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NCBC GULFPORT
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TECHNICAL REVIEW COMMITTEE MEETING MINUTES 23 AUGUST 1989 NCBC GULFPORT MS
8/23/1989
NCBC GULFPORT

CBC GULFPORT
TECHNICAL REVIEW COMMITTEE MEETING MINUTES
23 AUGUST 1989

Members Present

NAME	ORGANIZATION	TELEPHONE
Tom Sarros	Public Works Department (Code 470.2) Naval Construction Battalion Center Gulfport, MS 39531	(601)865-2484
Wayne Mathis	Environmental Protection Agency 345 Courtland Street Atlanta, GA 30365	(404)347-5171
Richard Byrd	Naval Facilities Engineering Command Southern Division, P.O. Box 10068 Charleston, SC 29411	(803)743-0576
Mohammad Shokouhian	Mississippi Department of Environmental Quality, P.O. Box 10385 Jackson, MS 39209	(601)961-5171
Jim Hardage	Mississippi Department of Environmental Quality, P.O. Box 10385 Jackson, MS 39209	(601)961-5171
Ed Cake	Gulf Esturine Association P.O. Box 176 Ocean Springs, MS 39564	(601)872-2507 (602)255-1461

MEMBERS ABSENT

Mayor Ken Combs	Mayor of Gulfport
John Becker	City of Long Beach
Philip Allen	Harrison County Board of Supervisors

DICUSSION

1. Mr. Sarros addressed the committee and stated that the members absent had called in that morning and stated that they could not attend the meeting. A general discussion then ensued concerning the purpose of the Technical Review Committee (TRC) and the need for the committee. Mr. Mathis requested that CBC Gulfport make every attempt to get local committee members to attend the meetings. A general discussion of member attendance took place. Mr. Mathis suggested that a letter be forwarded to members and ask them to select some one who can attend for the City/County Governments and an alternative. This member could be the City Engineer, or Public Works Director. The purpose of the committee is to keep the community informed of the actions to be taken by the Navy on sensitive environmental matters, some of which might effect the local community.

2. Mr. Mathis explained to Dr. Cake that the sites at CBC Gulfport were not on the National Priority List (NPL) and that the EPA was involved here in an overview capacity to ensure that all restorations/site mitigations were carried out in the proper manner.

3. Mr. Byrd explained to the TRC that the Navy treats all waste dump sites as if they were on the NPL even if, as in Gulfports case, they are not. Each site is investigated and its mitigation is handled as if the site is on the NPL. All aspects of the Installation Restoration Program (IRP) process from beginning to end are utilized.

4. A general discussion of the Herbicide Orange mitigation followed. Mr. Mathis suggested that a summary of the burn from beginning to end be published. This summary will be handed out at the next meeting.

5. Mr. Sarros explained to the committee that the draft Delisting Petition for the Herbicide Orange Site had been forwarded to the EPA in Atlanta and that the Air Force was waiting for comments from EPA before correcting and publishing the Final Petition. Mr. Sarros requested Mr. Mathis check on the status of the petition for the committee when he returns to Atlanta. Mr Mathis said he would.

6. Mr. Byrd explained that an A&E firm had been selected by the Navy to complete work plans for Phase III of the IRP. The work plan will outline/ identify the work required to carry out the recommendations of the Final Verification Report published in 1988. He estimated that the work plan will be published in the spring or early summer of 1990.

7. A general discussion was then held concerning the clean-up priority of the waste dumps at CBC Gulfport. Mr. Mathis again explained that the sites were not on the NPL and were not Resource Conservation and Recovery Act (RCRA) non-compliance sites. Therefore, the sites would be on the priority list for funding of mitigation actions.

8. Dr. Cake presented his review of the Charter and requested that some changes be made to it. The changes are minor and do not effect the intent of the Charter. The changes have been incorporated and the Charter is included as attachment (1). Please review attachment (1) and forward any comments to us by January 30, 1990, for incorporation into the final Charter. The final Charter will be signed at the meeting to be held in late spring. Dr. Cake also asked if there was a possibility of reimbursement of expenses for committee members. Mr. Byrd said he would check and report back to the committee. Mr. Byrd also requested that CBC publish a letter to members perodically informing them of things that have happened between meetings.

9. Mr. Hardage handed out comments that the Mississippi Department of Environmental Quality (MSDEQ) had made on the Final Verification Report and requested that they be incorporated into the report. The comments are included in these minutes as attachment (2).

10. Mr. Byrd requested that the next meeting of the TRC be held when the work plan for site mitigation is completed. The plan will be ready in draft format in the spring or summer of 1990 and the next meeting will be held at that time..

11. The members were taken on a tour of the base and each hazardous waste dump site was visited. After the tour was complete there was no further business and the meeting was adjourned.

TECHN. REVIEW COMMITTEE MTG.
NAVAL CONSTRUCTION BATTALION CENTER
23 AUGUST, 1989

NAME	ORGANIZATION	Phone
TOM SARROS	NCBC Gulfport	(601) 865-2484
RICHARD BYRD	SOUTHNAVFACENGCOM	(803) 743-0576
Mohammad Shokouhian	Ms. Dept. of Natural Resources	(601) 961-5171
Jim Hardage	Ms. Dept. of Natural Resources	601 961-5171
ED CANE	Gulf Estuarine Assoc.	(601) 872-2507/255-1461
WAYNE MATHIS	EPA REG III, OPM-FAB-FPC	(404) 347-3776

Example (Draft) TRC Charter for Federal Facility Case

NAVAL CONSTRUCTION BATTALION CENTER GULFPORT
TECHNICAL REVIEW COMMITTEE CHARTER

In order to establish a body that will facilitate communication and coordination among its members, this Technical Review Committee (TRC) Charter (hereinafter referred to as the "Charter") is entered into by the following parties: The United States Navy, Naval Construction Battalion Center (CBC), Gulfport, the U.S. Environmental Protection Agency (EPA), the Mississippi Department of Environmental Quality (MDEQ), the County of Harrison, the City of Gulfport, Mississippi, City of Long Beach, Mississippi, and the local community of Harrison County, Mississippi (hereinafter referred to as the "Members").

All members entering into this Charter recognize and agree that their mutual consent and cooperation will help achieve the best possible solutions to potential problems at CBC Gulfport, and protect public health, welfare, and the environment.

I. Purpose

A. The TRC shall review and comment on proposed Navy response actions with respect to the Navy's Installation Restoration Program (IRP) at CBC Gulfport.

B. The TRC shall coordinate technical review procedures and schedules to be followed by the Navy during the IRP at CBC Gulfport.

C. The TRC shall timely identify all federal and promulgated state standards, requirements, criteria and/or limitations that are legally applicable or relevant and appropriate under the circumstances of the release or threatened release of a hazardous substance, pollutant or contaminant at CBC Gulfport.

II. Basis and Authority for Charter

The basis and authority for this Charter is the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), particularly Sections 120(a), 120(f), and 121(f), and 10 U.S.C. 2705, enacted by Section 211 of SARA.

III. Structure of the Technical Review Committee (TRC)

A. The TRC shall consist of the CBC Gulfport Installation Commander, or his designated representative (Chairman), the Naval Facilities Engineering Command, Engineering Field Division (NAVFACENGCOM EFD), Environmental Protection Agency (EPA), Mississippi Department of Environmental Quality (MDEQ), the County of Harrison, the City of Gulfport, Mississippi, the City of Long Beach, Mississippi, and a public representative of Harrison County, Mississippi (Member-at-large).

B. The TRC shall generally meet in the vicinity of Gulfport, Mississippi, on a quarterly basis or as required. More frequent meetings may

be called by the Chair, or his designated representative, at the request of any member organization. It is essential that all committee members be present or represented at each TRC meeting.

C. Members shall serve without compensation. All expenses incident to travel and review inputs shall be borne by the respective member's organization.

D. The Chair shall be responsible for recording the minutes of the meetings and for dissemination of these minutes to committee members within 14 calendar days after the meeting. Committee members shall review and comment if desired, on the minutes within 14 calendar days after their receipt of the minutes.

E. Navy technical data, remedial investigation reports, feasibility study reports, work plans, and other documents relating to Navy response actions shall be sent to committee members. Members shall submit written reviews to the Chair within 30 calendar days following receipt, unless additional time is granted upon request to the Chair.

F. The Navy shall respond to committee members within 30 days of receipt of their reviews, indicating its response to comments and specifying the reasons for not adopting any recommendations.

IV. Function of the TRC

A. The primary function of the TRC is to obtain coordinated direction for IRP actions at CBC Gulfport through consultation with EPA, state, and local authorities. The committee members shall review and comment on various IRP data, technical documents, reports, studies, plans, and proposed response actions. They shall recommend necessary changes based on continuing review of IRP actions at CBC Gulfport. Individual committee members are reponsible for ensuring that their inputs reflect the position of their respective parent organizations.

B. The EPA representative shall specifically review Navy documents for consistency with applicable EPA guidelines, rules, regulations, and criteria, especially the National Contingency Plan, and to ensure that remedial actions are permanent, cost effective and adequate to protect the public health and welfare of any affected populations and the environment. The EPA representative shall additionally propose any federal standard, requirement, criteria, or limitation that is legally applicable or relevant and appropriate under the circumstances of the release or threatened release for any hazardous substance, pollutant or contaminant that will remain or be treated on site.

C. The MDEQ representative shall timely identify any promulgated state standards, requirements, criteria, or limitations that are legally applicable or relevant and appropriate under the circumstances of the release or threatened release for any hazardous substance, pollutant, or contaminant that will remain or be treated on site.

V. Effective Date, Flexibility and Modification

A. The effective date of the Charter shall be the date of the last member's signature.

B. This Charter may be amended by the mutual consent of all members. Such amendments must be in writing and signed by all members.

C. Because the work to be accomplished involves a great deal of unknown technical questions and field work, including evaluation of unknown scientific data, the members acknowledge that the scope of work is likely to change several times before completion.

D. It is acknowledged that some IRP work may result in several sites at CBC Gulfport being dropped from further investigation, due to lack of evidence of potential problem. At the same time, some sites may require interium remediation without total completion of the remedial investigation. In all cases, written documentation shall be accomplished subject to review by all TRC members.

VI. Imminent Health Hazard

If an imminent health hazard is discovered by any member or any other person during the effort covered by this Charter, immediate action shall be taken to notify all responsible parties, including local health officials.

VII. Termination

The provisions of this Charter shall be satisfied and considered complete when all members agree in writing to terminate the TRC.

- See attached Page -

H. H. LEWIS, JR., CAPT, CEC, USN
Commanding Officer (Chairman)
Naval Construction Battalion Center
Gulfport, MS

Date

WILLIAM STEWART
Coordinator CERCLA Branch
Mississippi Department of
Environmental Quality
Jackson, MS

Date

WAYNE MATHIS
Environmental Protection Agency
Region IV
Atlanta, GA

Date

KEN COMBS
Mayor
City of Gulfport, MS

Date

DR. ED CAKE
Member-At-Large

Date

PHILIP ALLEN
District Four Supervisor
County of Harrison
Gulfport, MS

Date

RICHARD BYRD
Naval Facilities Engineering Command
Engineering Field Division
Charleston, SC

Date

GLEN RISCHEL, JR.
Mayor
City of Long Beach, MS

Date

Phase II

COMMENTS FOR THE FINAL VERIFICATION REPORT
NAVAL CONSTRUCTION BATTALION CENTER (NCBC)
GULFPORT, MISSISSIPPI

July, 1989

Author: David C. Pentecost

Attachment (2)

INTRODUCTION

We have recently reviewed the Final Verification Report for the Naval Construction Battalion Center (NCBC) located at Gulfport, Mississippi. The purpose of this review is to evaluate the analytical data and recommend additional work that will satisfy the requirements under the Comprehensive Environmnetal Response Compensation and Liability Act (CERCLA). Six sites are included in this study and include a fire fighting training area, a disaster recovery disposal area, and four other landfill/disposal areas. Figure 1 shows the location of these sites and table 1 lists the chemical parameters identified for analysis of sediment, soil, and water samples at NCBC for this study.

HYDROGEOLOGICAL SETTING

The stratigraphy beneath the NCBC facility consists of, in descending order, a thin topsoil layer, the surficial aquifer, which consisits of up to 27 feet of unconsolidated sand with varying amounts of clay and silt, and a lower confining clay layer. Below this confining clay are deeper groundwater aquifers that are divided into two major systems: 1) the Citronelle Formation and 2) the Miocene aquifer system. These two deeper aquifers are the primary sources of water for individuals and municipalities in the Gulf Coast area. While the Citronelle aquifer is the source of water for some individual and municipal water supplies, higher yields can be obtained from the Miocene aquifer system. As a result, the majority of wells in this area are completed in the Miocene aquifers.

The aquifer of concern in this verification study is the surficial aquifer, which, according to this report, is closely interrelated with surface water bodies at NCBC Gulfport. The main focus of the verification study is the surficial aquifer and its related surface water bodies. However, samples were also collected from the Miocene aquifer water supply wells for analyses.

REVIEW OF ANALYTICAL RESULTS FOR WATER SUPPLY WELLS AT NCBC

Five wells supply potable water from the Miocene aquifer system to the NCBC facility. The report indicates that the Miocene aquifer system underlies the clay interval that serves as the surficial aquifer's lower confining unit. As a result, the Miocene aquifers are presumed to be protected from potential contamination that may occur in the surficial aquifer. However, groundwater samples were taken from each of the potable water wells on the base in order to determine if chemical contamination of the Miocene aquifer has occurred.

Analytical data (table 2) for groundwater samples collected from the NCBC water supply wells indicate that only one groundwater sample had a concentration of chromium above detection limits. The sample

from well No. 5 had a concetration of 9 ppb chromium, significantly below the MCL of 50 ppb. The other metals analyzed for in this study, cadmium and lead, were below detection limits.

Traces of toluene were detected in groundwater samples from all five water supply wells, and ranged in concentration from 6 ppb to 11 ppb. Phenol was detected in well No. 1 at 12 ppb, and Bis (2-Ethylhexyl) phthalate was found at 24 ppb and 227 ppb in well Numbers 1 and 3, respectively. The concentrations of toluene, phenol, and Bis (2-Ethylhexyl) phthalate were all below RFI health based criteria. The report states that the presence of toluene and phenol at such low concentrations may be attributable to the presence of phase separated hydrocarbons associated with oils used in well pumping equipment. The Bis (2-Ethylhexyl) phthalate is presumed to be associated with the use of PVC piping.

The report recommends resampling the potable wells for confirmation of analytical results. Such sampling and analysis could also be used to verify the sources of contamination. If the presumed sources are verified, remediation could be achieved by removing phase separated hydrocarbons at the groundwater surface in the wells, improving maintenance procedures, and replacing equipment where necessary. The report also recommends that additional geotechnical and/or hydrogeological investigations be conducted to fully characterize the confining clay that separates the surficial aquifer from the deeper aquifers. This course of action should be adequate with respect to the base water supply wells.

GENERAL CONCERNS AND RECOMMENDATIONS

Only one round of water level measurements were taken in the surficial aquifer at the NCBC facility. These measurements indicate that the hydraulic gradient slopes in a direction different than originally presumed (figure 2). This has resulted in the placement of an inadequate number of downgradient monitoring wells at Sites 1 through 5, and possibly at Site 6. The Final Verification Report recommends that before additional monitoring wells are installed at these locations, further rounds of water level measurements should be collected. It was noted in the report that several inches of precipition had occurred at the facility in the weeks that preceeded the water level measurements. This rainfall had the effect of raising water levels to above normal and may have also affected the slope of the potentiometric surface. Quarterly water level measurements would determine if seasonal and/or local effects cause significant variations in the hydraulic gradient and the direction in which it slopes. This information is necessary to determine if future monitoring wells are correctly placed and that an adequate number are installed.

The screened intervals of all monitoring wells at the NCBC facility extend entirely through the surficial aquifer. During future sampling events, groundwater samples should be collected from discrete intervals in the wells in order to minimize the effects of dilution. Some wells at the facility (discussed in detail later in

these comments) detected relatively low concentrations of TCE, a denser than water compound. Concentrations of contaminants in such cases would likely have been greater if well screens had been shorter in length and if they had been placed at the bottom of the aquifer. Dilution of other contaminants is also a possibility when aquifers are screened over large intervals. In the future, well screens at the NCBC facility should be constructed in such a way as to optimize the possiblilty of collecting samples from intervals having the greatest potential contaminant levels.

The report states that methyl ethyl ketone (MEK) was disposed of at sites 4, 5, and 6. However, this compound is not listed as one of the chemical parameters analyzed for in this report. It is recommened that MEK be added to the list of constituents to be analyzed for in future sampling events.

Additional surface water and sediment sampling is recommended. The report states that the surficial aquifer is probably interconnected with surface water bodies at NCBC Gulfport. If it is found that the slope of the potentiometric surface of the shallow aquifer changes seasonally, or is affected by local conditions, then further surface water and sediment sampling will be needed.

No hydraulic data has been included with the Final Verification Report. Parameters such as hydraulic conductivity, transmissivity, or average linear velocity have not been determined. Slug tests, single well pump tests, multiple well pump tests, or other appropriate tests should be conducted to determine hydraulic characteristics of the surficial aquifer and the confining nature of the confining clay before a final risk assessment can be made.

If contaminant levels are confirmed to be above health base levels, it will be necessary to perform additional work to define contaminant plumes and levels of contamination.

SITE SPECIFIC CONCERNS AND RECOMMENDATIONS

Site 1

Site 1 is currently used as a disaster recovery training area. From 1942 to 1948, before being used as a training area, chemical wastes were disposed of at this site primarily by trench burial of containerized materials, reportedly 55 gallon drums. The principal wastes disposed of include paints, oils, solvents, paint strippers and cleaning compounds. Excavation in this area is 1984 revealed several drums containing xylene, toluene, and 1,2 dichloroehtane.

Analytical results for groundwater samples taken from all three monitoring wells at site 1 indicate that levels of chromium and lead are above the Maximum Concentration Levels (MCLs) as specified in the Safe Drinking Water Act (figure 3). The highest concentrations of chromium and lead were encountered in well GPT-1-2. As stated previously, the report recommends that the wells be resampled to verify contaminant concentrations. The installation of additional

downgradient well are necessary pending confirmation of the potentiometric surface configuration.

Site 2

Site 2 was originally defined as two separate areas (Sites 2 and 7). These sites were combined after reconnaissance indicated that Site 7 was larger than originally anticipated and actually overlapped Site 2.

Site 2 was used for the burning and burial of chemical wastes from 1948 to 1966. The principal wastes disposed of include ash from combustible solid waste and noncombustible solid waste and liquid wasted (paints, point thinners, solvents, oils, and fuels).

Site 7 is currently used for rubble disposal and has been in operation since 1978. Disposal of chemical wastes have not been reported at this site.

Analytical results for groundwater samples at Site 2 indicate an elevated concentration of chromium in well GPT-2-2 (figure 4). The value obtained was 73 ppb, which is in excess of the MCL of 50 ppb. Lower concentrations of chromium and lead were detected in wells GPT-2-1 and GPT-2-3, but did not exceed the MCL.

Trichloroethylene (TCE) was detected at a concentration of 5 ppb (equal to the MCL) in a sample from well GPT-2-3. This well is screened at the shallowest interval of any well at the facility and was presumed in the report to encounter the lower confining clay at a depth of 13 feet. Most wells at the facility encounter the lower confining clay at depths in excess of 20-25 feet. The possibility exists that well GPT-2-3 encountered a discrete clay lense above the lower confining clay unit. Because TCE is denser than water, and if there is additional sand below a shallow clay layer, there is a possibility that TCE may be contaminating groundwater at a deeper interval at this site. Further characterization of the clay unit in this area will be necessary to determine if such contamination has occurred.

In addition, 1,2-trans-Dichloroethylene was detected in well GPT-2-3 at a concentration of 37 ppb, as was a trace of toluene and chloroform. The Bureau concurs with the report which recommends additional sampling in order to evaluate the significance of the contamination in these wells.

Low levels of lead and chromium were detected in the sediment sample at the site. The level of chromium detected in this sample is below the RFI health-based criteria for systemic toxicants. There is no RFI level for lead.

None of the monitoring wells at Site 2 were in the downgradient direction. Pending further water level measurements, additional monitoring wells will be necessary to fully assess this site.

Site 3

Site 3 is currently a training area for Navy Reserve personnel. From 1948 to 1966, prior to use as a training area, chemical wastes were disposed of at this site by burning and burial. The principal wastes disposed of included substantial amounts of solid wastes and liquid wastes (fuels, oils, solvents, paints, and paint thinners).

Metals were the only contaminants detected in the groundwater samples from Site 3 (figure 5), and all metals levels were below the MCL. Resampling to verify contaminant concentrations is recommended, as is installation of additional downgradient monitoring wells after confirmation of the configuration of the potentiometric surface.

Analytical results for surface water and sediment samples indicated no volitile organic, acid-extractable, or base-neutral constituents above the detection limits. All metals concentrations were found to be well within any health based criteria listed in the RFI guidance document.

Site 4

Site 4 is located on the base golf course and driving range. From 1966 to 1972, prior to construction of the golf course, chemical wastes were disposed of at this site by burning and burial. Some containerized chemical wastes were also buried. The principal wastes disposed of included solid wastes and liquid wastes (fuel, oils, solvents {toluene, xylene, MEK}, paints, and paint thinners). Combustion by products were also disposed of at Site 4.

There were no volatile organic, acid-extractable, or base-neutral contaminants above detection limits for all monitoring wells at Site 4 (figure 6). Chromium concentrations for samples taken from wells GPT-4-1 and GPT-4-3, however, were above the MCL of 50 ppb at concentrations of 72 ppb and 155 ppb, respectively. Lead concentrations for the same two wells were 50 ppb and 124 ppb (MCL = 50 ppb). Levels of chromium and lead below the MCL were detected at well GPT-4-2 and levels below the RFI health based criteria were found in sediment sample SD4-1. Resampling of all wells is recommended to confirm these contaminant levels. Additional downgradient wells are needed, but as always should be installed only after further groundwater measurements confirm slope of the potentiometric surface at this site.

Another area of concern involves the past practice of disposing of MEK at Site 4. This compound was not included in the list of chemical parameters analyzed for at this facility. MEK should be added to this list and analyzed for in any future sampling events.

Site 5

Site 5 is currently used as a training area for operating heavy equipment. From 1972 to 1976, before its use as a training area,

Site 5 was used as a landfill for the burial of containerized and noncontainerized chemical wastes. The principal wastes disposed of included liquid wastes (fuels, oils, solvents {MEK, toluene, xylene}, paints, and paint thinners), some solid wastes, and liquid dichlorodiphenyl-trichlorethane (DDT).

Elevated levels of chromium were detected at Site 5 (figure 7). Analytical results for groundwater samples from GPT-5-1, GPT-5-2 and GPT-5-3 indicate chromium concentrations of 79 ppb, 104 ppb, and 91 ppb, respectively. Lead levels were all below the MCL, but are high enough (38 to 48 ppb) to be of concern. As for the other sampling sites, resampling as recommended in the report should be done, but in a manner that reduces the dilution of groundwater samples. Additional downgradient wells are needed.

As at Site 4, the disposal of MEK is of concern and should be added to the list of chemical parameters analyzed for in future sampling events.

Site 6

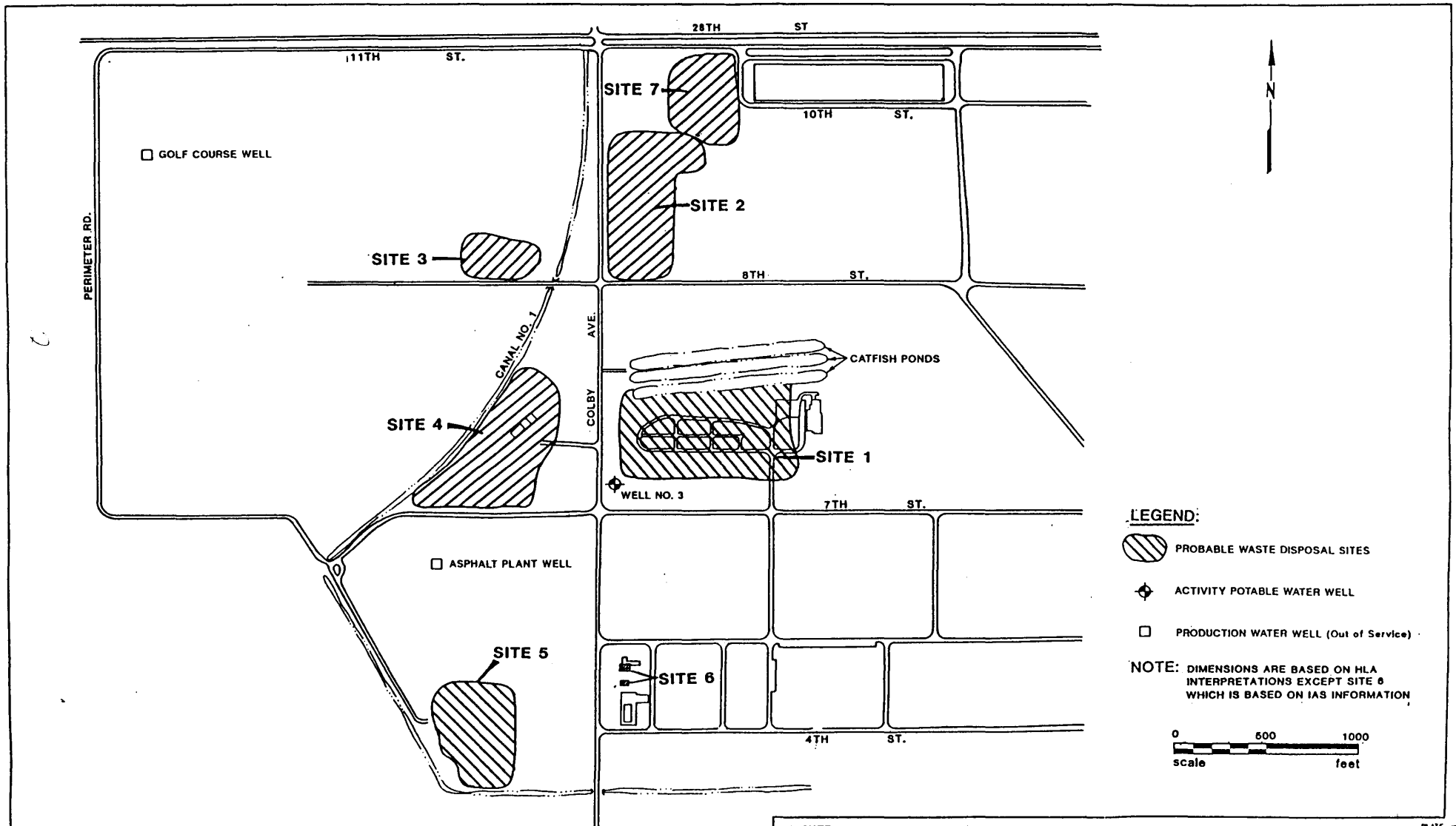
Site 6 is currently a training area for electricians. From 1966 to 1975, prior to its current use, chemical wastes were disposed of at Site 6 by burning in unlined earth pits during fire fighting training. The principal wastes disposed of were free liquid wastes (fuels, oils, solvents (xylene, toluene, {MEK}, paints and paint thinners). Also, combustion by-products were present.

The concerns at Site 6 are much the same as those at Sites 4 and 5 (figure 8). Concentrations of chromium and lead in GPT-6-1 are 72 ppb and 70 ppb, repectively. Levels of these two metals are below the MCL of 50 ppb in each of the other two monitoring wells, but they are high enough to be of concern. As stated previously, sampling of discrete intervals is recommended to confirm the level of contamination and to determine if there is vertical variations in their concentrations.

The disposal of MEK at this site makes it necessary that it be included in the list of chemical constituents analyzed for in future sampling events.

CONCLUSIONS

The findings summarized in the Final Verification Report reveal that levels of some contaminants are higher than health based limits. Until the slope of the potentiometric surface is determined by additional rounds of water level measurements, it will be impossible to determine which contaminant levels detected, if any, represent background values, or if the contaminants detected represent releases from the sites. The recommendations included in these comments should be addressed as well as those in the Final Verification Report in order to fully assess the level and extent of contamination and to characterize the hydrogeology at the NCBC facility.



REFERENCE: MAP OF HARRISON COUNTY, MISSISSIPPI BY CONTINENTAL AERIAL SURVEYS, INC., 1982 AS MODIFIED BY HLA FIELD RECONNAISSANCE, MARCH 1987.

Harding Lawson Associates
Engineers, Geologists & Geophysicists

SITE LOCATION MAP
NCBC Gulfport
Gulfport, Mississippi

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE	PLATE
EB.	2176,093.12	MB	11/11/87			

Figure 1

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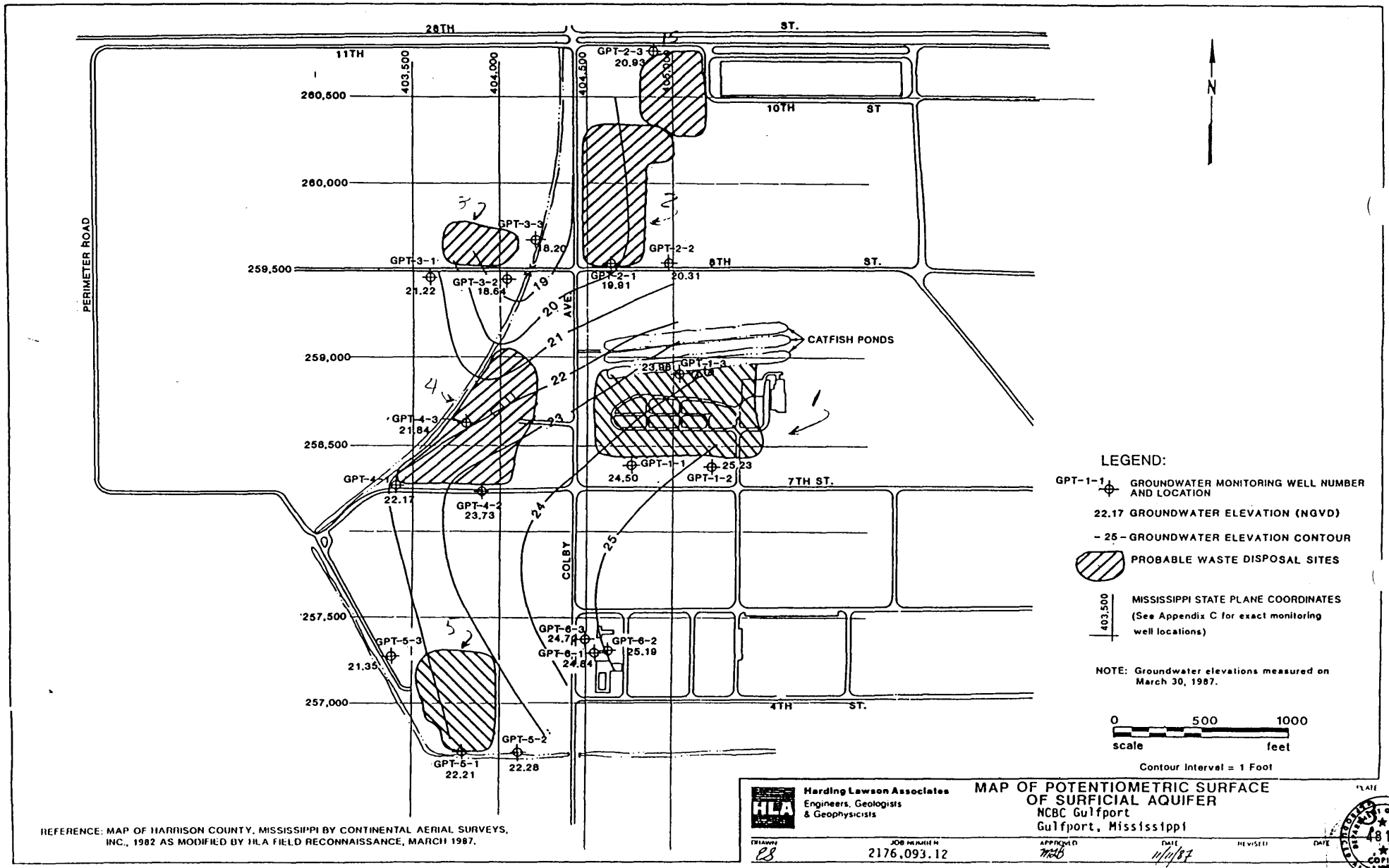
28TH
ST.
11TH
403,500
404,000
404,500
405,000
260,500
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259,500
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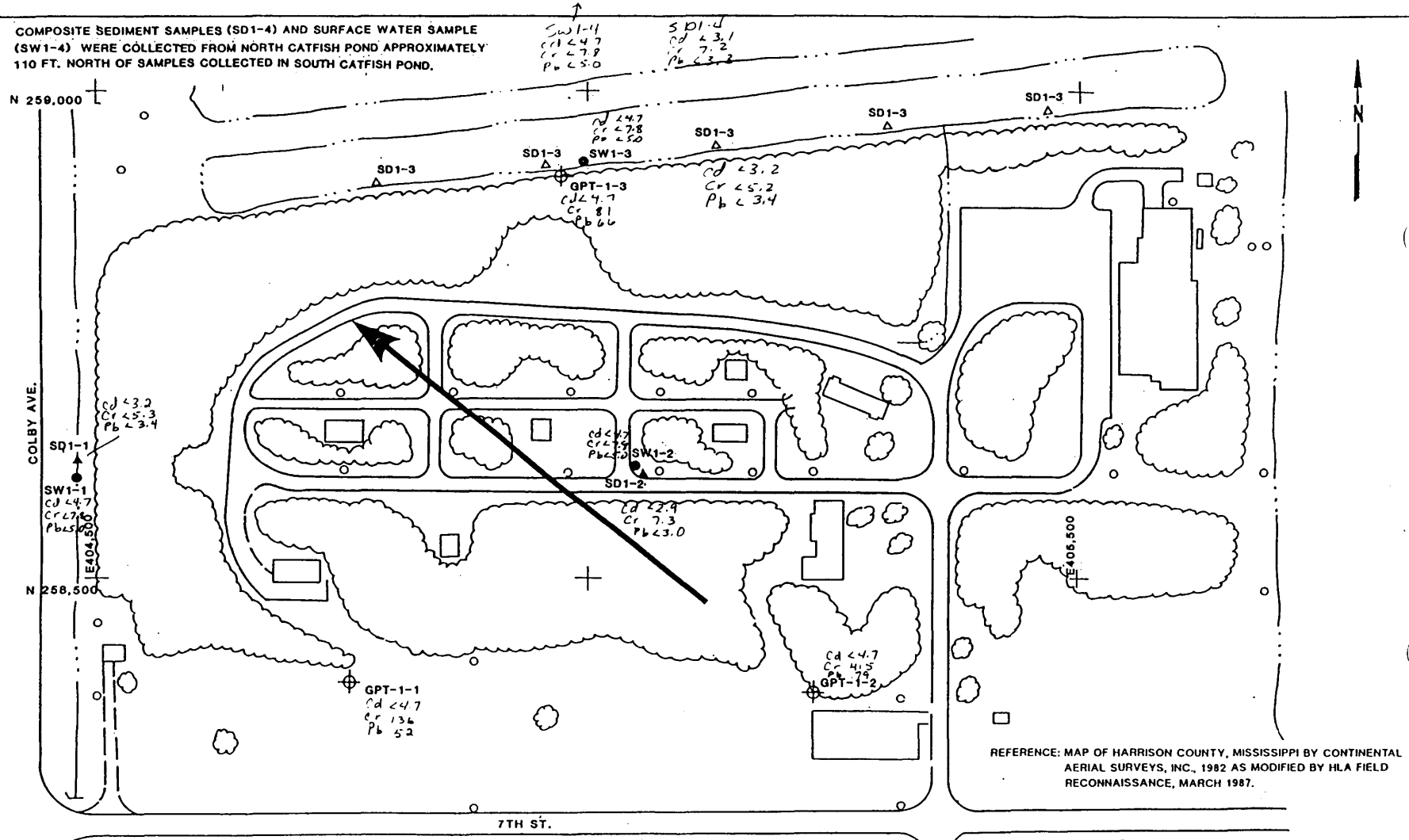
257,500
257,000
PERIMETER ROAD
10TH ST
9TH ST.
7TH ST.
4TH ST.
COLBY AVE
CATFISH PONDS
GPT-2-3
20.93
GPT-2-2
20.31
GPT-2-1
19.81
GPT-3-3
18.20
GPT-3-1
21.22
GPT-3-2
18.64
GPT-1-3
23.88
GPT-1-1
24.50
GPT-1-2
25.23
GPT-4-3
21.84
GPT-4-1
22.17
GPT-4-2
23.73
GPT-5-3
21.35
GPT-5-1
22.21
GPT-5-2
22.28
GPT-6-3
24.74
GPT-6-1
24.64
GPT-6-2
25.19
19
20
21
22
23
24
25
N
LEGEND:
GPT-1-1 GROUNDWATER MONITORING WELL NUMBER AND LOCATION
22.17 GROUNDWATER ELEVATION (NGVD)
- 25 - GROUNDWATER ELEVATION CONTOUR
PROBABLE WASTE DISPOSAL SITES
403,500 MISSISSIPPI STATE PLANE COORDINATES (See Appendix C for exact monitoring well locations)
NOTE: Groundwater elevations measured on March 30, 1987.
0 500 1000
scale feet
Contour Interval = 1 Foot
REFERENCE: MAP OF HARRISON COUNTY, MISSISSIPPI BY CONTINENTAL AERIAL SURVEYS, INC., 1982 AS MODIFIED BY HLA FIELD RECONNAISSANCE, MARCH 1987.
HLA
Harding Lawson Associates
Engineers, Geologists & Geophysicists
MAP OF POTENTIOMETRIC SURFACE OF SURFICIAL AQUIFER
NCBC Gulfport
Gulfport, Mississippi
DRAWN
JOB NUMBER
2176,093.12
APPROVED
DATE
11/11/87
REVISED
DATE
PLATE
COPIER

Figure 2

COMPOSITE SEDIMENT SAMPLES (SD1-4) AND SURFACE WATER SAMPLE (SW1-4) WERE COLLECTED FROM NORTH CATFISH POND APPROXIMATELY 110 FT. NORTH OF SAMPLES COLLECTED IN SOUTH CATFISH POND.



LEGEND:

GPT-1-1 ⊕ GROUNDWATER MONITORING WELL NUMBER AND LOCATION

SD1-1 ▲ SEDIMENT SAMPLE NUMBER AND LOCATION

SD1-3 △ COMPOSITE SEDIMENT SAMPLE NUMBER AND LOCATION

SW1-1 ● SURFACE WATER SAMPLE NUMBER AND LOCATION

← APPROXIMATE DIRECTION OF GROUNDWATER FLOW IN SURFICIAL AQUIFER (Based on Plate 3)

Harding Lawson Associates
Engineers, Geologists & Geophysicists

GROUNDWATER MONITORING WELL AND SAMPLING LOCATIONS - SITE 1
NCBC Gulfport
Gulfport, Mississippi

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED
Ed.	2176,093.12	MB	4/11/87	

PLATE 4

Figure 3

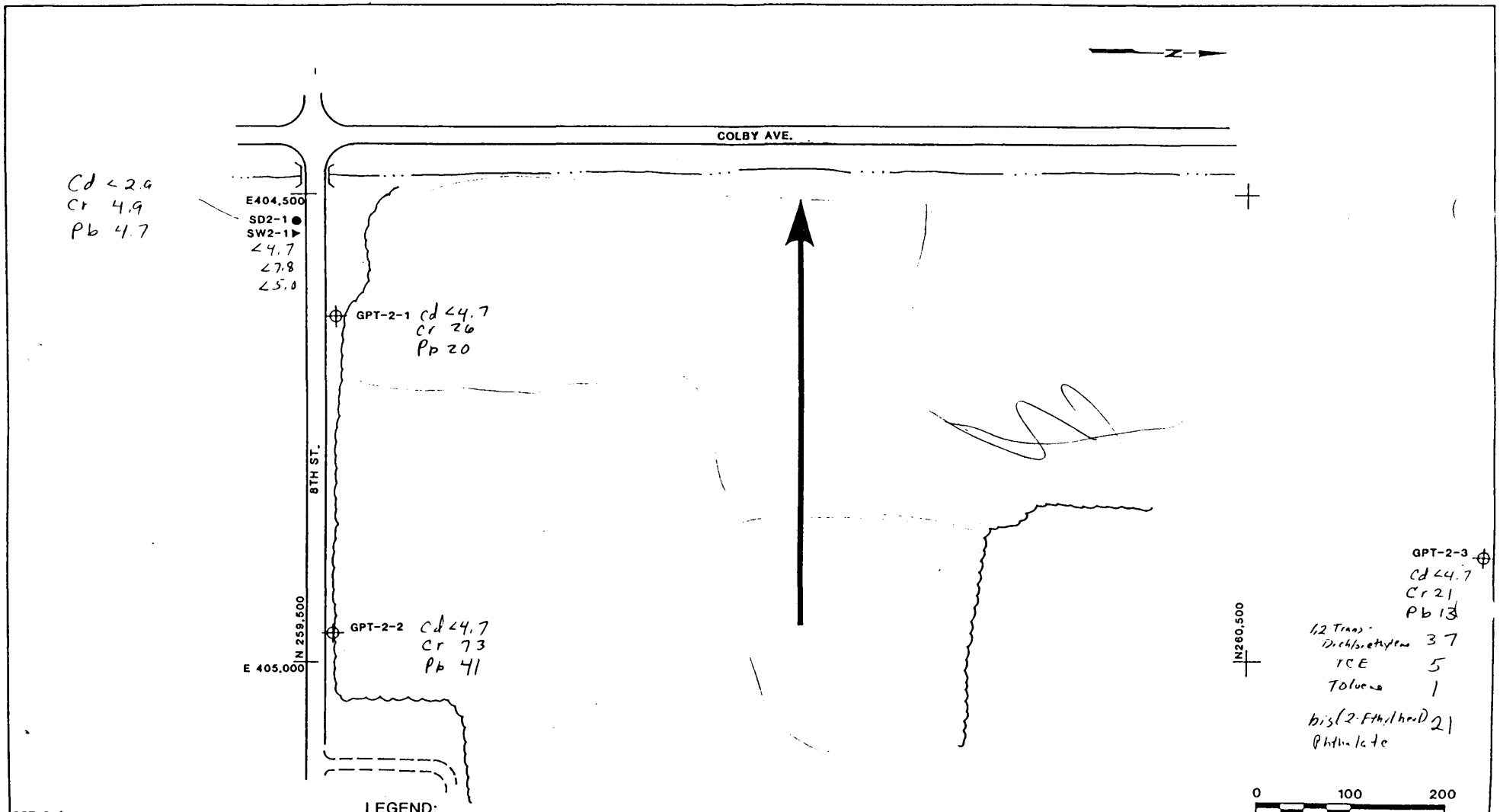

N
COLBY AVE.
8TH ST.
E404,500
N 259,500
E 405,000
N280,500
SD2-1
SW2-1
Cd < 2.6
Cr 4.9
Pb 4.7
<4.7
<7.8
<5.0
GPT-2-1
Cd <4.7
Cr 26
Pb 20
GPT-2-2
Cd <4.7
Cr 73
Pb 41
GPT-2-3
Cd <4.7
Cr 21
Pb 13
1,2 Trans-Dichloroethylene 37
TCE 5
Toluene 1
bis(2-Ethylhexyl) Phthalate 21
0 100 200
scale feet
LEGEND:
GPT-2-1 GROUNDWATER MONITORING WELL NUMBER AND LOCATION
SD2-1 SEDIMENT SAMPLE NUMBER AND LOCATION
SW2-1 SURFACE WATER SAMPLE NUMBER AND LOCATION
APPROXIMATE DIRECTION OF GROUNDWATER FLOW IN SURFICIAL AQUIFER (based on Plate 3)
REFERENCE: MAP OF HARRISON COUNTY, MISSISSIPPI BY CONTINENTAL AERIAL SURVEYS INC., 1982 AS MODIFIED BY HLA FIELD RECONNAISSANCE, MARCH 1987.
Harding Lawson Associates
Engineers, Geologists & Geophysicists
GROUNDWATER MONITORING WELL AND SAMPLING LOCATIONS - SITES 2 AND 7
NCBC Gulfport
Gulfport, Mississippi
DRAWN
JOB NUMBER 2176,093.12
APPROVED
DATE 11/1/87
REVISED
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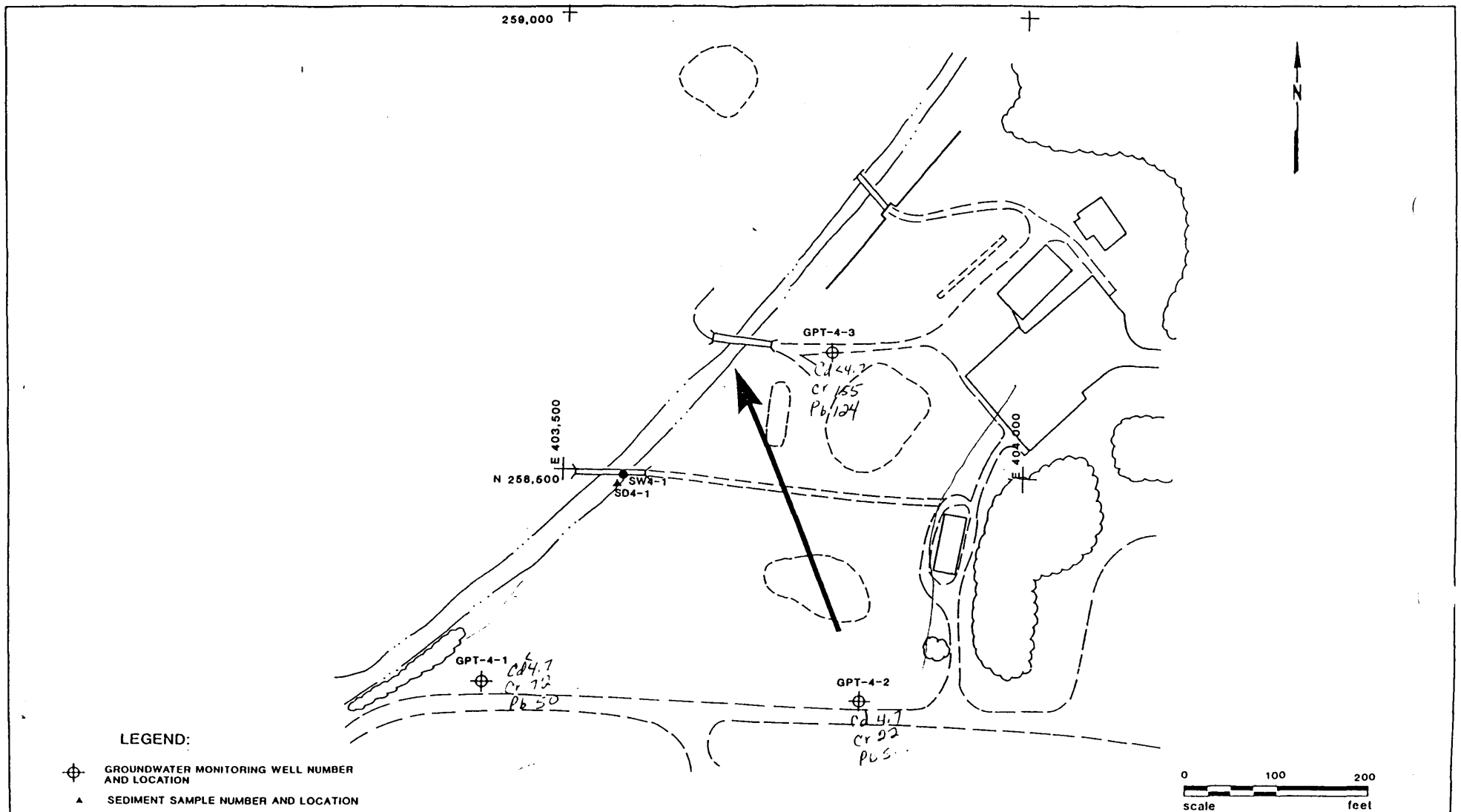
Figure 4



LEGEND:

- GROUNDWATER MONITORING WELL NUMBER AND LOCATION
- SEDIMENT SAMPLE NUMBER AND LOCATION
- SURFACE WATER SAMPLE NUMBER AND LOCATION
- APPROXIMATE DIRECTION OF GROUNDWATER FLOW IN SURFICIAL AQUIFER (based on Plate 3)

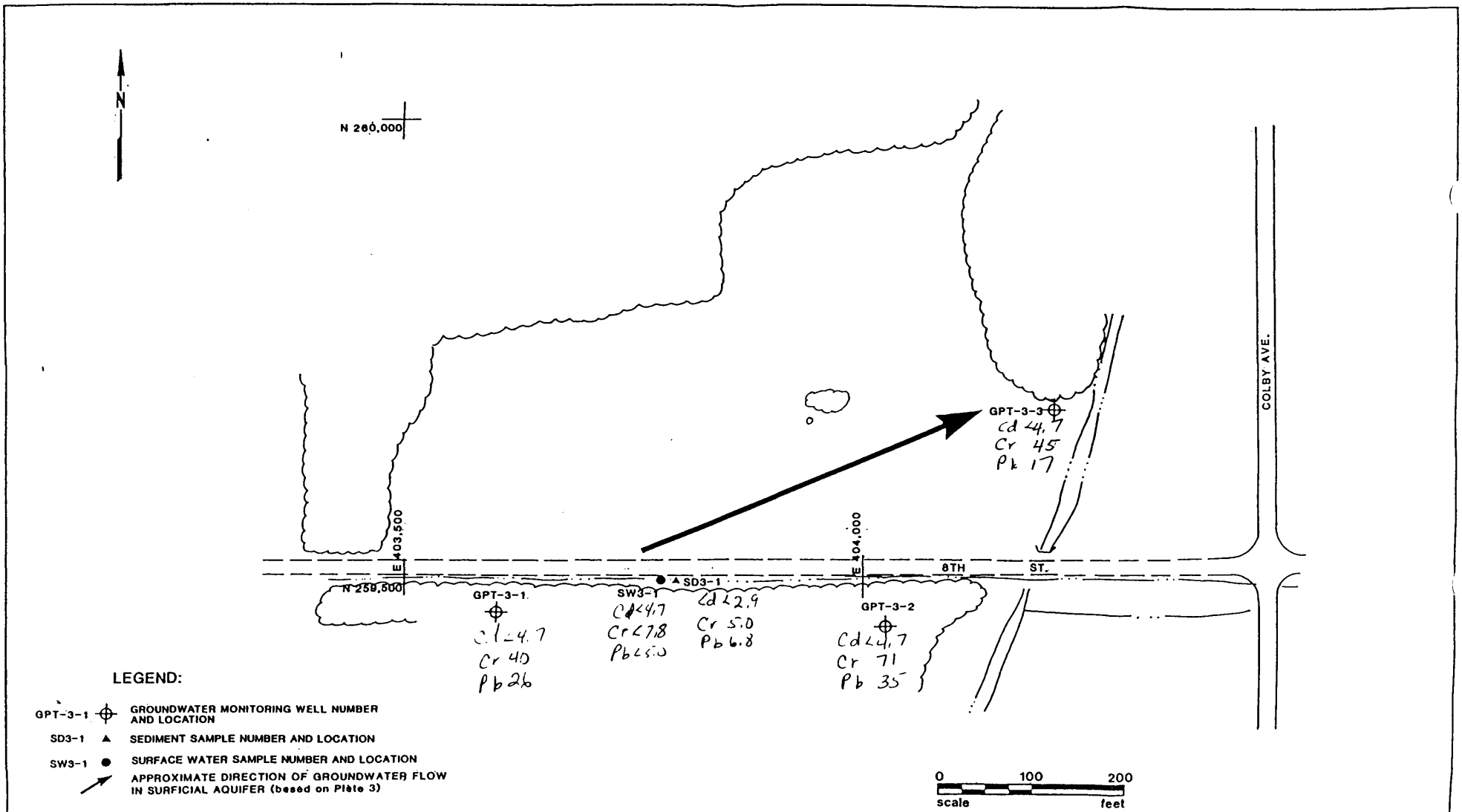
REFERENCE: MAP OF HARRISON COUNTY, MISSISSIPPI BY CONTINENTAL AERIAL SURVEYS INC., 1982 AS MODIFIED BY HLA FIELD RECONNAISSANCE, MARCH 1987.

Harding Lawson Associates
Engineers, Geologists & Geophysicists

GROUNDWATER MONITORING WELL AND SAMPLING LOCATIONS - SITE 4
NCBC Gulfport
Gulfport, Mississippi

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED
EJ	2176,093.12	MAB	11/11/87	

Figure 6



LEGEND:

GPT-3-1 ⊕ GROUNDWATER MONITORING WELL NUMBER AND LOCATION

SD3-1 ▲ SEDIMENT SAMPLE NUMBER AND LOCATION

SW3-1 ● SURFACE WATER SAMPLE NUMBER AND LOCATION

↗ APPROXIMATE DIRECTION OF GROUNDWATER FLOW IN SURFICIAL AQUIFER (based on Plate 3)

REFERENCE: MAP OF HARRISON COUNTY, MISSISSIPPI BY CONTINENTAL AERIAL SURVEYS, INC., 1982 AS MODIFIED BY HLA FIELD RECONNAISSANCE, MARCH 1987.

Harding Lawson Associates
Engineers, Geologists & Geophysicists

GROUNDWATER MONITORING WELL AND SAMPLING LOCATIONS - SITE 3
NCBC Gulfport
Gulfport, Mississippi

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
EJ.	2176,093.12	MB	11/11/87		

Figure 5

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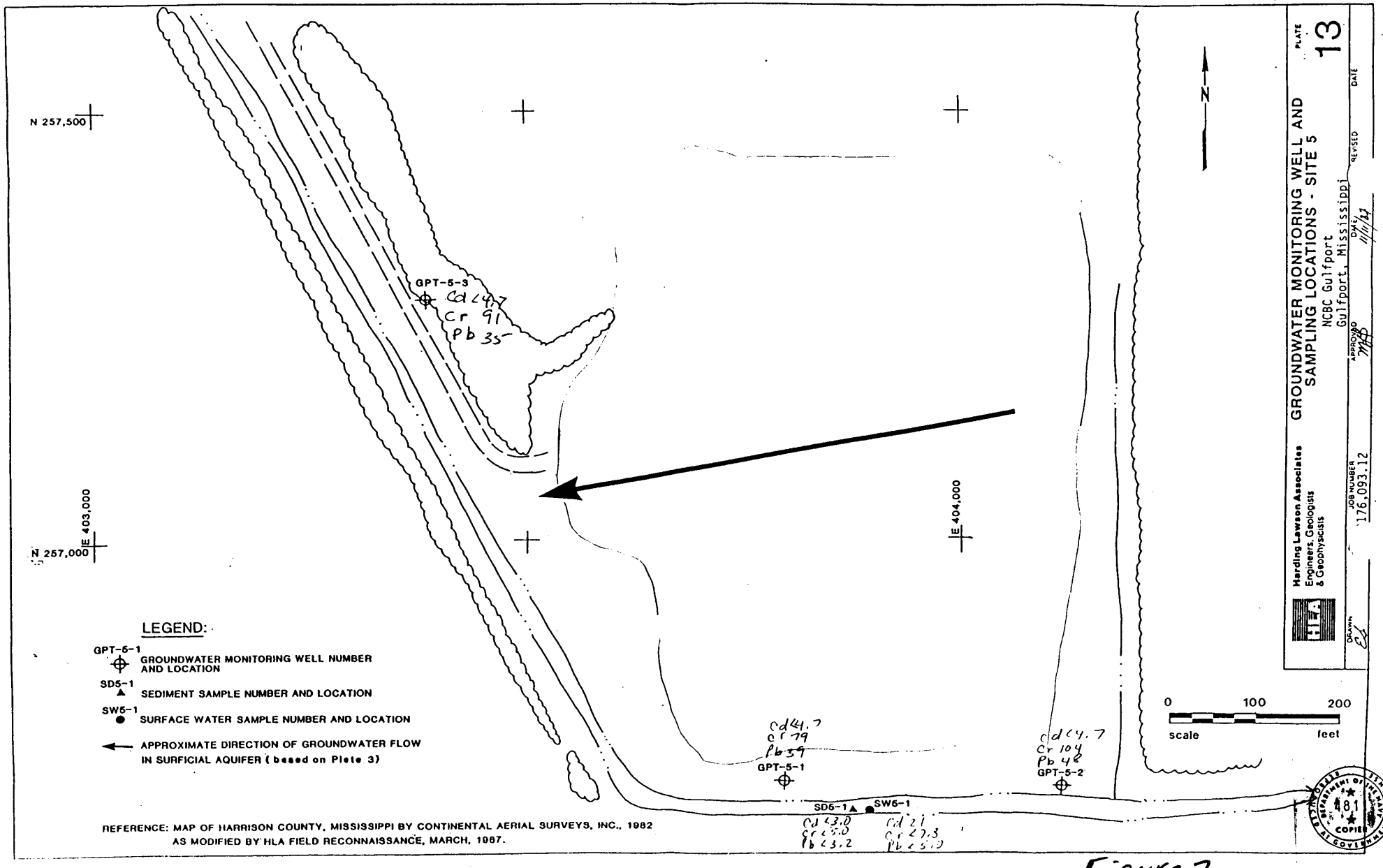

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N 257,000
E 403,000
E 404,000
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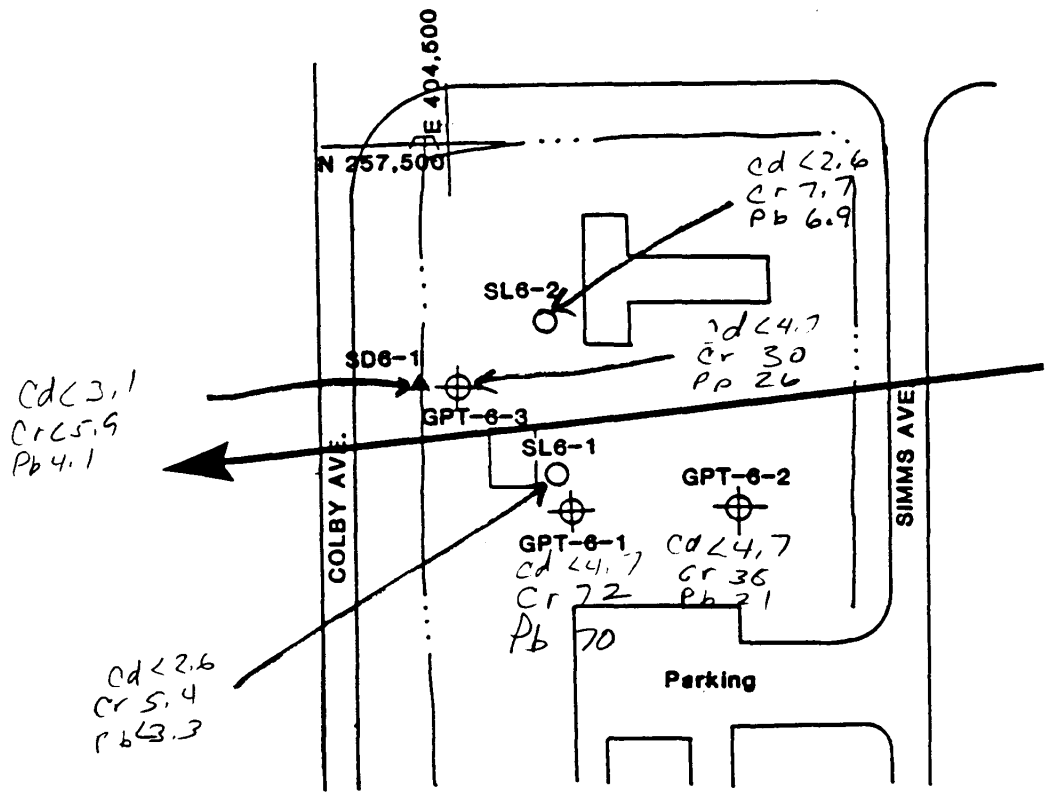
Cr 91
Pb 35
GPT-5-1
Cd <4.7
Cr 79
Pb 39
GPT-5-2
Cd <4.7
Cr 104
Pb 48
SD5-1
SW5-1
Cd <3.0
Cr <5.0
Pb <3.2
Cd 21
Cr <7.3
Pb <5.0
N
0
100
200
scale
feet
LEGEND:
GPT-5-1
GROUNDWATER MONITORING WELL NUMBER AND LOCATION
SD5-1
SEDIMENT SAMPLE NUMBER AND LOCATION
SW5-1
SURFACE WATER SAMPLE NUMBER AND LOCATION
APPROXIMATE DIRECTION OF GROUNDWATER FLOW IN SURFICIAL AQUIFER (based on Plate 3)
REFERENCE: MAP OF HARRISON COUNTY, MISSISSIPPI BY CONTINENTAL AERIAL SURVEYS, INC., 1982
AS MODIFIED BY HLA FIELD RECONNAISSANCE, MARCH, 1987.
Harding Lawson Associates
Engineers, Geologists & Geophysicists
GROUNDWATER MONITORING WELL AND SAMPLING LOCATIONS - SITE 5
NCBC Gulfport
Gulfport, Mississippi
PLATE
13
DRAWN
JOB NUMBER
176,093.12
APPROVED
DATE
11/11/87
REVISED
DATE
481
COPIES

Figure 7



LEGEND:

GPT-6-1 — GROUNDWATER MONITORING WELL NUMBER AND LOCATION

SD6-1 — SEDIMENT SAMPLE NUMBER AND LOCATION

SL6-1 — SOIL SAMPLE NUMBER AND LOCATION

APPROXIMATE DIRECTION OF GROUNDWATER FLOW IN SURFICIAL AQUIFER (based on Plate 3)

REFERENCE: MAP OF HARRISON COUNTY, MISSISSIPPI BY CONTINENTAL AERIAL SURVEYS, INC., 1982 AS MODIFIED BY HLA FIELD RECONNAISSANCE, MARCH, 1987.

0 100 200
scale feet

Harding Lawson Associates
Engineers, Geologists & Geophysicists

GROUNDWATER MONITORING WELL AND SAMPLING LOCATIONS - SITE 6
NCBC Gulfport
Gulfport, Mississippi

PLATE 15

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
ES.	2176,093.12	MHB	11/4/87		

Figure 8

TABLE 1
~~TABLE~~ 2 (con't.)

CHEMICAL PARAMETERS IDENTIFIED FOR
ANALYSIS OF SEDIMENT, SOIL, AND WATER SAMPLES

Parameter	Surface and Groundwater Samples: Analytical Method Number	Surface and Groundwater Samples: Method Detection Limit	Sediment and Soil Samples: Analytical Method Number	Sediment and Soil Samples: Method Detection Limit
Pesticides/PCB's	608(7)		Not Applicable	
Heptachlor Epoxide		0.1 µg/l(8)		
Methoxylchlor		0.5		
PCB-1242		1.0		
PCB-1254		1.0		
PCB-1221		1.0		
PCB-1232		1.0		
PCB-1248		1.0		
PCB-1260		1.0		
PCB-1016		1.0		
Toxaphene		1.0		

Notes: (1) "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020, March 1979.

(2) Plumb, R.H., Jr., 1981, Procedures for Handling Sediment and Water Samples, Technical Report EPA/CE-81-1.

(3) Dohrmann DC-80 Analysis Specifications.

(4) U. S. EPA Test Methods for Evaluating Solid Waste-Physical/Chemical Methods, SW-846, 2nd Edition, U. S. EPA, 1985.

(5) Dohrmann DX-20 Analysis Specification.

(6) HACH COD Specifications.

(7) U.S. EPA Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

(8) All method detection limits for volatile and acid, base-neutral extractable organics and pesticides/PCB's are in µg/l.

TABLE 1

~~TABLE 2~~ (con't.)

Harding Lawson Associates

CHEMICAL PARAMETERS IDENTIFIED FOR
ANALYSIS OF SEDIMENT, SOIL, AND WATER SAMPLES

Parameter	Surface and Groundwater Samples: Analytical Method Number	Surface and Groundwater Samples: Method Detection Limit	Sediment and Soil Samples: Analytical Method Number	Sediment and Soil Samples: Method Detection Limit
Acid Extractable Organics	625(7)		Not Applicable	
2-Chlorophenol		10 µg/l(8)		
2,4-Dichlorophenol		10		
2,4-Dimethylphenol		10		
4,6-Dinitro-o-cresol		50		
2,4-Dinitrophenol		50		
2-Nitrophenol		10		
4-Nitrophenol		50		
P-chloro-m-cresol		10		
Pentachlorophenol		50		
Phenol		10		
2,4,5-Trichlorophenol		50		
2,4,6-Trichlorophenol		10		
Base-Neutral Extractable Organics	625(7)		Not Applicable	
Acenaphthene		10 µg/l(8)		
Acenaphthylene		10		
Anthracene		10		
Benzidine		50		
Benzo(a)anthracene		10		
Benzo(a)pyrene		10		
Benzo(b)fluoranthene		10		
Benzo(ghi)perylene		10		
Benzo(k)fluoranthene		10		
bis(2-chloroethoxy)methane		10		
bis(2-chloroethyl)ether		10		
bis(2-chloroisoprophyl)ether		10		
bis(2-ethylhexyl)phthalate		10		
4-Bromophenylphenyl ether		10		
Butyl Benzyl Phthalate		10		
2-Chloronaphthalene		10		
4-Chlorophenyl Phenyl ether		10		
Chrysene		10		
Dibenzo(a,h)anthracene		10		
1,2-Dichlorobenzene		10		
1,3-Dichlorobenzene		10		
1,4-Dichlorobenzene		10		
3,3'-Dichlorobenzidine		20		
Diethylphthalate		10		
Dimethyl Phthalate		10		

TABLE 1

~~TABLE 2~~

Harding Lawson Associates

CHEMICAL PARAMETERS IDENTIFIED FOR
ANALYSIS OF SEDIMENT, SOIL, AND WATER SAMPLES

Parameter	Surface and Groundwater Samples: Analytical Method Number	Surface and Groundwater Samples: Method Detection Limit	Sediment and Soil Samples: Analytical Method Number	Sediment and Soil Samples: Method Detection Limit
pH	150.1(1)	0.1 su	3-51(2)	0.01 su
Specific Conductance	120.1(1)	1 µmhos	Not Applicable	
Total Organic Carbon (TOC)	415.2(1)	1 mg/l	DC-80(3)	100 mg/kg
Total Organic Halogen (TOX)	9020(4)	5 µg/l	DX-20(5)	200 mg/kg
Chemical Oxygen Demand (COD)	Hach(6)	5 mg/l	3-393(2)	50 mg/kg
Oil and Grease (O and G)	413.2(1)	1.0 mg/l	3-284(2)	100 mg/kg
Cadmium (Cd)	213.2(1)	5 µg/l	213.2(1)	3 mg/kg
Chromium (Cr)	218.2(1)	10 µg/l	218.2(1)	5 mg/kg
Lead (Pb)	239.2(1)	5 µg/l	239.2(1)	3 mg/kg
Volatile Organics	624(7)		Not Applicable	
Acrolein		20 µg/l(8)		
Acryonitrile		10		
Benzene		5		
Bromoform		5		
Bromomethane		10		
Carbon Tetrachloride		5		
Chlorobenzene		5		
Chlorodibromomethane		5		
Chloroethane		10		
Chloromethane		10		
2-Chloroethyl Vinyl Ether		10		
Chloroform		5		
Dichlorobromomethane		5		
1,1-Dichloroethane		5		
1,2-Dichloroethane		5		
1,1-Dichloroethlyene		5		
1,2-Dichloropropane		5		
trans-1,3-Dichloropropene		5		
Ethyl Benzene		5		
Methylene Chloride		5		
1,1,2,2-Tetrachloroethane		5		
Tetrachloroethylene		5		
Toluene		5		
1,2-trans-Dichloroethylene		5		
1,1,1-Trichloroethane		5		
1,1,2-Trichloroethane		5		
Trichloroethylene		5		
Trichlorofluoromethane		10		
Vinyl Chloride		10		
cis-1,3-Dichloropropene		10		

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TABLE 1
~~TABLE 2~~ (con't.)

CHEMICAL PARAMETERS IDENTIFIED FOR
ANALYSIS OF SEDIMENT, SOIL, AND WATER SAMPLES

Parameter	Surface and Groundwater Samples: Analytical Method Number	Surface and Groundwater Samples: Method Detection Limit	Sediment and Soil Samples: Analytical Method Number	Sediment and Soil Samples: Method Detection Limit
Base-Neutral Extractable Organics (con't.)	625(7)		Not Applicable	
Di-n-butylphthalate		10 µg/l(8)		
1,2-Diphenylhydrazine		10		
2,4-Dinitrotoluene		10		
2,6-Dinitrotoluene		10		
Di-n-octyl Phthalate		10		
Fluoranthene		10		
Fluorene		10		
Hexachlorobenzene		10		
Hexachlorobutadiene		10		
Hexachlorocyclopentadiene		10		
Hexachloroethane		10		
Indeno(1,2,3-cd)pyrene		10		
Isophorone		10		
Naphthalene		10		
Nitrobenzene		10		
N-nitrosodi-n-propylamine		10		
N-nitrosodiphenylamine		10		
Phenanthrene		10		
Pyrene		10		
1,2,4-Trichlorobenzene		10		
Pesticides/PCB's	608(7)		Not Applicable	
Aldrin		0.1 µg/l(8)		
alpha-BHC		0.1		
beta-BHC		0.1		
gamma-BHC		0.1		
delta-BHC		0.1		
alpha Chlordane		0.5		
gamma Chlordane		0.5		
4,4'-DDT		0.1		
4,4'-DDE		0.1		
4,4'-DDD		0.1		
Dieldrin		0.1		
alpha-Endosulfan		0.1		
beta-Endosulfan		0.1		
Endosulfan Sulfate		0.1		
Endrin		0.1		
Endrin Ketone		0.1		
Heptachlor		0.1		

TABLE 2
~~TABLE 6~~

SUMMARY OF CHEMICAL ANALYSIS RESULTS,
ACTIVITY POTABLE WELLS

Location	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5
Sampling Date	3/27/87	3/27/87	3/27/87	3/27/87	3/27/87
Temperature	26	25	24	28	24
pH (field)	9.02	8.73	7.57	8.36	7.49
Specific Conductance (field)	740	400	310	320	310
pH (laboratory)	8.69	9.03	8.30	8.88	8.00
Specific Conductance (laboratory)	500 (500)	220	190	190	190
Cd	<4.7	< 4.7	< 4.7	< 4.7	< 4.7
Cr	<7.8	< 7.8	< 7.8	< 7.8	9.0
Pb	<5.0	< 5.0	< 5.0	< 5.0	< 5.0
Volatile Organics	(1)	(1)	(1)	(1)	(1)
Toluene	7	7	11	10	6
Acid/Base/Neutrals	(1)	(1)	(1)	(1)	(1)
Phenol	12				
Bis (2-Ethylhexyl) Phthalate	24		277(2)		

Note: 1. All analysis results are reported in µg/l except temperature, pH, and specific conductance which are in °C, units and µmhos/cm at 25°C, respectively.

2. Results presented in parentheses are for duplicate analyses.

3. Temperature, pH (field) and Specific Conductance (field) data for groundwater samples are an average of three separate measurements.

(1) All chemical parameters not specifically reported were below their analytical detection limit (Table 3).

(2) Laboratory analysis and associated calculations were repeated to verify accuracy of reported value.

\- Sample not analyzed or measured for these parameters.

* Found below detection limit for analytical method.