #22. THE GUIDELINE SHOWING THE SEWERLINE ALIGNMENT IS IN THE CENTER OF THE PHOTOGRAPH. JOHN BOAT IS TO THE RIGHT.

LOOKING EAST ACROSS THE SITE. PHOTO WAS TAKEN WHILE STANDING ON MANHOLE #22.

LOOKING WEST ACROSS THE SITE FROM MANHOLE #24 TOWARD MANHOLE #22. MANHOLE #24 IS SHOWN IN THE CENTER OF THE PHOTO.

LOOKING WEST ACROSS THE SITE FROM THE PONDS EDGE. POINTS GB6SB02, GB3SB02 AND GB3SB2 ARE SHOWN IN THE CENTER OF THE PHOTO. MANHOLE #24 IS BEHIND PHOTOGRAPHER.

LOOKING EAST ACROSS THE SITE FROM THE POND EDGE.
POINTS 6D1SB2, 6D1SB3, 6D4SB2 AND 6D4SB3.
MANHOLE #22 IS BEHIND THE PHOTOGRAPHER.

PHOTOGRAPH OF JOHN BOAT. NOTE SAMPLING PORTAL IN THE CENTER OF THE BOAT.

CONCRETE AND ASPHALT DEBRIS PILE.

UTILITY POLE DEBRIS PILE.

DEBRIS PILE CONTAINING ROOFING SHINGLES.

THE LIVESTOCK PEN IS SHOWN IN THE CENTER OF THE PHOTOGRAPH. THE UTILITY POLE DEBRIS PILE IS TO THE LEFT. SURVEYOR WITH GPS UNIT IS SHOWN IN FRONT OF THE PIG PEN.

ATTACHMENT C

AS-BUILT DRAWING OF BRINSON CREEK TRUNK MAIN

ALTON B PARKER
DB 616, PG 714

EXISTING DESIGN COLLECTOR SEWER

HENDERSON AVE - 30' R/W (PROPOSED 50' R/W)

ALTON B PARKER
DB 616, PG 714

MANHOLE # 22

MANHOLE # 24

MANHOLE # 21

MANHOLE # 25

20

SEE SHEET 6 OF 14

45+05

116 LF 18" SS @ 0.115%
S 73°49'25" E 116.12

208 LF 18" SS @ 0.115%
N 74 09 25" E 207.93

398 LF 18" SS @ 0.15%
S 78 10'56" E 398.36

110 LF 18" SS @ 0.14%
S 46 34 14" E 110.00

219 LF 18" SS @ 0.115%
S 71 44 08" E 219.36

STUB-OUT & PLUG
4 LF 8" SS @ 0.40%

STUB-OUT & PLUG
4 LF 8" SS @ 1.0%

60' UTILITY & ACCESS EASEMENT

SILT FENCE

TRAVERSE LINE

BRINSON CREEK

BRINSON CREEK

BRINSON CREEK

RAILROAD BRIDGE

PIG PEN

WASHINGTON STREET 40' R/W

EXISTING DESIGN COLLECTOR SEWER

ALLISON HATCHELL
D.B. 217, PG. 568

ALLISON HATCHELL
D.B. 269, PG. 271

JOHN HENRY LEWIS
& LETTIE (DOLLY) LEWIS
D.B. 248, PG. 831

ALLISON HATCHELL
D.B. 285, PG. 278

MATCHLINE STA 56+70
FOR CONTINUATION SEE SHEET 8 OF 14

BENCHMARK - RAILROAD SPIKE
IN 10" OAK
ELEV 5.60

BENCHMARK - NAIL IN WOOD
OF RAILROAD BRIDGE
ELEV 6.92

BENCHMARK
SPIKE 1' AB
IN 16" PINE
ELEV 5.15

NOTE M.H. #23 DELETED

DROP MANHOLE # 21
STA 46+
TOP 5.5

MANHOLE # 22
STA 48+29
TOP 5.3 WITH 1' VENT

MANHOLE # 24
STA 52+27 LINE BACK
STA 53+41 LINE AHEAD
TOP 4.6

DROP MANHOLE # 25
STA 54+51
TOP 5.3

MATCHLINE MANHOLE # 26
STA 58+
TOP 5.2 WITH

0.15% @ 0.115%
208 LF 18" SS @ 0.115%
0.12%
398 LF 18" SS @ 0.15%
0.17%
110 LF 18" SS @ 0.14%
0.15%
219 LF 18" SS @ 0.115%
0.15%

MATCH
MATCH

AS BUILT

46+00 47+00 48+00 49+00 50+00 51+0 52+0 53+00 54+00 55+00 56+00 57+00

10 5 0 -10

BRINSON CREEK TRUNK MAIN

BRINSON CREEK TRUNK MAIN AND SEWAGE PUMPING STATION
SEWER SYSTEM IMPROVEMENTS
1990 ANNEXATION AREAS
CITY OF JACKSONVILLE

OWNER: CITY OF JACKSONVILLE
ONSLOW COUNTY NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 11575 TIMOTHY M. STEWART

James E Stewart and Associates, Inc
ENGINEERING - SURVEYING - PLANNING
P.O. DRAWER 576
JACKSONVILLE, NORTH CAROLINA 28541-0576
919-455-2414

SHEET NO. 7 OF 14
FILE NO. BCPPS
APPROVED

SCALE HORIZONTAL 1"=40' DRAWN DESIGNED TMS

C233620

ATTACHMENT D
CHAIN OF CUSTODY RECORDS

Quanterra
Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(423) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 377
Page 1 of 2

Project Name/No.[1] BRINSON CREEK SANDBLAST GRITE AREA
Sample Team Members[2] MDSMITH
Profit Center No.[3] KNOXVILLE, TN
Project Manager[4] JAMIE MCKINNEY
Purchase Order No.[6] CTO 375
Required Report Date[11] 7 DAYS FROM RECEIPT

Samples Shipment Date[7] 7-16-98
Lab Destination[8] KNOXVILLE, TN
Lab Contact[9] TOM YODER/J. MCKINNEY
Project Contact/Phone[12] MSMITH or 910-347-8230 412-26A-2024
Carrier/Waybill No.[13]

Bill to:[5] MDSMITH
420 ROUSER ROAD
AIRPORT OFFICE PARK
BLDG 3
CORAOPOLIS, PA 15108

Report to:[10] SAME

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Pre-servative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
SD01-98C	sediment	7-14-98 1715	WM Glass	250ml	—	TCLP METALS		
SD02-98C		7-15-98 0930			—		FOR LAB USE ONLY	
SD03-98C		7-15-98 1453			—			
SD04-98C		7-14-98 1915			—			
SD02-98C(DUPLICATE)		7-15-98 0930		150ml	—			
SD05-98C		7-16-98 1600		250ml	—		FOR LAB USE ONLY	
SD06-98C		7-15-98 1725			—			
SD04A-98C		7-15-98 1747			—	MS/MSD QUANTITY		

Special Instructions:[23] SEVEN DAY TURNAROUND TIME

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☒ Archive (mos.)

Turnaround Time Required:[26]
Normal ☐ Rush ☒ 7 DAY

QC Level:[27]
I. ☐ II. ☐ III. ☒ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation) MDSMITH	Date: 5-18-98 Time: 1745	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]
MOST LIKELY THESE ARE NON HAZARDOUS.

MCA 2/15/91

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(423) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 4377
Page 2 of 2

Project Name BRINSON CREEK SANDBLAST GRIT AREA

Project No. C10375

Samples Shipment Date 7-16-98

ONE CONTAINER PER LINE

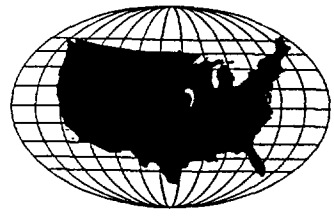
Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
IDW01-98C	SEDIMENT	7/16/98 1030	2, 250ml / 1, 150ml	WM GLASS	—	FULL TCLP VOA		
RB01-98C	WATER	7/16/98 0930	AMBER	1, 1L	—	TCLP METALS	FOR LAB USE ONLY	
RB02-98C	WATER	7/16/98 0945	AMBER	1, 1L	—	TCLP METALS		
TB01-98C	WATER	— 7/16/98	VIALS	3, 40ml	—	CLP VOA	FOR LAB USE ONLY	
FB01-98C	WATER	7/16/98 1130	AMBER	1, 1L	—	TCLP METALS		
IDW01-98C	SEDIMENT	7/16/98 1030	1/2WMGlass	2, 250ml	—	RCRA CHARACTERISTICS IGNITABILITY, CN'S REACTIVITY CORROSIVITY SUBAU 8270	FOR LAB USE ONLY	
1ST61-SB04-03	SOIL	7/16/98 1550	2,250ml	WM GLASS	—		FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA 2/15/91

ATTACHMENT E
DATA VALIDATION REPORT



HEARTLAND
ENVIRONMENTAL SERVICES, INC.

Data Validation Report

SDG#:	H8G170111
Date:	August 12, 1998
Client Name:	Baker Environmental
Project/Site Name:	Camp Lejeune
Date Sampled:	July 14-16, 1998
Number of Samples:	3 Aqueous Sample(s) with 0 MS/MSD(s) 8 Non-aqueous Sample(s) with 1 MS/MSD(s)
Laboratory:	Quanterra, Inc.
Validation Guidance:	National Functional Guidelines for Organic and Inorganic Data, February, 1994
QA/QC Level:	NEESA Level C
Method(s) Utilized:	SW846 Third Edition
Analytical Fractions:	TCLP Metals

Analytical data in this report were screened to determine usability of results and also to determine contractual compliance relative to these requirements and deliverables. This screening assumes analytical results are correct as reported and merely provides an interpretation of the reported quality control results. A minimum of 10% of all laboratory calculations have been verified as part of this validation. All instrument output, i.e. spectra, chromatograms, etc., for each sample have been carefully reviewed. The end-user is urged to review the Specific Findings and associated Data Qualifications presented in this report. Annotated Form 1s or spreadsheets for all samples reviewed are included after the Data Assessment Narratives. Form 1s for MS/MSD samples or spreadsheets are not annotated.

The release of this Data Validation Report is authorized by the following signature:

Craig G. Scafford

Eugene M. Watson, Vice President

8/12/98.

Date

4127 Plaza 94 South • St. Charles, MO 63304
(314) 936-1332 • Fax (314) 936-1335

SDG# H8G170111

Samples and Fractions Reviewed

Sample Identifications Analytical Fractions

BAKER ID	MATRIX	T-MET	
SD01-98C	SOIL		X
SD02-98C	SOIL		X
SD03-98C	SOIL		X
SD04-98C	SOIL		X
SD02-98C DUP	SOIL		X
SD05-98C	SOIL		X
SD06-98C	SOIL		X
SD04A-98C	SOIL		X
SD04A-98C MS	SOIL		X
SD04A-98C MSD	SOIL		X
RB01-98C	WATER	X	
RB02-98C	WATER	X	
FB01-98C	WATER	X	
Total Billable Samples (Water/Soil)		3	10

T-MET= TCLP Metals

DATA ASSESSMENT NARRATIVE
TCLP METALS

General

The inorganic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, matrix spike and LCS recoveries, matrix duplicates and calibration results. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the SW 846 Methods; the Functional Guidelines for Inorganic Data Validation, February 1994, and NEESA C requirements. All comments made within this report should be considered when examining the analytical results. Please refer the specific findings found in each category to the Summary of Data Qualification table.

SDGs # H8G170111

A validation was performed on the TCLP Metals Data from SDG H8G170111. The data was evaluated based on the following parameters.

*	•	Data Completeness
*	•	Holding Times
*	•	Calibrations
*	•	Blanks
*	•	Interferences
*	•	Matrix Spike Recovery
*	•	Matrix Duplicates
*	•	Field Duplicates
*	•	Laboratory Control Samples
*	•	Serial Dilutions

* - All criteria were met for this parameter.

SUMMARY OF DATA QUALIFICATIONS

Sample ID	Analyte	DL	QL

Data stands as reported without qualification.

BAKER ENVIRONMENTAL, INC.

Client Sample ID: SD01-98C

TCLP Metals

Lot-Sample #...: H8G170111-001 Matrix.....: SOLID
Date Sampled...: 07/14/98 Date Received..: 07/17/98
Leach Date.....: 07/20/98 Leach Batch #..: P820102

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 8202304						
Mercury	ND	0.0020	mg/L	SW846 7470A	07/22/98	CJVCD108
		Dilution Factor: 1				
Prep Batch #...: 8203144						
Arsenic	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVCD101
		Dilution Factor: 1				
Barium	ND	10.0	mg/L	SW846 6010B	07/22/98	CJVCD102
		Dilution Factor: 1				
Cadmium	ND	0.10	mg/L	SW846 6010B	07/22/98	CJVCD103
		Dilution Factor: 1				
Chromium	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVCD104
		Dilution Factor: 1				
Lead	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVCD105
		Dilution Factor: 1				
Selenium	ND	0.25	mg/L	SW846 6010B	07/22/98	CJVCD106
		Dilution Factor: 1				
Silver	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVCD107
		Dilution Factor: 1				

NOTE(S):

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

PBH 8/12/98

BAKER ENVIRONMENTAL, INC.

Client Sample ID: SD02-98C

TCLP Metals

Lot-Sample #...: H8G170111-002 **Matrix.....:** SOLID
Date Sampled...: 07/15/98 **Date Received..:** 07/17/98
Leach Date.....: 07/20/98 **Leach Batch #..:** P820102

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 8202304						
Mercury	ND	0.0020 Dilution Factor: 1	mg/L	SW846 7470A	07/22/98	CJVCF108
Prep Batch #...: 8203144						
Arsenic	ND	0.50 Dilution Factor: 1	mg/L	SW846 6010B	07/22/98	CJVCF101
Barium	ND	10.0 Dilution Factor: 1	mg/L	SW846 6010B	07/22/98	CJVCF102
Cadmium	ND	0.10 Dilution Factor: 1	mg/L	SW846 6010B	07/22/98	CJVCF103
Chromium	ND	0.50 Dilution Factor: 1	mg/L	SW846 6010B	07/22/98	CJVCF104
Lead	ND	0.50 Dilution Factor: 1	mg/L	SW846 6010B	07/22/98	CJVCF105
Selenium	ND	0.25 Dilution Factor: 1	mg/L	SW846 6010B	07/22/98	CJVCF106
Silver	ND	0.50 Dilution Factor: 1	mg/L	SW846 6010B	07/22/98	CJVCF107

NOTE(S):

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

PBH 8/12/98

BAKER ENVIRONMENTAL, INC.

Client Sample ID: SD03-98C

TCLP Metals

Lot-Sample #...: H8G170111-003 Matrix.....: SOLID
Date Sampled...: 07/15/98 Date Received..: 07/17/98
Leach Date.....: 07/20/98 Leach Batch #..: P820102

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 8202304						
Mercury	ND	0.0020	mg/L	SW846 7470A	07/22/98	CJVCG108
		Dilution Factor: 1				
Prep Batch #...: 8203144						
Arsenic	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVCG101
		Dilution Factor: 1				
Barium	ND	10.0	mg/L	SW846 6010B	07/22/98	CJVCG102
		Dilution Factor: 1				
Cadmium	ND	0.10	mg/L	SW846 6010B	07/22/98	CJVCG103
		Dilution Factor: 1				
Chromium	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVCG104
		Dilution Factor: 1				
Lead	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVCG105
		Dilution Factor: 1				
Selenium	ND	0.25	mg/L	SW846 6010B	07/22/98	CJVCG106
		Dilution Factor: 1				
Silver	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVCG107
		Dilution Factor: 1				

NOTE(S):

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

1/21/98

BAKER ENVIRONMENTAL, INC.

Client Sample ID: SD04-98C

TCLP Metals

Lot-Sample #...: H8G170111-004 Matrix.....: SOLID
Date Sampled...: 07/14/98 Date Received..: 07/17/98
Leach Date.....: 07/20/98 Leach Batch #..: P820102

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 8202304						
Mercury	ND	0.0020	mg/L	SW846 7470A	07/22/98	CJVCJ108
		Dilution Factor: 1				
Prep Batch #...: 8203144						
Arsenic	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVCJ101
		Dilution Factor: 1				
Barium	ND	10.0	mg/L	SW846 6010B	07/22/98	CJVCJ102
		Dilution Factor: 1				
Cadmium	ND	0.10	mg/L	SW846 6010B	07/22/98	CJVCJ103
		Dilution Factor: 1				
Chromium	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVCJ104
		Dilution Factor: 1				
Lead	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVCJ105
		Dilution Factor: 1				
Selenium	ND	0.25	mg/L	SW846 6010B	07/22/98	CJVCJ106
		Dilution Factor: 1				
Silver	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVCJ107
		Dilution Factor: 1				

NOTE(S):

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

PDA 8/25/98

BAKER ENVIRONMENTAL, INC.

Client Sample ID: SD02-98C(DUP)

TCLP Metals

Lot-Sample #...: H8G170111-005 Matrix.....: SOLID
Date Sampled...: 07/15/98 Date Received..: 07/17/98
Leach Date.....: 07/20/98 Leach Batch #..: P820102

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 8202304						
Mercury	ND	0.0020	mg/L	SW846 7470A	07/22/98	CJVCP108
		Dilution Factor: 1				
Prep Batch #...: 8203144						
Arsenic	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVCP101
		Dilution Factor: 1				
Barium	ND	10.0	mg/L	SW846 6010B	07/22/98	CJVCP102
		Dilution Factor: 1				
Cadmium	ND	0.10	mg/L	SW846 6010B	07/22/98	CJVCP103
		Dilution Factor: 1				
Chromium	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVCP104
		Dilution Factor: 1				
Lead	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVCP105
		Dilution Factor: 1				
Selenium	ND	0.25	mg/L	SW846 6010B	07/22/98	CJVCP106
		Dilution Factor: 1				
Silver	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVCP107
		Dilution Factor: 1				

NOTE(S):

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

PPA 8/12/98

BAKER ENVIRONMENTAL, INC.

Client Sample ID: SD05-98C

TCLP Metals

Lot-Sample #...: H8G170111-006 Matrix.....: SOLID
Date Sampled...: 07/15/98 Date Received..: 07/17/98
Leach Date.....: 07/20/98 Leach Batch #..: P820102

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 8202304						
Mercury	ND	0.0020	mg/L	SW846 7470A	07/22/98	CJVCW108
		Dilution Factor: 1				
Prep Batch #...: 8203144						
Arsenic	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVCW101
		Dilution Factor: 1				
Barium	ND	10.0	mg/L	SW846 6010B	07/22/98	CJVCW102
		Dilution Factor: 1				
Cadmium	ND	0.10	mg/L	SW846 6010B	07/22/98	CJVCW103
		Dilution Factor: 1				
Chromium	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVCW104
		Dilution Factor: 1				
Lead	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVCW105
		Dilution Factor: 1				
Selenium	ND	0.25	mg/L	SW846 6010B	07/22/98	CJVCW106
		Dilution Factor: 1				
Silver	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVCW107
		Dilution Factor: 1				

NOTE(S):

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

PBH 08/12/98

BAKER ENVIRONMENTAL, INC.

Client Sample ID: SD06-98C

TCLP Metals

Lot-Sample #...: H8G170111-007 Matrix.....: SOLID
Date Sampled...: 07/15/98 Date Received..: 07/17/98
Leach Date.....: 07/20/98 Leach Batch #..: P820102

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 8202304						
Mercury	ND	0.0020 Dilution Factor: 1	mg/L	SW846 7470A	07/22/98	CJVD5108
Prep Batch #...: 8203144						
Arsenic	ND	0.50 Dilution Factor: 1	mg/L	SW846 6010B	07/22/98	CJVD5101
Barium	ND	10.0 Dilution Factor: 1	mg/L	SW846 6010B	07/22/98	CJVD5102
Cadmium	ND	0.10 Dilution Factor: 1	mg/L	SW846 6010B	07/22/98	CJVD5103
Chromium	ND	0.50 Dilution Factor: 1	mg/L	SW846 6010B	07/22/98	CJVD5104
Lead	ND	0.50 Dilution Factor: 1	mg/L	SW846 6010B	07/22/98	CJVD5105
Selenium	ND	0.25 Dilution Factor: 1	mg/L	SW846 6010B	07/22/98	CJVD5106
Silver	ND	0.50 Dilution Factor: 1	mg/L	SW846 6010B	07/22/98	CJVD5107

NOTE(S):

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

BAKER ENVIRONMENTAL, INC.

Client Sample ID: SD04A-98C

TCLP Metals

Lot-Sample #...: H8G170111-008 Matrix.....: SOLID
Date Sampled...: 07/15/98 Date Received..: 07/17/98
Leach Date.....: 07/20/98 Leach Batch #..: P820102

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 8202304						
Mercury	ND	0.0020	mg/L	SW846 7470A	07/22/98	CJVD610P
		Dilution Factor: 1				
Prep Batch #...: 8203144						
Arsenic	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVD6101
		Dilution Factor: 1				
Barium	ND	10.0	mg/L	SW846 6010B	07/22/98	CJVD6104
		Dilution Factor: 1				
Cadmium	ND	0.10	mg/L	SW846 6010B	07/22/98	CJVD6107
		Dilution Factor: 1				
Chromium	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVD610A
		Dilution Factor: 1				
Lead	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVD610E
		Dilution Factor: 1				
Selenium	ND	0.25	mg/L	SW846 6010B	07/22/98	CJVD610H
		Dilution Factor: 1				
Silver	ND	0.50	mg/L	SW846 6010B	07/22/98	CJVD610L
		Dilution Factor: 1				

NOTE(S):

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

Prott 8/12/98

BAKER ENVIRONMENTAL, INC.

Client Sample ID: RB01-98C

TCLP Metals

Lot-Sample #...: H8G170111-010 Matrix.....: WATER
Date Sampled...: 07/16/98 Date Received..: 07/17/98
Leach Date.....: 07/20/98 Leach Batch #..: P820103

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 8202311						
Mercury	ND	0.0020	mg/L	SW846 7470A	07/22/98	CJVDA101
		Dilution Factor: 1				
Prep Batch #...: 8203143						
Arsenic	ND	0.50	mg/L	SW846 6010B	07/22-07/23/98	CJVDA102
		Dilution Factor: 1				
Barium	ND	10.0	mg/L	SW846 6010B	07/22-07/23/98	CJVDA103
		Dilution Factor: 1				
Cadmium	ND	0.10	mg/L	SW846 6010B	07/22-07/23/98	CJVDA104
		Dilution Factor: 1				
Chromium	ND	0.50	mg/L	SW846 6010B	07/22-07/23/98	CJVDA105
		Dilution Factor: 1				
Lead	ND	0.50	mg/L	SW846 6010B	07/22-07/23/98	CJVDA106
		Dilution Factor: 1				
Selenium	ND	0.25	mg/L	SW846 6010B	07/22-07/23/98	CJVDA107
		Dilution Factor: 1				
Silver	ND	0.50	mg/L	SW846 6010B	07/22-07/23/98	CJVDA108
		Dilution Factor: 1				

NOTE(S):

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

PBot 8/29/98

BAKER ENVIRONMENTAL, INC.

Client Sample ID: RB02-98C

TCLP Metals

Lot-Sample #...: H8G170111-011 **Matrix.....:** WATER
Date Sampled...: 07/16/98 **Date Received..:** 07/17/98
Leach Date.....: 07/20/98 **Leach Batch #..:** P820103

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 8202311						
Mercury	ND	0.0020	mg/L	SW846 7470A	07/22/98	CJVDE101
		Dilution Factor: 1				
Prep Batch #...: 8203143						
Arsenic	ND	0.50	mg/L	SW846 6010B	07/22-07/23/98	CJVDE102
		Dilution Factor: 1				
Barium	ND	10.0	mg/L	SW846 6010B	07/22-07/23/98	CJVDE103
		Dilution Factor: 1				
Cadmium	ND	0.10	mg/L	SW846 6010B	07/22-07/23/98	CJVDE104
		Dilution Factor: 1				
Chromium	ND	0.50	mg/L	SW846 6010B	07/22-07/23/98	CJVDE105
		Dilution Factor: 1				
Lead	ND	0.50	mg/L	SW846 6010B	07/22-07/23/98	CJVDE106
		Dilution Factor: 1				
Selenium	ND	0.25	mg/L	SW846 6010B	07/22-07/23/98	CJVDE107
		Dilution Factor: 1				
Silver	ND	0.50	mg/L	SW846 6010B	07/22-07/23/98	CJVDE108
		Dilution Factor: 1				

NOTE(S):

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

PBH 3/12/99

BAKER ENVIRONMENTAL, INC.

Client Sample ID: FB01-98C

TCLP Metals

Lot-Sample #...: H8G170111-013 **Matrix.....:** WATER
Date Sampled...: 07/16/98 **Date Received..:** 07/17/98
Leach Date.....: 07/20/98 **Leach Batch #..:** P820103

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 8202311						
Mercury	ND	0.0020	mg/L	SW846 7470A	07/22/98	CJVDJ101
		Dilution Factor: 1				
Prep Batch #...: 8203143						
Arsenic	ND	0.50	mg/L	SW846 6010B	07/22-07/23/98	CJVDJ102
		Dilution Factor: 1				
Barium	ND	10.0	mg/L	SW846 6010B	07/22-07/23/98	CJVDJ103
		Dilution Factor: 1				
Cadmium	ND	0.10	mg/L	SW846 6010B	07/22-07/23/98	CJVDJ104
		Dilution Factor: 1				
Chromium	ND	0.50	mg/L	SW846 6010B	07/22-07/23/98	CJVDJ105
		Dilution Factor: 1				
Lead	ND	0.50	mg/L	SW846 6010B	07/22-07/23/98	CJVDJ106
		Dilution Factor: 1				
Selenium	ND	0.25	mg/L	SW846 6010B	07/22-07/23/98	CJVDJ107
		Dilution Factor: 1				
Silver	ND	0.50	mg/L	SW846 6010B	07/22-07/23/98	CJVDJ108
		Dilution Factor: 1				

NOTE(S):

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

PBK 8/12/98

Quanterra, Inc. - Knoxville Laboratory

ICP Data Reporting Form

Initial Calibration Verification

Units: ug/L (ppb)

Standard Source: ULTRA

Instrument ID: TJA 61-E ICP

Standard ID: 1398-28

Data File Name: AB01283.ARC

Elem	True Conc	PICV 7/23/98 10:40 AM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Ag	500.0	512.56	102.5										
As	1000.0	967.80	96.8										
Ba	1000.0	976.74	97.7										
Cd	1000.0	961.95	96.2										
Cr	1000.0	1006.64	100.7										
Pb	1000.0	986.23	98.6										
Se	1000.0	966.31	96.6										

Quanterra, Inc. - Knoxville Laboratory

ICP Data Reporting Form

Continuing Calibration Verification **Units:** ug/L (ppb)

Standard Source: ULTRA **Instrument ID:** TJA 61-E ICP

Standard ID: 1397-28 **Data File Name:** AB01283.ARC

Elem	True Conc	PCCV1 7/23/98 11:09 AM Found	% Rec	PCCV2 7/23/98 12:09 PM Found	% Rec	PCCV3 7/23/98 1:13 PM Found	% Rec	PCCV4 7/23/98 2:14 PM Found	% Rec	PCCV5 7/23/98 3:14 PM Found	% Rec	Found	% Rec
Ag	1000.0	1023.93	102.4	1023.27	102.3	1018.11	101.8	1034.95	103.5	1032.89	103.3		
As	5000.0	4885.20	97.7	4964.61	99.3	4887.35	97.7	4985.97	99.7	4971.30	99.4		
Ba	5000.0	4984.65	99.7	5017.47	100.3	4951.91	99.0	4947.90	99.0	4944.82	98.9		
Cd	5000.0	4934.13	98.7	4975.09	99.5	4940.57	98.8	5044.25	100.9	5063.03	101.3		
Cr	5000.0	5014.96	100.3	5050.11	101.0	5003.84	100.1	5118.48	102.4	5091.62	101.8		
Pb	5000.0	4984.14	99.7	4978.82	99.6	4949.24	99.0	5077.58	101.6	5074.59	101.5		
Se	5000.0	4948.58	99.0	5170.23	103.4	4960.33	99.2	5008.54	100.2	4995.31	99.9		

Quanterra, Inc. - Knoxville Laboratory

ICP Data Reporting Form

Contract Required Detection Limit Standard(s)

Units: ug/L (ppb)

Standard Source: ULTRA

Instrument ID: TJA 61-E ICP

Standard ID: 1555-6-22

Data File Name: AB01283.ARC

Elem	True Conc	CRI1 7/23/98 10:49 AM Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec	Found	% Rec
Ag	20.0	23.58	117.9										
As	600.0	603.34	100.6										
Ba	400.0	430.20	107.6										
Cd	10.0	10.99	109.9										
Cr	20.0	20.97	104.9										
Pb	200.0	207.18	103.6										
Se	500.0	531.23	106.2										

Quanterra, Inc. - Knoxville Laboratory

ICP Data Reporting Form

Initial Calibration Blank(s)

Units: ug/L (ppb)

Instrument ID: TJA 61-E ICP

Data File Name: AB01283.ARC

Elem	Reporting Limit	ICB 7/23/98 10:45 AM											
		Found	Flag	Found	Flag	Found	Flag	Found	Flag	Found	Flag	Found	Flag
Ag	500.0	3.7	B										
As	500.0	23.6	U										
Ba	10000.0	0.5	U										
Cd	100.0	1.7	U										
Cr	500.0	3.3	B										
Pb	500.0	24.9	B										
Se	250.0	34.6	U										

ICP Report Generator Version 2.0

B - Analyte concentration is between IDL and Reporting Limit
U - Analyte concentration is less than IDL

Form 3 Equivalent

Quanterra, Inc. - Knoxville Laboratory

ICP Data Reporting Form

Continuing Calibration Blank(s)

Units: ug/L (ppb)

Instrument ID: TJA 61-E ICP

Data File Name: AB01283.ARC

Elem	Reporting Limit	CCB1 7/23/98 11:14 AM		CCB2 7/23/98 12:13 PM		CCB3 7/23/98 1:18 PM		CCB4 7/23/98 2:19 PM		CCB5 7/23/98 3:19 PM			
		Found	Flag	Found	Flag	Found	Flag	Found	Flag	Found	Flag	Found	Flag
Ag	500.0	3.4	U	3.4	U	3.4	U	3.4	U	3.4	U		
As	500.0	23.6	U	23.6	U	23.6	U	23.6	U	23.6	U		
Ba	10000.0	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U		
Cd	100.0	1.8	B	1.7	U	1.7	U	1.7	U	1.7	U		
Cr	500.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U		
Pb	500.0	19.1	U	23.2	B	19.1	U	19.1	U	19.1	U		
Se	250.0	34.6	U	34.6	U	34.6	U	34.6	U	34.6	U		

METHOD BLANK REPORT

TCLP Metals

Client Lot #...: H8G170111 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: H8G200000-143 **Prep Batch #...:** 8203144						
Leach Date.....: 07/20/98 **Leach Batch #..:** P820102						
Arsenic	ND	0.50	mg/L	SW846 6010B	07/22/98	CJWQD10D
		Dilution Factor: 1				
Barium	ND	10.0	mg/L	SW846 6010B	07/22/98	CJWQD10E
		Dilution Factor: 1				
Cadmium	ND	0.10	mg/L	SW846 6010B	07/22/98	CJWQD10F
		Dilution Factor: 1				
Chromium	ND	0.50	mg/L	SW846 6010B	07/22/98	CJWQD10G
		Dilution Factor: 1				
Lead	ND	0.50	mg/L	SW846 6010B	07/22/98	CJWQD10H
		Dilution Factor: 1				
Selenium	ND	0.25	mg/L	SW846 6010B	07/22/98	CJWQD10J
		Dilution Factor: 1				
MB Lot-Sample #: H8G200000-143 **Prep Batch #...:** 8202304						
Leach Date.....: 07/20/98 **Leach Batch #..:** P820102						
Mercury	ND	0.0020	mg/L	SW846 7470A	07/22/98	CJWQD104
		Dilution Factor: 1				
MB Lot-Sample #: H8G200000-143 **Prep Batch #...:** 8203144						
Leach Date.....: 07/20/98 **Leach Batch #..:** P820102						
Silver	ND	0.50	mg/L	SW846 6010B	07/22/98	CJWQD10K
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

TCLP Metals

Client Lot #...: H8G170111 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: H8G200000-146 **Prep Batch #...:** 8203143						
Leach Date.....: 07/20/98 **Leach Batch #..:** P820103						
Arsenic	ND	0.50	mg/L	SW846 6010B	07/22-07/23/98	CJWQJ102
	Dilution Factor: 1					
Barium	ND	10.0	mg/L	SW846 6010B	07/22-07/23/98	CJWQJ103
	Dilution Factor: 1					
MB Lot-Sample #: H8G200000-146 **Prep Batch #...:** 8202311						
Leach Date.....: 07/20/98 **Leach Batch #..:** P820103						
Mercury	ND	0.0020	mg/L	SW846 7470A	07/22/98	CJWQJ101
	Dilution Factor: 1					
MB Lot-Sample #: H8G200000-146 **Prep Batch #...:** 8203143						
Leach Date.....: 07/20/98 **Leach Batch #..:** P820103						
Cadmium	ND	0.10	mg/L	SW846 6010B	07/22-07/23/98	CJWQJ104
	Dilution Factor: 1					
Chromium	ND	0.50	mg/L	SW846 6010B	07/22-07/23/98	CJWQJ105
	Dilution Factor: 1					
Lead	ND	0.50	mg/L	SW846 6010B	07/22-07/23/98	CJWQJ106
	Dilution Factor: 1					
Selenium	ND	0.25	mg/L	SW846 6010B	07/22-07/23/98	CJWQJ107
	Dilution Factor: 1					
Silver	ND	0.50	mg/L	SW846 6010B	07/22-07/23/98	CJWQJ108
	Dilution Factor: 1					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE DATA REPORT

TCLP Metals

Client Lot #...: H8G170111 **Matrix.....:** SOLID
Date Sampled...: 07/15/98 **Date Received..:** 07/17/98

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: H8G170111-008 **Prep Batch #...:** 8202304									
Leach Date.....: 07/20/98 **Leach Batch #..:** P820102									
Mercury									
	ND	0.005	0.00528	mg/L	106		SW846 7470A	07/22/98	CJVD610(
	ND	0.005	0.00529	mg/L	106	0.18	SW846 7470A	07/22/98	CJVD610I
			Dilution Factor: 1						
MS Lot-Sample #: H8G170111-008 **Prep Batch #...:** 8203144									
Leach Date.....: 07/20/98 **Leach Batch #..:** P820102									
Arsenic									
	ND	5.00	5.45	mg/L	109		SW846 6010B	07/22/98	CJVD610:
	ND	5.00	5.39	mg/L	108	1.0	SW846 6010B	07/22/98	CJVD610:
			Dilution Factor: 1						
Barium									
	ND	50.0	53.0	mg/L	103		SW846 6010B	07/22/98	CJVD610!
	ND	50.0	52.0	mg/L	101	1.8	SW846 6010B	07/22/98	CJVD610(
			Dilution Factor: 1						
Cadmium									
	ND	1.00	1.05	mg/L	105		SW846 6010B	07/22/98	CJVD610(
	ND	1.00	1.03	mg/L	103	1.9	SW846 6010B	07/22/98	CJVD610!
			Dilution Factor: 1						
Chromium									
	ND	5.00	5.18	mg/L	104		SW846 6010B	07/22/98	CJVD610(
	ND	5.00	5.10	mg/L	102	1.5	SW846 6010B	07/22/98	CJVD610I
			Dilution Factor: 1						
Lead									
	ND	5.00	5.17	mg/L	103		SW846 6010B	07/22/98	CJVD610I
	ND	5.00	5.09	mg/L	101	1.5	SW846 6010B	07/22/98	CJVD610(
			Dilution Factor: 1						
Selenium									
	ND	1.00	1.17	mg/L	117		SW846 6010B	07/22/98	CJVD610.
	ND	1.00	1.19	mg/L	119	1.6	SW846 6010B	07/22/98	CJVD610I
			Dilution Factor: 1						
Silver									
	ND	1.00	1.08	mg/L	108		SW846 6010B	07/22/98	CJVD610I
	ND	1.00	1.06	mg/L	106	2.4	SW846 6010B	07/22/98	CJVD610I
			Dilution Factor: 1						

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TCLP Metals

Client Lot #...: H8G170111 **Matrix.....:** SOLID
Date Sampled...: 07/15/98 **Date Received..:** 07/17/98

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: H8G170111-008 **Prep Batch #...:** 8202304							
Leach Date.....: 07/20/98 **Leach Batch #..:** P820102							
Mercury	106	(78 - 122)			SW846 7470A	07/22/98	CJVD610Q
	106	(78 - 122)	0.18	(0-20)	SW846 7470A	07/22/98	CJVD610R
		Dilution Factor: 1					
MS Lot-Sample #: H8G170111-008 **Prep Batch #...:** 8203144							
Leach Date.....: 07/20/98 **Leach Batch #..:** P820102							
Arsenic	109	(75 - 125)			SW846 6010B	07/22/98	CJVD6102
	108	(75 - 125)	1.0	(0-20)	SW846 6010B	07/22/98	CJVD6103
		Dilution Factor: 1					
Barium	103	(75 - 125)			SW846 6010B	07/22/98	CJVD6105
	101	(75 - 125)	1.8	(0-20)	SW846 6010B	07/22/98	CJVD6106
		Dilution Factor: 1					
Cadmium	105	(75 - 125)			SW846 6010B	07/22/98	CJVD6108
	103	(75 - 125)	1.9	(0-20)	SW846 6010B	07/22/98	CJVD6109
		Dilution Factor: 1					
Chromium	104	(75 - 125)			SW846 6010B	07/22/98	CJVD610C
	102	(75 - 125)	1.5	(0-20)	SW846 6010B	07/22/98	CJVD610D
		Dilution Factor: 1					
Lead	103	(75 - 125)			SW846 6010B	07/22/98	CJVD610F
	101	(75 - 125)	1.5	(0-20)	SW846 6010B	07/22/98	CJVD610G
		Dilution Factor: 1					
Selenium	117	(75 - 125)			SW846 6010B	07/22/98	CJVD610J
	119	(75 - 125)	1.6	(0-20)	SW846 6010B	07/22/98	CJVD610K
		Dilution Factor: 1					
Silver	108	(75 - 125)			SW846 6010B	07/22/98	CJVD610M
	106	(75 - 125)	2.4	(0-20)	SW846 6010B	07/22/98	CJVD610N
		Dilution Factor: 1					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TCLP Metals

Client Lot #...: H8G170111 **Matrix.....:** SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: H8G210000-304 **Prep Batch #...:** 8202304							
Mercury	0.00500	0.00495	mg/L	99	SW846 7470A	07/22/98	CK02A101
		Dilution Factor: 1					
LCS Lot-Sample#: H8G220000-144 **Prep Batch #...:** 8203144							
Chromium	5.00	5.06	mg/L	101	SW846 6010B	07/22/98	CK08Q101
		Dilution Factor: 1					
Lead	5.00	5.04	mg/L	101	SW846 6010B	07/22/98	CK08Q102
		Dilution Factor: 1					
Selenium	1.00	1.14	mg/L	114	SW846 6010B	07/22/98	CK08Q103
		Dilution Factor: 1					
Silver	1.00	1.05	mg/L	105	SW846 6010B	07/22/98	CK08Q104
		Dilution Factor: 1					
Arsenic	5.00	5.31	mg/L	106	SW846 6010B	07/22/98	CK08Q105
		Dilution Factor: 1					
Barium	50.0	49.7	mg/L	99	SW846 6010B	07/22/98	CK08Q106
		Dilution Factor: 1					
Cadmium	1.00	1.02	mg/L	102	SW846 6010B	07/22/98	CK08Q107
		Dilution Factor: 1					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TCLP Metals

Client Lot #...: H8G170111 **Matrix.....:** WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: H8G210000-311 **Prep Batch #...:** 8202311							
Mercury	0.00500	0.00497	mg/L	99	SW846 7470A	07/22/98	CK02W101
		Dilution Factor: 1					
LCS Lot-Sample#: H8G220000-143 **Prep Batch #...:** 8203143							
Arsenic	5.00	5.50	mg/L	110	SW846 6010B	07/22-07/23/98	CK08P101
		Dilution Factor: 1					
Barium	50.0	52.7	mg/L	105	SW846 6010B	07/22-07/23/98	CK08P102
		Dilution Factor: 1					
Cadmium	1.00	1.04	mg/L	104	SW846 6010B	07/22-07/23/98	CK08P103
		Dilution Factor: 1					
Chromium	5.00	5.32	mg/L	106	SW846 6010B	07/22-07/23/98	CK08P104
		Dilution Factor: 1					
Lead	5.00	5.23	mg/L	105	SW846 6010B	07/22-07/23/98	CK08P105
		Dilution Factor: 1					
Selenium	1.00	1.21 N	mg/L	121	SW846 6010B	07/22-07/23/98	CK08P106
		Dilution Factor: 1					
Silver	1.00	1.08	mg/L	108	SW846 6010B	07/22-07/23/98	CK08P107
		Dilution Factor: 1					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TCLP Metals

Client Lot #...: H8G170111 **Matrix.....:** SOLID

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: H8G210000-304 **Prep Batch #...:** 8202304					
Mercury	99	(80 - 120)	SW846 7470A	07/22/98	CK02A101
		Dilution Factor: 1			
LCS Lot-Sample#: H8G220000-144 **Prep Batch #...:** 8203144					
Chromium	101	(80 - 120)	SW846 6010B	07/22/98	CK08Q101
		Dilution Factor: 1			
Lead	101	(80 - 120)	SW846 6010B	07/22/98	CK08Q102
		Dilution Factor: 1			
Selenium	114	(80 - 120)	SW846 6010B	07/22/98	CK08Q103
		Dilution Factor: 1			
Silver	105	(80 - 120)	SW846 6010B	07/22/98	CK08Q104
		Dilution Factor: 1			
Arsenic	106	(80 - 120)	SW846 6010B	07/22/98	CK08Q105
		Dilution Factor: 1			
Barium	99	(80 - 120)	SW846 6010B	07/22/98	CK08Q106
		Dilution Factor: 1			
Cadmium	102	(80 - 120)	SW846 6010B	07/22/98	CK08Q107
		Dilution Factor: 1			

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TCLP Metals

Client Lot #...: H8G170111 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: H8G210000-311 **Prep Batch #...:** 8202311					
Mercury	99	(80 - 120)	SW846 7470A	07/22/98	CK02W101
		Dilution Factor: 1			
LCS Lot-Sample#: H8G220000-143 **Prep Batch #...:** 8203143					
Arsenic	110	(80 - 120)	SW846 6010B	07/22-07/23/98	CK08P101
		Dilution Factor: 1			
Barium	105	(80 - 120)	SW846 6010B	07/22-07/23/98	CK08P102
		Dilution Factor: 1			
Cadmium	104	(80 - 120)	SW846 6010B	07/22-07/23/98	CK08P103
		Dilution Factor: 1			
Chromium	106	(80 - 120)	SW846 6010B	07/22-07/23/98	CK08P104
		Dilution Factor: 1			
Lead	105	(80 - 120)	SW846 6010B	07/22-07/23/98	CK08P105
		Dilution Factor: 1			
Selenium	121 N	(80 - 120)	SW846 6010B	07/22-07/23/98	CK08P106
		Dilution Factor: 1			
Silver	108	(80 - 120)	SW846 6010B	07/22-07/23/98	CK08P107
		Dilution Factor: 1			

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

Quanterra, Inc. - Knoxville Laboratory

ICP Data Reporting Form

Serial Dilution(s)

Units: ug/L (ppb)

Instrument ID: TJA 61-E ICP

Data File Name: AB01283.ARC

Element	CJVDJ	CJVDJP	Percent Difference
Ag	3.38 U	16.90 U	
As	23.56 U	117.80 U	
Ba	420.45 B	420.10 B	0.1
Cd	1.65 U	8.25 U	
Cr	2.95 U	14.75 U	
Pb	20.35 B	95.55 U	100.0
Se	34.63 U	173.15 U	

ICP Report Generator Version 2.0

B - Analyte concentration is between IDL and Reporting Limit
U - Analyte concentration is less than IDL
E - Percent Difference is greater than 10 and [OS]>50 times IDL

Form 9 Equivalent