N62604.AR.000617
NCBC GULFPORT
5090.3a

REMEDIAL INVESTIGATION AND FEASIBILITY STUDY SITE 20 NCBC GULFPORT MS
6/1/2005
TETRA TECH NUS

Remedial Investigation and Feasibility Study

at

Site 10 – Parade Field Ditch

at

Naval Construction Battalion Center

Gulfport, Mississippi

Southern Division
Naval Facilities Engineering Command

Contract Number N62467-94-D-0888

Contract Task Order 0288

June 2005

010510/P

REMEDIAL INVESTIGATION AND FEASIBILITY STUDY AT SITE 10 – PARADE FIELD DITCH

NAVAL CONSTRUCTION BATTALION CENTER GULFPORT, MISSISSIPPI

COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

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CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0288

JUNE 2005

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LIST OF ACRONYMS AND ABBREVIATIONS

ABB-ES	ABB Environmental Services, Inc.
ARAR	Applicable or Relevant and Appropriate Requirement
ATSDR	Agency for Toxic Substance and Disease Registry
BCF	Bioconcentration factor
bgs	Below ground surface
BTOC	Below top of casing
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-Term Environmental Action Navy
COC	Chemical of concern
ComQAP	Compresensive Quality Assurance Plan
°F	Degree Farenheit
DPT	Direct push technology
DQO	Data Quality Objective
EDB	Ethylene dibromide
FID	Flame ionization detector
FS	Feasibility Study
GAC	Granular activated carbon
GRA	General Response Action
HSA	Hollow-stem auger
HxCDF	Hexachlorinated-dibenzo-furan
IAS	Initial Assessment Study
IDW	Investigation derived waste
K_d	Distribution coefficient
K_{oc}	Organic carbon partition coefficient
K_{ow}	Octanol/water partition coefficient
LTTD	Low-temperature thermal desorption
LUC	Land use control
LUCIP	Land Use Control Implementation Plan
µg/kg	microgam(s) per kilogram
mg/kg	milligram per kilogram
MDEQ	Mississippi Department of Environmental Quality
MI	Mobility index
msl	Mean sea level

NAVFAC EFD South	Naval Facilities Engineering Field Division South
NCBC	Naval Construction Battalion Center
NCF	Naval Construction Force
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPW	Net present worth
OCBE	Octachlorinated-biphenly ether
O&M	Operation and maintenance
OSHA	Occupational Safety and Health Act
PAH	Polynuclear aromatic hydrocarbon
PCB	polychlorinted biphenyl
PPE	Personal protective equipment
ppm	Part per million
PRG	Preliminary Remedial Goal
PRSE	Post Removal Site Evaluation
PVC	Polyvinyl chloride
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
SARA	Superfund Amendments Reauthorization Act
SCEM	Site Concenptual Exposure Model
SLERA	Screening level ecological risk assessment
SOP	Standard Operating Procedure
SVOC	Semivolatile organic compound
SWL	Static water level
TAL	Target Analyte List
TBC	To Be Considered (criterion)
TCL	Target Compound List
TCLP	Toxicity Characteristics Leaching Procedure (USEPA's)
TOC	Top of casing
TRG	Target Risk Goal (MDEQ's)
TSCA	Toxic Substance Control Act
TSDF	Treatment Storage or Disposal Facility
TtNUS	Tetra Tech NUS, Inc.

UCL	Upper confidence limit
USC	United States Code
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
VOC	Volatile organic compound
yd^2	square yard(s)
yd^3	cubic yard(s)

EXECUTIVE SUMMARY

E.1 PURPOSE OF THE REPORT

The purpose of this Remedial Investigation (RI) and Feasibility Study (FS) Report is to summarize past environmental investigations and to develop and evaluate options for the remediation of contaminated soil and sediment of Site 10 – Parade Field Ditch at the Naval Construction Battalion Center (NCBC) in Gulfport, Mississippi.

E.2 SITE DESCRIPTION AND HISTORY

Site 10 is a short section of primary drainage ditch located in the south-central section of NCBC Gulfport adjacent to the Parade Field. The site is bordered to the north by a parking area (the former location of the Building 295) and to the south by the Parade Field. The site topography is relatively flat. A sidewalk leading south from the former location of Building 295 crosses the ditch via a footbridge and continues south to the Parade Field.

The drainage ditch at Site 10 is approximately 10 feet wide and 4 feet deep. Storm water runoff from the paved areas surrounding Site 10 flows into various tributary ditches that feed into the larger primary ditch. Surface water runoff in the primary ditch is conveyed to the west into Canal No. 1, which collects the runoff from Drainage Area 5. Surface water in Canal No. 1 flows north and eventually leaves NCBC Gulfport at Outfall 1, located at 28th Street.

Several environmental investigations were performed at Site 10, starting with the dioxin delineation studies for on-and off-site surface water drainage features conducted in 1997 (ABB-ES, 1997). These investigations showed that areas of surface soil and sediment at Site 10 and associated surface drainage systems were contaminated with octachlorinated-biphenyl ethers (OCBEs), chlorobenzene, and Aroclor-1260. The detections of OCBE, chlorobenzene, and Aroclor-1260 indicate the probable release or releases of electrical transformer oil adjacent to or directly into the drainage ditch near the footbridge as the source of contamination at Site 10.

The levels of polychlorinated biphenyls (PCBs) and chlorobenzene contamination in the sediments in the ditch at Site 10 prompted a source removal excavation in August 1999. Approximately 80 cubic yards (yd^3) (120 tons) of sediment and soil with PCB concentrations exceeding the Mississippi Department of Environmental Quality (MDEQ) unrestricted Tier 1 Target Risk Goal (TRG) of 1 part per million (ppm) were removed from the source area during this excavation (Phase I). Confirmation sampling from the bottom of the excavation indicated that PCB concentrations up to 1,240 ppm remained in the soil below

the area of excavation. Therefore, an additional 1.5-foot layer of sediment was removed and additional confirmation samples were collected (the Phase II excavation). Results of the Phase II confirmation sampling identified PCB concentrations up to 16,300 ppm. Excavation activities were suspended and further delineation sampling was conducted using direct push technology (DPT) sampling methods. Results showed that PCB concentrations exceeding the Tier 1 TRG of 1,000 ppm continued to a depth of 22 feet, with PCB concentrations declining with depth. Based on these results, the Phase III excavation was conducted. An additional 3 to 6 feet of soil was removed from the excavation area, with a maximum excavation depth of 14.5 feet in the vicinity of the footbridge. Confirmation samples collected from three locations at the bottom of the Phase III excavation had PCB concentrations exceeding the screening level.

Following the source removal excavations and site restoration, additional samples were collected to evaluate the effectiveness of the remedial action (TtNUS, 2002). The samples from the various media were analyzed for volatile organic compounds (VOCs), pesticides and PCBs, and ethylene dibromide (EDB). The continued presence of PCB concentrations exceeding the screening level in subsurface soil samples prompted the Navy to conduct a more comprehensive RI/FS and to use these data for evaluation of remedial alternatives.

E.3 SUMMARY OF REMEDIAL INVESTIGATION

The overall goal of the investigative work at Site 10 is to characterize environmental contamination and to determine whether there is a risk to human health and the environment and therefore to (1) determine whether further action is required, (2) determine whether further investigation and characterization is needed, and/or (3) develop and design appropriate remedial actions. The overall purpose of this investigation was to address potential risks associated with Site 10 and develop and evaluate options for the remediation of contaminated soil and sediment of Site 10.

Three phases of fieldwork associated with the post-removal site evaluation (PRSE) and RI/FS were conducted at Site 10:

- Phase I PRSE – January 7 through January 13, 2002
- Phase II PRSE – February 11 through February 15, 2002
- Phase III RI – December 2003

Surface water and sediment samples were collected from the ditch at Site 10 to evaluate conditions within the bed of the ditch. Surface water samples were collected during Phase I and Phase III of the investigation. Sediment samples were collected during Phases I, II, and III of the investigation.

Soil samples were collected during Phase I, Phase II, and Phase III of the investigation at Site 10 to evaluate the horizontal and vertical extent of soil contamination. The soil investigation was conducted utilizing DPT methods to allow for collection of soil samples from discrete vertical intervals and to reduce the amount of investigation derived waste (IDW) produced during the investigation.

Based on the results of the soil sampling conducted during Phase I, five permanent monitoring wells were installed at Site 10, allowing for the characterization and delineation of potential groundwater contamination. Groundwater in the vicinity of Site 10 was anticipated to flow to the west-northwest; therefore, the monitoring wells were installed in the following locations:

- NCBC10G01 Source area well (in area of the highest detected PCB concentrations)
- NCBC10G02 Downgradient well
- NCBC10G03 Sidegradient well
- NCBC10G04 Sidegradient well
- NCBC10G05 Upgradient well

Groundwater samples were collected from the monitoring wells during Phase II and Phase III of the investigation.

E.4 NATURE AND EXTENT OF CONTAMINATION

VOC and semivolatile organic compound (SVOC) concentrations in soil samples were less than Tier 1 unrestricted TRGs. Herbicide concentrations in soil samples were less than standard laboratory detection limits. Aroclor-1260 was detected in three soil samples at concentrations greater than the unrestricted TRG and in two samples at concentrations greater than the restricted TRG. The dieldrin concentration in one soil sample was greater than the unrestricted TRG but less than the restricted TRG. Other pesticides and PCBs were detected at concentrations less than Tier 1 unrestricted TRGs. Arsenic was detected in five of the six soil samples at concentrations greater than the Tier 1 unrestricted TRG but less than the restricted TRG. Other metals were detected at concentrations less than Tier 1 unrestricted TRGs. Cyanide concentrations in the soil samples were less than standard laboratory detection limits.

Detected VOC concentrations in groundwater samples were less than Tier 1 TRGs. Detected benzo(k)fluoranthene concentrations in two groundwater samples were greater than the Tier 1 TRG. Concentrations of other SVOCs in groundwater samples were less than standard laboratory detection limits. Pesticides were detected in groundwater samples from two monitoring wells. The dieldrin concentration in one Phase III groundwater sample was greater than Tier 1 TRG. Other pesticides were detected at concentrations less than Tier 1 TRGs. PCB concentrations in groundwater samples were less than standard laboratory detection limits. Herbicide concentrations in groundwater samples were

less than standard laboratory detection limits. Metals and cyanide concentrations in groundwater were less than the Tier 1 TRGs.

Detected VOC concentrations in surface water and sediment samples were less than Tier 1 TRGs. Indeno(1,2,3-CD)pyrene was detected in a Phase III surface water sample at a concentration greater than the Tier 1 TRG. Concentrations of other SVOCs in surface water samples were less than Tier 1 TRGs. Benzo(a)pyrene was detected in a Phase III sediment sample at a concentration greater than the unrestricted TRG of 0.426 milligrams per kilogram (mg/kg) but less than the restricted TRG of 3.82 mg/kg. Concentrations of other SVOCs in sediment samples were less than Tier 1 TRGs. Pesticides were detected in Phase I surface water samples. The dieldrin concentration in one Phase I surface water sample was greater than the human health surface water criteria but less than the Tier 1 TRG and the aquatic life surface water criteria. Aroclor-1260 was detected in a Phase I surface water sample at a concentration exceeding the Tier 1 TRG and the acute and chronic criteria for fresh water aquatic life. Both samples were collected following the remedial action at the site. Pesticides were not detected in the Phase III surface water samples collected approximately 1 year later. Pesticide and PCB concentrations in sediment samples were less than Tier 1 TRGs. Herbicide concentrations in surface water and sediment samples were less than standard laboratory detection limits. Copper was detected in surface water samples at concentrations less than the Tier 1 TRG and the human health surface water criteria but greater than the acute and chronic aquatic life criteria. Concentrations of other metals in surface water samples were less than screening criteria. Arsenic concentrations in four sediment samples were greater than the Tier 1 unrestricted TRG but less than the restricted TRG. Concentrations of other metals detected in sediment samples were less than Tier 1 TRGs. Cyanide concentrations in surface water and sediment samples were less than standard laboratory detection limits.

E.6 BASELINE RISK EVALUATION

The baseline Site Conceptual Exposure Model (SCEM) identified completed pathways in soil, surface water, and sediment and potentially completed pathways to unrestricted receptor populations.

The following analytes were identified in the Tier 1 risk evaluation as having concentrations exceeding Tier 1 TRGs in one or more samples:

Subsurface soil	Aroclor-1260, arsenic, and dieldrin
Sediment	Arsenic and benzo(a)pyrene
Groundwater	Benzo(k)fluoranthene and dieldrin
Surface water	Aroclor-1260, dieldrin, and indeno(1,2,3-CD)pyrene

However, polynuclear aromatic hydrocarbons (PAHs) and pesticides will not be retained as chemicals of concern (COCs) due to infrequent detections and because their presence is likely a result of urban runoff. Similarly, arsenic will not be retained because it was detected within the lower range of naturally occurring concentrations.

Only Aroclor-1260 will be retained as a COC for protection of human health. An FS was prepared to present alternatives to eliminate or minimize human exposure to Aroclor-1260 in soil, sediment, and surface water by active cleanup, engineering controls, and/or institutional controls.

Based on an evaluation of site-specific data with respect to the criteria in the MDEQ Ecological Checklist, a screening level ecological risk assessment (SLERA) is not required for Site 10.

E.7 REMEDIAL ACTION OBJECTIVES, PRELIMINARY REMEDIAL ACTION GOALS, AND VOLUME OF CONTAMINATED SOIL AND SEDIMENT

The Remedial Action Objectives (RAOs) identified in this section are based on the one COC (Aroclor-1260) retained for Site 10 and consist of the following.

RAO 1: Prevent direct exposure to soil with concentrations of Aroclor-1260 greater than 1,000 micrograms per kilogram (µg/kg).

RAO 2: Prevent the erosional transport of Aroclor-1260 through the drainage channel system.

RAO 3: Comply with federal and State Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considered (TBC) guidance criteria in accordance with accepted United States Environmental Protection Agency (USEPA) and MDEQ guidelines.

Based on discussions between the Navy, MDEQ, and USEPA, it was agreed that the Preliminary Remediation Goals (PRGs) for the project would be based on the State of Mississippi TRGs. As a result, TRGs will serve as the basis for remedial action.

Per Mississippi Code Section 49-35-21, TRGs are based on either (1) a $1x10^{-6}$ target incremental cancer risk level for each carcinogenic chemical, (2) a hazard index not to exceed 1.0 for each systemic toxicant, or (3) constituent TRG concentrations established through federal/State programs (e.g., the Safe Drinking Water Act). The State of Mississippi lists TRGs for both restricted (industrial) and unrestricted (residential) land use. Site 10 is located due south of the base mess hall and to the southwest of McDonald's. Because of Site 10's proximity to these public locations, unrestricted (residential) TRGs are

deemed appropriate for remedial consideration. The State of Mississippi unrestricted TRG for Aroclor-1260 in soil is 1,000 µg/kg, and this value is selected as the PRG for soil and sediment at Site 10.

Although concentrations of Aroclor-1260 detected in sediment are less than the unrestricted TRG, sediment is retained as a medium of concern. It is believed that sediment concentrations of Aroclor-1260 are responsible for the surface water detection of Aroclor-1260 observed during the RI/FS. By addressing sediment, surface water concerns will also be addressed.

Due to the relatively small volume of media identified at Site 10, soil and sediment will be addressed as one combined medium. Moreover, soil is assumed to be similar to sediment because subsurface soil is saturated. Lastly, any actions conducted to address contaminated soil would require movement of sediment.

In all, an estimated 450 yd^3 of contaminated soil/sediment containing 33 pounds of Aroclor-1260 is present at Site 10.

E.8 SCREENING OF GENERAL RESPONSE ACTIONS, REMEDIATION TECHNOLOGIES, AND PROCESS OPTIONS

General Response Actions (GRAs) and associated technologies and processes were screened for effectiveness, implementability, and cost. Technologies that were determined to be ineffective or too difficult to implement were eliminated from further consideration. The following GRAs, remediation technologies, and process options were retained to develop soil and sediment remedial alternatives for Site 10:

General Response Action	Remediation Technology	Process Option
No Action	None	Not Applicable
Limited Action	Institutional Controls	Active and Passive Controls
	Monitoring	Sampling and Analysis
Containment	Surface Protection	Concrete/Rip-Rap Cover/Asphalt
Containment (Continued)	Surface Water Controls	Vertical Barriers
Removal	Excavation	Excavation
Ex-Situ Treatment	Physical/Chemical	Dewatering
		Chemical Fixation/Solidification
Disposal	Landfill	Off-Site Disposal

E.9 DEVELOPMENT OF REMEDIAL ALTERNATIVES

The following remedial alternatives were developed for Site 10:

Alternative 1: No Action. No action would be taken. Retained as a baseline for comparison with other alternatives.

Alternative 2: Institutional Controls and Monitoring. Institutional controls would consist of restricting access to soil with concentrations of Aroclor-1260 greater than 1,000 µg/kg and controlling future land use. Existing fencing at Site 10 would be expanded. Site controls would be developed and implemented to prevent residential development of Site 10. Signs would be posted to warn against unauthorized digging activities.

Monitoring would consist of annually collecting samples of sediment and surface water and analyzing these samples for PCBs. Two surface water and two sediment samples would be collected within the area of known contamination. Additionally, two surface water and two sediment samples would be collected immediately downgradient of the fenced area to detect potential migration of PCBs.

Every 5 years, the status of the site would be formally reviewed and evaluated to determine the continued effectiveness of this alternative.

Alternative 3: Surface Water Controls, Excavation, Surface Protection, Institutional Controls, and Monitoring. Within the drainage channel, surface water controls would be used to divert water from work areas. Marine-grade polyvinyl chloride (PVC) sheet piling would be used to section off portions of the drainage channel, and pumps (e.g., bladder-type mud pumps) would be used to remove water from within the cordoned-off sections.

Excavation would be performed within the area designated for surface protection and would be limited to the top 1 foot of soil or sediment. This limited excavation would be conducted to allow the surface protection to be placed at grade with the existing ground surface. The area to be excavated would first be cleared and grubbed, and the pedestrian bridge would be removed. Next, approximately 45 yd^3 of vegetation, soil, and sediment would be removed and disposed at an approved off-site facility. Based on data collected during the RI/FS, it is assumed that the excavated material would be characterized as non-hazardous waste. It is also anticipated that excavated material would not need to be dewatered.

Surface protection would be installed at Site 10 to prevent direct contact with PCB-contaminated media and to prevent erosional transport of PCBs in the shallow sediment. As part of this component, approximately 85 linear feet of the drainage channel would be lined with a 9-inch-thick layer of concrete and/or rip rap and approximately 27 square yards (yd^2) of soil would be paved (consisting of a 6-inch stone base, a 2-inch binder course layer, and a 1-inch wearing course layer). Because direct contact with

contaminated media would be prevented by installing surface protection, existing fencing present at Site 10 would not be needed and would be removed. Additionally, a new pedestrian bridge would be constructed across the drainage channel to replace the one removed to facilitate excavation activities.

Site controls would be developed and implemented to prevent residential development of Site 10. Signs would be posted to warn against unauthorized digging activities. Periodic inspections would be required to ensure that the integrity of the surface protection is not compromised and to determine whether maintenance to the surface protection is required.

Monitoring would consist of annually collecting samples of sediment and surface water and analyzing these samples for PCBs. Two surface water and two sediment samples would be collected immediately downgradient of the surface protection to detect potential migration of PCBs. Every 5 years, the status of the site would be formally reviewed and evaluated to determine the continued effectiveness of this alternative.

Alternative 4: Alternative 4: Surface Water Controls, Excavation, Dewatering, Off-Site Treatment and Disposal. Within the drainage channel, surface water controls would be used to divert water from work areas. Marine-grade PVC sheet piling would be used to section off portions of the drainage channel, and pumps (e.g., bladder-type mud pumps) would be used to remove water from within the cordoned-off sections.

Approximately 450 yd^3 of soil with concentrations of PCBs greater than 1,000 µg/kg would be excavated. The area to be excavated would be cleared and grubbed and the pedestrian bridge would be removed. Excavation of the contaminated material would be accomplished with a Gradall-type excavator, backhoe, or similar type of equipment. The sidewalls of the excavation would be shored to minimize the amount of soil required to be excavated to reach soils at depth. Pre-excavation sampling would be conducted to verify the depth of excavation. After sampling activities have verified the removal of contaminated material, the excavated areas would be backfilled with imported clean soil. The excavated areas would also be graded to original grade and native vegetation would be planted. Additionally, a new pedestrian bridge would be constructed across the drainage channel.

Excavated material would be dewatered by stockpiling it in staging/dewatering cells constructed for this purpose. The cells would be constructed on the parade deck just south of the drainage channel. The free water draining from the cells would be collected in a sump and, if necessary, treated prior to surface water discharge. It is assumed that two sediment staging/dewatering cells would be constructed and operated at Site 10. After the material is sufficiently dewatered, it would be placed in a roll-off dumpster for transport.

Excavated soil would be transported and disposed at a permitted off-site Treatment Storage or Disposal Facility (TSDF). The type of TSDF and pre-treatment requirements prior to ultimate disposal by landfilling would be dictated by the anticipated characteristics of the excavated material.

As part of pre-excavation sampling, samples would be collected to further refine the extent of soil that contains PCBs at concentrations greater than 50,000 µg/kg. It is assumed that approximately 100 yd^3 of excavated material would contain PCB concentrations greater than 50,000 µg/kg and would require disposal at a Toxic Substance Control Act (TSCA)-certified TSDF. It is also assumed that prior to ultimate disposal by landfilling, the TSDF would pre-treat that entire fraction of the excavated material by chemical fixation/solidification to meet disposal requirements. Lastly, it is assumed that the remaining 350 yd^3 would be classified as Resource Conservation and Recovery Act (RCRA) non-hazardous and would be disposed by landfilling at a permitted off-site RCRA Subtitle D TSDF.

E.10 DETAILED ANALYSIS OF REMEDIAL ALTERNATIVES

The remedial alternatives were analyzed in detail using seven of the nine criteria provided in the USEPA's National Oil and Hazardous Substance Pollution Contingency Plan (NCP) and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). These seven criteria are as follows:

- Overall Protection of Human Health and the Environment,
- Compliance with ARARs and TBCs guidance criteria,
- Long-term Effectiveness and Permanence,
- Reduction of Contaminant Toxicity, Mobility, or Volume through Treatment,
- Short-term Effectiveness,
- Implementability, and
- Cost

Two other criteria, State and Community Acceptance were not evaluated in this report. They will be evaluated after regulatory and public comments are available.

E.11 COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES

The remedial alternatives were compared to each other using the same criteria that were used for detailed analysis. The following is a summary of these comparisons:

Overall Protection of Human Health and Environment

Alternative 1 would not be protective of human health and the environment because Arocor-1260 would remain at concentrations in soil in excess of its PRG. As a result, exposure to these concentrations could result. Also, under this alternative, no monitoring would occur; therefore, no warning would be provided if Arocor-1260 concentrations were to migrate through the drainage channel system.

Although Alternative 2 would allow Arocor-1260 concentrations to remain in soil and to possibly continue to migrate from contaminated areas, it would provide some protection by restricting access to contaminated media through fencing and site restrictions and would provide warning of potential contaminant migration through monitoring.

Alternative 3 would be more protective than Alternative 2 because it would essentially eliminate the potential for exposure to PCBs. Surface protection in conjunction with site controls would eliminate direct contact with contaminated media. Moreover, the surface protection would prevent the potential migration of contaminants through the drainage channel system via erosion.

Alternative 4 would provide the highest level of protection because contaminated soil would be removed from its present location and would be transported to an approved TSDF.

Compliance with ARARs and TBCs

Alternative 1 would not comply with chemical-specific ARARs. Action-specific ARARs or TBCs would not apply.

Alternatives 2 and 3 would not comply with chemical-specific ARARs and TBCs due to the pervasiveness of PCBs through the environment. Alternatives 2 and 3 would comply with action-specific ARARs and TBCs.

Alternative 4 would comply with chemical- and action-specific ARARs and TBCs.

There are no location-specific ARARs identified for Site 10.

Long-term Effectiveness and Permanence

Alternative 1 would have very limited long-term effectiveness and permanence because no contaminant removal or reduction would occur. Because there would be no site controls to restrict access to Site 10,

the potential would also exist for direct exposure to PCB-contaminated media. Because there would be no monitoring, potential PCBs migration would remain undetected.

Alternative 2 would provide some long-term effectiveness and permanence because fencing and site controls would reduce exposure to contaminated soil, and monitoring would provide indication of PCBs migration.

Alternative 3 would be more effective and permanent than Alternative 2 in the long term. Surface protection would be more effective and permanent than fencing in preventing direct contact with contaminants and preventing the erosional transport of PCBs through the drainage channel system. Inspection, maintenance, and repair of the surface protection would need to be conducted to ensure its continued structural integrity and effectiveness.

Alternative 4 would be the most long-term effective and permanent remedy. Under this alternative, contaminated soil would be removed from its present location and treated, as required, for ultimate disposal at a TSDF.

Reduction of Toxicity, Mobility, or Volume through Treatment

Alternatives 1 and 2 would not achieve any reduction of toxicity, mobility, or volume of PCB-contaminated media through treatment. Both alternatives might eventually achieve reduction of contaminant toxicity and volume through natural attenuation; however, under Alternative 1, this reduction would neither be verified or quantified. There would be no treatment residuals associated with Alternative 2.

Alternative 3 would not achieve any reduction of toxicity or volume of PCB-contaminated media through treatment. However, Alternative 3 would significantly reduce PCB mobility because Arocor-1260 concentrations would be contained under the surface protection. There would be construction debris associated with this alternative.

Similarly, Alternative 4 would not achieve any reduction of toxicity or volume of PCB-contaminated media through treatment. However, Alternative 4 would reduce PCB mobility through off-site chemical stabilization. A wastewater residual might be generated by the sediment dewatering step, but it is anticipated that this wastewater could be discharged to surface water without treatment. There would be construction debris associated with this alternative.

Short-term Effectiveness

Implementation of Alternative 1 would not result in risks to site workers or adversely impact the surrounding community or environment because no remedial activities would be performed. Alternative 1 would never achieve the RAOs, and although the Arocor-1260 PRG might eventually be attained through natural attenuation processes in the very long term, this occurrence would not be verified.

Implementation of Alternative 2 would result in a slight possibility of exposing site workers to PCB contamination during long-term monitoring activities. However, the risk of exposure would be effectively controlled through compliance with proper site-specific health and safety procedures. Implementation of Alternative 2 would not adversely impact the surrounding community or environment. Alternative 2 would be expected to achieve the RAOs immediately upon implementation of institutional controls and monitoring.

Implementation of Alternatives 3 and 4 would result in the possibility of exposing construction workers to PCB contamination during remedial activities. However, the risk of exposure would be effectively controlled by the implementation of engineering controls (e.g., dust suppression) and compliance with applicable OSHA regulations and proper site-specific health and safety procedures. Implementation of Alternative 4 would potentially impact the surrounding community because approximately 28 truckloads of PCB-contaminated material would be transported over public roads. However, the potential for adverse impact would be effectively addressed through implementation of such appropriate measures as decontamination of transport vehicles, traffic control, and spill prevention and emergency response. Alternatives 3 and 4 would be expected to achieve the RAOs immediately upon removal of the contaminated soil. Alternative 4 would also achieve PRGs upon implementation.

It is anticipated that Alternatives 2, 3, and 4 can be implemented in 1 day, 3 days, and 12 days, respectively.

Implementability

Alternative 1 would be extremely simple to implement because no action would occur.

The technical implementability of Alternative 2 would also be very simple because it would only require implementation of site controls and monitoring.

The technical implementability of Alternative 3 would be somewhat more difficult than that of Alternative 2. In addition to site controls and long-term monitoring, this alternative would require the use of surface water controls, excavation, and surface protection. However, these activities would be

technically implementable. Resources, equipment, and materials are readily available to perform the tasks associated with Alternative 3. Alternative 4 would be somewhat harder to implement, although resources, equipment, and materials are readily available to perform the excavation, dewatering, and transportation activities.

Administratively, Alternatives 2 and 3 would require the development and implementation of land use controls (LUCs) and the performance of long-term monitoring and 5-year site reviews. Under Alternatives 3 and 4, off-site transportation of the excavated soil may require the preparation and implementation of a traffic control plan and would require the completion of waste manifests. Off-site treatment and disposal of the excavated soil would require prior securing of waste acceptance from the TSDF. Alternatives 3 and 4 would require a base permit to conduct remedial activities, manifesting of the material to be transported off base, and formal acceptance of this material by the off-base disposal facility. These administrative requirements could readily be met. Alternative 4 would not require site controls, long-term monitoring, or 5-year reviews because all soil with concentrations greater than the Arocor-1260 PRG would be removed from Site 10.

Cost

The capital and operation and maintenance (O&M) costs and net present worth (NPW) of the remedial alternatives were estimated to be as follows:

Alternative	Capital ($)	NPW of O&M ($)		NPW ($)	
1	0	0		0	
2	19,000	81,000	(30 Year)	100,000	(30 Year)
3	39,000	70,000	(30 Year)	109,000	(30 Year)
4	186,000	0	(1 Year)	186,000	(1 Year)

The above cost figures have been rounded to the nearest $1,000 to reflect the preliminary nature of these estimates.

1.0 INTRODUCTION

Tetra Tech NUS (TtNUS) under contract to the United States Department of the Navy, Naval Facilities Engineering Field Division South (NAVFAC EFD South), has conducted a Remedial Investigation and Feasibility Study (RI/FS) at Site 10, Naval Construction Battalion Center (NCBC), Gulfport, Mississippi. This RI/FS report was prepared under the Comprehensive Long-Term Environmental Action Navy (CLEAN) III, Contract No. N62467-94-D-0888.

1.1 PURPOSE OF REPORT

The primary objective of the RI/FS was to provide data to guide the selection of a remedy for contamination at Site 10 that is protective of human health and the environment. In order to achieve this primary objective, samples from various media were collected and analyzed to fill data gaps from previous investigations. Previous investigations and removal actions at the site focused on polychlorinated biphenyl (PCB) and transformer oil-related contaminants; therefore, additional samples were collected and analyzed during the RI/FS to evaluate the nature and extent of other contaminants that may have been released at the site. Samples from various media were used to confirm the extent of PCB-related contamination previously documented at the site and to evaluate the effect remedial actions have had on site conditions.

1.2 SITE BACKGROUND

NCBC Gulfport is located in the western part of Gulfport, Mississippi, in the southeastern part of Harrison County, about 2 miles north of the Gulf of Mexico (Figure 1-1). Originally, nine sites at NCBC Gulfport were identified in the Initial Assessment Study (IAS) as potential threats to human health or the environment (Naval Energy and Environmental Support Activity, 1985). Contamination was first detected at the area later designated as Site 10 during the dioxin delineation activities for on- and off-site surface water drainage features conducted in 1997 (ABB-ES, 1997).

1.2.1 Site Description

Site 10 is a short section of primary drainage ditch located in the south-central section of NCBC Gulfport adjacent to the Parade Field (Figure 1-2). The site is bordered to the north by a parking area (the former location of the Building 295) and to the south by the Parade Field (Figure 1-3). The site topography is relatively flat. A sidewalk leading south from the former location of Building 295 crosses the ditch via a footbridge and continues south to the Parade Field.

The drainage ditch at Site 10 is approximately 10 feet wide and 4 feet deep. Storm water runoff from the paved areas surrounding Site 10 flows into various tributary ditches that feed into the larger primary ditch.

Surface water runoff in the primary ditch is conveyed to the west into Canal No. 1, which collects the runoff from Drainage Area 5 (Figure 1-2). Surface water in Canal No. 1 flows north and eventually leaves NCBC Gulfport at Outfall 1, located at 28th Street.

1.2.2 Site History

Contamination was first detected at the area designated as Site 10 during the dioxin delineation activities for on- and off-site surface water drainage features conducted in 1997 (ABB-ES, 1997). Analytical results from the samples collected at Drainage Area 5 (in the southwestern corner of NCBC) for this investigation indicated high levels of dioxins and furans, particularly hexachlorinated-dibenzo-furans (HxCDFs). Further evaluation of the laboratory data indicated that the responses interpreted as elevated HxCDFs were actually caused by octachlorinated-biphenyl ethers (OCBEs), which are commonly found in transformer oils manufactured in the 1940s and 1950s. Two of the samples collected during this study were analyzed for PCBs. Aroclor-1260 was detected at concentrations exceeding screening levels in these samples (Figure 1-4). Analysis of sediment samples for volatile organic compounds (VOCs) also detected elevated levels of chlorobenzene, another common ingredient in transformer oil.

The detections of OCBE, chlorobenzene, and Aroclor-1260 indicate the probable release or releases of electrical transformer oil adjacent to or directly into the drainage ditch near the footbridge as the source of contamination at Site 10.

1.2.3 Previous Investigations

Previous environmental investigations and remedial activities conducted at Site 10, as discussed below, are as follows:

- The initial field investigation (ABB-ES, 1997)
- The source removal and associated sampling (CCI, 2000)
- The post-removal site evaluation (PRSE) (TtNUS, 2002)

Initial Field Investigation

Delineation studies were conducted at Site 10 in July 1997 (ABB-ES, 1997). The field screening and sediment sample analysis indicated an area of PCB exceedances approximately 100 feet along the length of the ditch (the source area shown on Figure 1-4). The vertical extent of contamination appeared to be confined to the upper 3 feet of sediment and soil below the base of the ditch. This delineation was based on a PCB screening level of 1 part per million (ppm), a level based on the Toxic Substances Control Act (TSCA) (USEPA, 1976). The highest contaminant levels were found within a 15-foot area

near the footbridge. The maximum level of PCB contamination measured during this event was 140 ppm. Screening level exceedances continued, at decreasing concentrations, for almost 80 feet downstream of the footbridge. The Investigation Report (ABB-ES, 1997) summarized the results of the investigation and provided recommendations for soil removal strategies.

Source Removal

The levels of PCB and chlorobenzene contamination in the sediments in the ditch at Site 10 prompted a source removal excavation in August 1999. Approximately 80 cubic yards (yd^3) (120 tons) of sediment and soil with PCB concentrations exceeding the Mississippi Department of Environmental Quality (MDEQ) unrestricted Tier 1 Target Risk Goal (TRG) of 1 ppm were removed from the source area (Figure 1-4) during this excavation (Phase I). Confirmation sampling from the bottom of the excavation indicated that PCB concentrations up to 1,240 ppm remained in the soil below the area of excavation (Figure 1-5). Therefore, an additional 1.5-foot layer of sediment was removed and additional confirmation samples were collected (the Phase II excavation). Results of the Phase II confirmation sampling identified PCB concentrations up to 16,300 ppm. Excavation activities were suspended and further delineation sampling was conducted using direct push technology (DPT) sampling methods. Results showed that PCB concentrations exceeding the Tier 1 TRG continued to a depth of 22 feet (Figure 1-5), with PCB concentrations declining with depth. Based on these results, the Phase III excavation was conducted (Figure 1-5). An additional 3 to 6 feet of soil was removed from the excavation area, with a maximum excavation depth of 14.5 feet in the vicinity of the footbridge. Confirmation samples collected from three locations at the bottom of the Phase III excavation had PCB concentrations exceeding the screening level.

Post-Removal Site Evaluation

Following the source removal excavations and site restoration, additional samples were collected to evaluate the effectiveness of the remedial action (TtNUS, 2002). The samples from the various media were analyzed for VOCs, pesticides and PCBs, and ethylene dibromide (EDB). The continued presence of PCB concentrations exceeding the screening level in subsurface soil samples prompted the Navy to conduct a more comprehensive RI/FS and to use these data for evaluation of remedial alternatives.

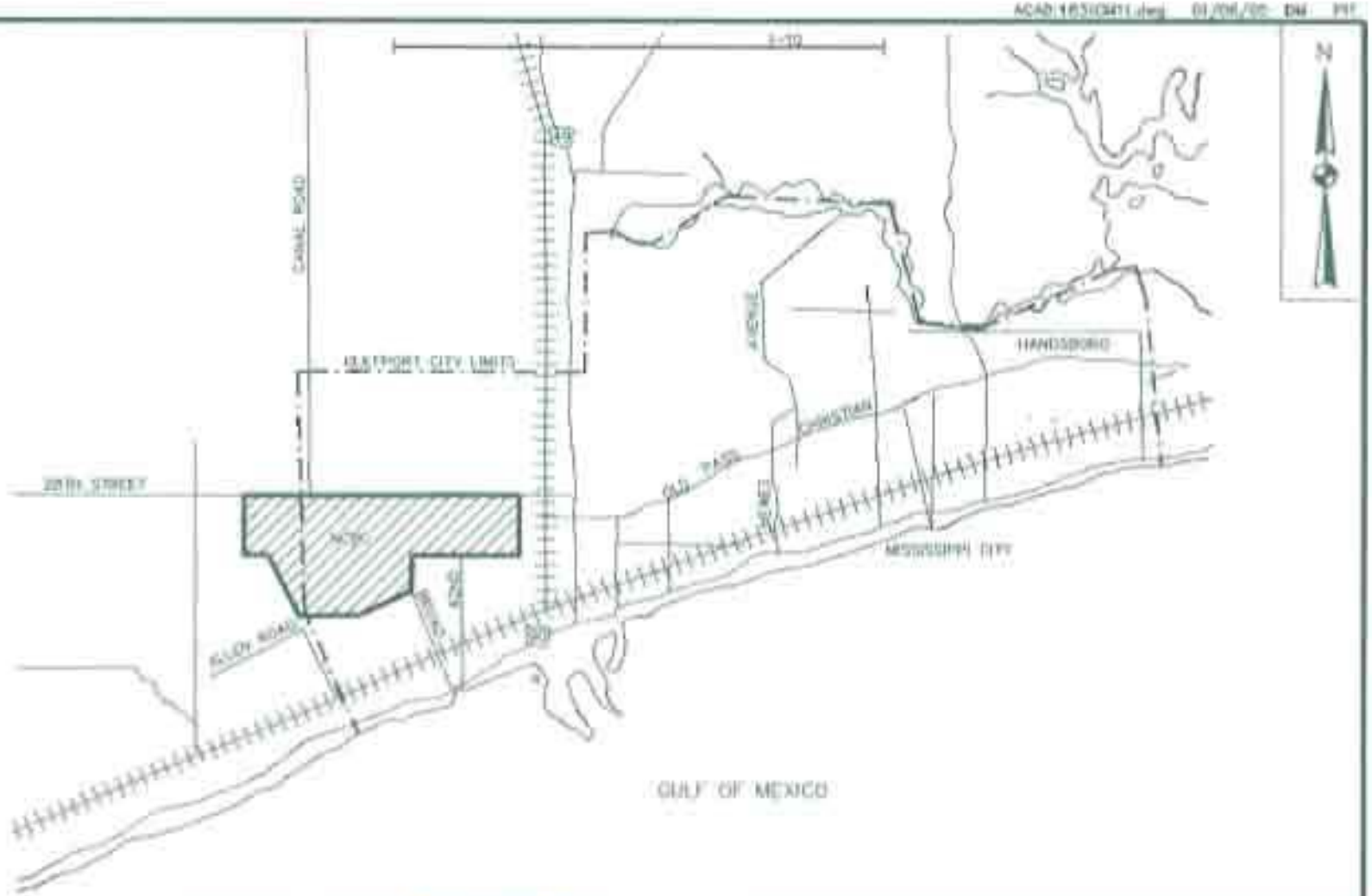
1.3 REPORT ORGANIZATION

This report consolidates the results of the PRSE sampling activities and the RI/FS sampling event and is organized into seven chapters:

- Section 1.0 – Introduction
- Section 2.0 – Study Area Investigation
- Section 3.0 – Physical Characteristics of the Study Area
- Section 4.0 – Nature and Extent of Contamination
- Section 5.0 – Contaminant Fate and Transport
- Section 6.0 – Baseline Risk Assessment
- Section 7.0 – Remedial Investigation Summary and Conclusions
- Section 8.0 – Remedial Action Objectives and General Response Actions
- Section 9.0 – Screening Of Technologies and Development of Alternatives
- Section 10.0 – Assembly and Detailed Analysis of Remedial Alternatives
- Section 11.0 – Comparative Analysis of Remedial Alternatives

The following appendices are included with this report:

- Appendix A – Field Data Forms
- Appendix B – Remedial Investigation Analytical Data
- Appendix C – Baseline SCEM Worksheet
- Appendix D – 95-Percent UCL Calculations and Tier 2 Risk Evaluation Support Data
- Appendix E – USEPA and MDEQ Decision on Site 10
- Appendix F – Calculations
- Appendix G – Cost Estimate



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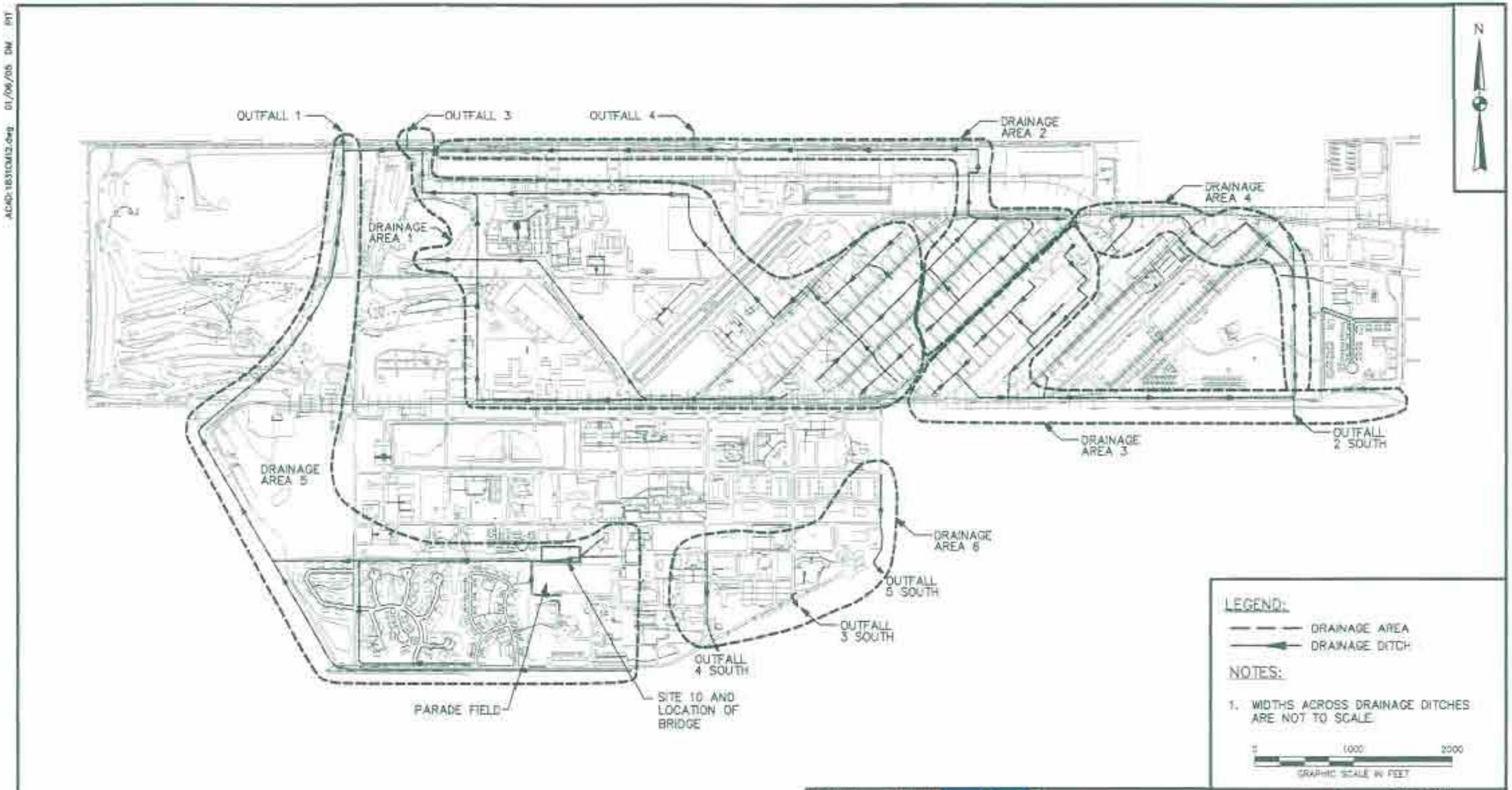

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K. JANICKI	2/25/04
ENGINEER BY	DATE
K. DUBOK	2/25/04
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SITE PLAN

SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT

NCBC GULFPORT

GULFPORT, MISSISSIPPI

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1997 PCB DETECTIONS IN SEDIMENT

PARADE FIELD DITCH

SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT

NCBC GULFPORT

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NOTE
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FIGURE 1-14

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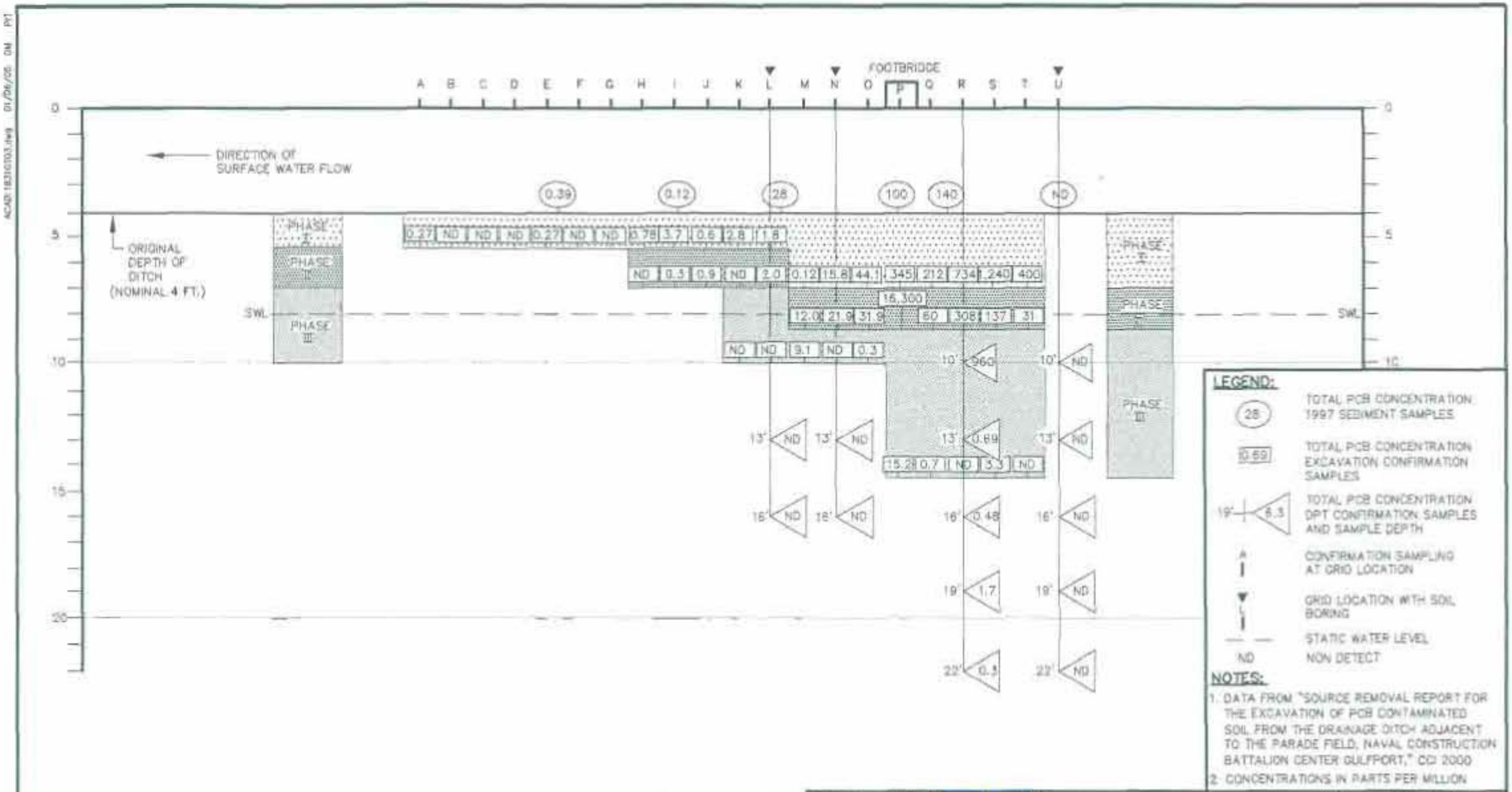

DRAWN BY DM	DATE 1/6/05	RESULTS OF PREVIOUS PCB SAMPLES SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT NCBC GULFPORT GULFPORT, MISSISSSIPPI	CONTRACT NO. 1831
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2.0 STUDY AREA INVESTIGATION

Three phases of fieldwork associated with the PRSE and RI/FS were conducted at Site 10:

- Phase I PRSE – January 7 through January 13, 2002
- Phase II PRSE – February 11 through February 15, 2002
- Phase III RI – December 2003

The data from the Phase I event were used to select the Phase II sampling locations and the monitoring well locations. The analytical results from the Phase I and Phase II sampling efforts were screened against the appropriate MDEQ Tier 1 (unrestricted) TRGs. PCB concentrations exceeding screening levels were reported for subsurface soil samples collected in the vicinity of the footbridge following the removal action. Groundwater, sediment, and surface water sample results were less than screening criteria.

The presence of PCBs at concentrations exceeding the screening level in these subsurface soil samples prompted the Navy to conduct a more comprehensive RI/FS, including the Phase III sampling event and an evaluation of remedial alternatives. Previous investigations and the removal actions at the site focused on PCB and transformer oil-related contaminants; therefore, additional samples were collected and analyzed to evaluate the nature and extent of other contaminants that may have been released at the site. Samples from various media were collected to confirm the extent of PCB-related contamination previously documented at the site and to evaluate the effect remedial actions have had on site conditions

Field investigation techniques used during the PRSE and RI/FS are described in the PRSE Work Plan (TtNUS, 2001) and the RI Work Plan (TtNUS, 2003). The Work Plans provide descriptions of standard operating procedures (SOPs), field personnel responsibilities, mobilization, sampling methods, monitoring well installation, decontamination procedures, groundwater level measurements, sample management, procedures for changes in field methods, waste management, project documentation, and other general information.

Laboratory and data quality assurance and quality control (QA/QC) requirements for the investigation activities were consistent with the Data Quality Objectives (DQOs) of the appropriate Work Plans. Samples collected were handled in accordance with the Quality Assurance Project Plan (QAPP) of the appropriate Work Plan and the TtNUS corporate comprehensive Quality Assurance Plan (ComQAP). At the end of each sampling day, the samples were submitted to the off-site laboratory under proper chain-of-custody protocol.

2.1 SURFACE WATER AND SEDIMENT INVESTIGATIONS

Surface water and sediment samples were collected from the ditch at Site 10 to evaluate conditions within the bed of the ditch. Surface water samples were collected during Phase I and Phase III of the investigation (Table 2-1). Sediment samples were collected during Phases I, II, and III of the investigation (Table 2-1).

2.1.1 Phase I Surface Water and Sediment Sampling

Three surface water samples were collected at Site 10 during Phase I (Figure 2-1). The surface water samples were analyzed for pesticides and PCBs, Target Compound List (TCL) VOCs, and EDB. Water quality parameters including pH, conductivity, temperature, dissolved oxygen, and turbidity were measured with field instruments at each surface water sampling location at the time of sample collection.

Three sediment samples were collected at Site 10 during Phase I (Figure 2-1), co-located with surface water samples. Sediment samples only were collected at the other three locations. The sediment samples were collected from depths of 0 to 6 inches and were analyzed for pesticides and PCBs, TCL VOCs, and EDB.

2.1.2 Phase II Sediment Sampling

Three sediment samples were collected at Site 10 during Phase II (Figure 2-1). No surface water samples were collected during Phase II. The sediment samples were collected from depths of 0 to 6 inches. The sediment samples were analyzed for pesticides and PCBs, TCL VOCs, and EDB.

2.1.3 Phase III Surface Water and Sediment Sampling

Two additional surface water samples were collected at Site 10 during Phase III and analyzed for a wider range of analytical parameters (Figure 2-1). The Phase III surface water samples were analyzed for pesticides and PCBs, TCL VOCs and semivolatile organic compounds (SVOCs), herbicides, Target Analyte List (TAL) metals, and cyanide. Water quality parameters including pH, conductivity, temperature, dissolved oxygen, and turbidity were measured with field instruments at each surface water sampling location at the time of sample collection.

Five sediment samples were collected at Site 10 during Phase III (Figure 2-1), two co-located with surface water samples and three at other locations. The sediment samples were collected from depths of 0 to 6 inches. The Phase III sediment samples were analyzed for pesticides and PCBs, TCL VOCs and SVOCs, herbicides, TAL metals, and cyanide.

The sediment samples collected at two of the Phase III locations were analyzed for grain size and Atterburg Limits to provide preliminary engineering data for use in the initial screening of remedial alternatives in the FS.

2.2 SOIL AND VADOSE ZONE INVESTIGATIONS

Soil samples were collected during Phase I, Phase II, and Phase III of the investigation at Site 10 to evaluate the horizontal and vertical extent of soil contamination (Table 2-1). The subsurface soil investigation was conducted utilizing DPT methods to allow for collection of soil samples from discrete vertical intervals and to reduce the amount of investigation derived waste (IDW) produced during the investigation.

2.2.1 Phase I Soil Sampling

The Phase I soil investigation included 18 soil boring locations (Figure 2-2). Soil samples were collected from five soil boring locations within the ditch (NCBC10S03, NCBC10S04, NCBC10S05, NCBC10S06, and NCBC10S17). Temporary bridges were constructed to allow sampling at the locations within the ditch. The 13 remaining soil boring locations (NCBC10S01, NCBC10S02, NCBC10S07 through NCBC10S16, and NCBC10S18) were collected outside of the ditch.

Soil samples were collected from three intervals at each Phase I soil boring location. The soil sample intervals specified in the PRSE Work Plan (TtNUS, 2001) were (1) 5 feet, (2) 15 feet, and (3) 35 feet below ground surface (bgs) based on the predicted occurrence a confining clay layer at approximately 40 feet bgs. The confining layer, composed of gray marine clay, was actually encountered at approximately 23 feet bgs at Site 10; therefore, the sampling intervals were changed to reflect site conditions.

Sample intervals for each soil boring were selected based on site stratigraphy and field flame ionization detector (FID) screening results. FID headspace readings were collected at 1-foot intervals, and the screening data were used to select sample intervals for laboratory analysis. The shallow soil samples collected from soil borings located in the ditch (NCBC10S03, NCBC10S04, NCBC10S05, NCBC10S06, and NCBC10S17) were collected from 1 to 2 feet below the bottom of the ditch. The shallow soil samples at the other soil boring locations were collected from 5 feet bgs, which roughly corresponds to the same vertical horizon as the shallow samples collected from the ditch. The intermediate soil samples collected from soil borings in the ditch were collected from 8 to 11 feet bgs, based on the FID field screening results. The intermediate soil samples collected from outside of the ditch were collected from 10 feet bgs. The majority of deep samples were collected from the interval just above the confining clay,

approximately 20 feet below the bottom of the ditch or 23 feet bgs. The sample intervals and FID readings for the Phase I soil borings are summarized in Table 2-2.

The soil samples collected from 14 of the borings (NCBC10S03 through NCBC10S16) were analyzed for pesticides and PCBs, TCL VOCs, and EDB. Soil samples from the remaining four borings (NCBC10S01, NCBC10S02, NCBC10S17, NCBC10S18) were analyzed for pesticides and PCBs only. The sample analyses for the Phase I soil borings are summarized in Table 2-2.

2.2.2 Phase II Soil Sampling

Five additional soil boring locations were sampled during the Phase II investigation to fill data gaps identified in Phase I (Figure 2-2). The Phase II soil samples were collected from depths of 5 feet. The five additional soil samples were collected to delineate contaminants detected in Phase I samples. Three of the samples (NCBC10S19, NCBC10S20, and NCBC10S21) were collected in the vicinity of NCBC10S 6 and were analyzed for pesticides and PCBs. Two of the additional samples (NCBC10S22 and NCBC10S23) were collected north of the ditch in the vicinity of NCBC10S11 and were analyzed for TCL VOCs and EDB.

2.2.3 Phase III Soil Sampling

Six soil samples were collected at six soil boring locations during Phase III. Shallow soil samples were collected at five of the soil boring locations, NCBC10S24, NCBC10S25, NCBC10S27, NCBC10S28, and NCBC10S29. These shallow samples were collected from a depth of 7 or 8 feet. One intermediate soil sample was collected at NCBC10S26 from a depth of 19 feet. These soil boring locations were selected to provide additional information on non-PCB and transformer oil-related contaminants that may have been released in the previously identified area of soil contamination. The Phase III soil samples were analyzed for pesticides and PCBs, TCL VOCs and SVOCs, herbicides, TAL metals, and cyanide.

2.3 GROUNDWATER INVESTIGATIONS

Based on the results of the soil sampling conducted during Phase I, five permanent monitoring wells were installed at Site 10, allowing for the characterization and delineation of potential groundwater contamination. Groundwater in the vicinity of Site 10 was anticipated to flow to the west-northwest; therefore, the monitoring wells were installed in the following locations:

- NCBC10G01 Source area well (in area of the highest detected PCB concentrations)
- NCBC10G02 Downgradient well
- NCBC10G03 Sidegradient well

- NCBC10G04 Sidegradient well
- NCBC10G05 Upgradient well

The locations of the five monitoring wells are shown in Figure 2-3. Groundwater samples were collected from the monitoring wells during Phase II and Phase III of the investigation (Table 2-1).

2.3.1 Monitoring Well Installation

The monitoring wells at Site 10 were installed using hollow-stem auger (HSA) drilling techniques. The wells were constructed of 2-inch-diameter, Schedule 40 polyvinyl chloride (PVC), flush-threaded casing with 15-foot, 0.01-inch slotted PVC screens. The shallow monitoring wells were installed to a total depth of approximately 17 feet so that the screened interval corresponded with the vertical extent of detected soil contamination. A filter pack of clean, 20/40, silica sand was installed from the bottom of the borehole to 2 feet above the top of the screen. A bentonite pellet seal or fine sand seal approximately 4 feet thick was installed above the 20/40 sand filter pack. The remainder of the annulus of the borehole was grouted with cement/bentonite slurry. The monitoring wells were completed at ground surface with flush mount vaults, as specified in the Southern Division Specifications for Monitoring Well Completion and Abandonment (NFESO, 1999). The horizontal location and top of casing elevation for each of the monitoring wells was surveyed by a Mississippi-licensed professional land surveyor. The details of the monitoring well installations are summarized in Table 2-3.

2.3.2 Phase II Groundwater Sampling

In February, 2002, TtNUS conducted groundwater sampling associated with Phase II of the investigation at Site 10. Groundwater samples were collected from the five monitoring wells installed at the site and submitted for laboratory analysis. The groundwater sample log sheets are included in Appendix A. The Phase II groundwater samples were analyzed for pesticides and PCBs, TCL VOCs, and EDB. Groundwater quality parameters including pH, conductivity, temperature, dissolved oxygen, and turbidity were measured with field instruments at each monitoring well during the sampling activities.

2.3.3 Phase III Groundwater Sampling

In December 2003, TtNUS conducted groundwater sampling associated with Phase III of the investigation at Site 10. Groundwater samples were collected from the five monitoring wells installed at the site and submitted for laboratory analysis. The groundwater sample log sheets are included in Appendix A. The Phase III groundwater samples were analyzed for pesticides and PCBs, TCL VOCs and SVOCs, herbicides, TAL metals and cyanide. Groundwater quality parameters including pH, conductivity,

temperature, dissolved oxygen, and turbidity were measured with field instruments at each monitoring well during the sampling activities.

TABLE 2-1

REMEDIAL INVESTIGATION AND FEASIBILITY STUDY SAMPLING AND ANALYSIS SUMMARY
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI

SAMPLE MATRIX	CHEMICAL ANALYSES							GEOTECHNICAL ANALYSIS	
	Pesticides/ PCBs	TCL VOCs	EDB	TCL SVOCs	Herbicides	TAL Metals	Cyanide	Grain Size	Atterburg Limits
Soil									
Phase I									
Shallow	18	14	14	--	--	--	--	--	--
Intermediate	18	14	14	--	--	--	--	--	--
Deep	18	14	14	--	--	--	--	--	--
Phase II									
Shallow	3	2	2	--	--	--	--	--	--
Intermediate	--	--	--	--	--	--	--	--	--
Deep	--	--	--	--	--	--	--	--	--
Phase III									
Shallow	5	5	--	5	5	5	5	--	--
Intermediate	1	1	--	1	1	1	1	--	--
Deep	--	--	--	--	--	--	--	--	--
Sediment									
Phase I	3	3	3	--	--	--	--	--	--
Phase II	3	3	3	--	--	--	--	--	--
Phase III	5	5	--	5	5	5	5	2	2
Surface Water									
Phase I	3	3	3	--	--	--	--	--	--
Phase II	--	--	--	--	--	--	--	--	--
Phase III	2	2	--	2	2	2	2	--	--
Groundwater									
Phase I	--	--	--	--	--	--	--	--	--
Phase II	5	5	5	--	--	--	--	--	--
Phase III	5	5	--	5	5	5	5	--	--

NOTES:
Phase I samples were collected in January 2002.
Phase II samples were collected in February 2002.
Phase III samples were collected in December 2003.

Shallow Interval = 1 to 2 feet bgs in ditch, 4 to 5 feet bgs outside of ditch.
Intermediate Interval = 8 to 13 feet bgs in ditch, 10 feet bgs outside of ditch.
Deep Interval = 18 to 20 feet bgs in ditch, 19 to 23 feet bgs outside of ditch.

bgs = Below ground surface.

TABLE 2-2

PHASE I SOIL SAMPLING SUMMARY
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI

Soil Boring	Location	Shallow Interval			Intermediate Interval			Deep Interval		
		Sample Depth Feet bgs	FID Results	Laboratory Analysis	Sample Depth bgs	FID Results	Laboratory Analysis	Sample Depth bgs	FID Results	Laboratory Analysis
NCBC10S01	Bank	5	0	P	10	0.1	P	23	0	P
NCBC10S02	Bank	5	2.1	P	10	0	P	23	0	P
NCBC10S03	Ditch	1	--	P/V	13	2.4	P/V	18	0	P/V
NCBC10S04	Ditch	1	--	P/V	11	4.3	P/V	20	5.4	P/V
NCBC10S05	Ditch	2	1156	P/V	11	1.4	P/V	20	0	P/V
NCBC10S06	Ditch	2	789	P/V	8	202	P/V	20	8.4	P/V
NCBC10S07	Bank	5	0	P/V	10	0.7	P/V	23	0	P/V
NCBC10S08	Bank	5	0.2	P/V	10	--	P/V	23	0.2	P/V
NCBC10S09	Bank	5	0.8	P/V	10	0.9	P/V	23	1.2	P/V
NCBC10S10	Bank	5	--	P/V	10	--	P/V	23	--	P/V
NCBC10S11	Bank	5	--	P/V	10	--	P/V	23	--	P/V
NCBC10S12	Bank	5	2.1	P/V	10	1.5	P/V	23	--	P/V
NCBC10S13	Bank	5	0	P/V	10	0.3	P/V	23	0.9	P/V
NCBC10S14	Bank	5	0	P/V	10	0.8	P/V	20	0.05	P/V
NCBC10S15	Bank	5	0	P/V	10	0	P/V	19	0	P/V
NCBC10S16	Bank	5	0	P/V	10	0	P/V	20	0	P/V
NCBC10S17	Ditch	2	986	P	11	4.1	P	20	4.2	P
NCBC10S18	Bank	5	1.1	P	10	4.4	P	23	0.5	P

NOTES:

Shallow Interval = 1 to 2 feet bgs in ditch, 4 to 5 feet bgs outside of ditch.

Intermediate Interval = 8 to 13 feet bgs in ditch, 10 feet bgs outside of ditch.

Deep Interval = 18 to 20 feet bgs in ditch, 19 to 23 feet bgs outside of ditch.

bgs = Below ground surface.

FID = Flame ionization detector. Results in ppm.

P = Pesticide/PCB analysis only.

P/V = Pesticide/PCB and VOC analysis.

TABLE 2-3

MONITORING WELL INSTALLATION DETAILS
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI

Well ID	Installation Date	Installation Method	Well Diameter	Installed Depth	Screen Length	Screened Interval	TOC Elevation	Ground Elevation
NCBC10G01	2/13/2002	HSA	2 inch	22 feet	15 feet	7-15 feet	28.29	28.27
NCBC10G02	2/13/2002	HSA	2 inch	22 feet	15 feet	7-15 feet	28.31	28.05
NCBC10G03	2/11/2002	HSA	2 inch	22 feet	15 feet	7-15 feet	28.28	28.09
NCBC10G04	2/11/2002	HSA	2 inch	22 feet	15 feet	7-15 feet	28.34	28.12
NCBC10G05	2/13/2002	HSA	2 inch	22 feet	15 feet	7-15 feet	28.57	28.33

NOTES:
HSA = Hollow-stem auger.
TOC = Top of casing.

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AS NOTED	SURFACE WATER AND SEDIMENT SAMPLE LOCATIONS SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT NSWC GULFPORT GULFPORT, MISSISSIPPI	1831 FIGURE E - 1

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SOIL BORING LOCATIONS

SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT

NCBC GULFPORT

GULFPORT, MISSISSIPPI

1631

FIGURE 2 - 2

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MONITORING WELLS LOCATIONS

SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT

NCBC GULFPORT

GULFPORT, MISSISSIPPI

AS NOTED

FIGURE 2 - 3

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3.0 PHYSICAL CHARACTERISTICS OF THE STUDY AREA

NCBC Gulfport is located in the western part of the City of Gulfport, Mississippi, in southeastern Harrison County, about 2 miles north of the Gulf of Mexico (Figure 1-1). NCBC Gulfport occupies approximately 1,100 acres and has an elevation averaging approximately 30 feet above sea level.

3.1 SURFACE FEATURES

Site 10 includes a short section of primary drainage ditch located in the south-central section of NCBC Gulfport adjacent to the Parade Field (Figure 3-1). The drainage ditch at Site 10 is approximately 2.5 feet deep and 10 feet wide at the base and approximately 25 feet wide at the top of the banks. The site is bordered to the north by a parking area associated with Building 295 and to the south by the Parade Field. Large trees are present on the northern side of the ditch. The site topography is relatively flat. A sidewalk leading south from the former location of Building 295 crosses the ditch via a footbridge and continues south to the Parade Field.

NCBC is located in the Gulf Coast Flatwoods physiographic division, which extends along the southern coast of Harrison County. Topography in this area is a series of wet, poorly drained depressions between better drained areas of slightly higher elevation.

3.2 METEOROLOGY

The Gulfport area has a mild climate with warm and humid summers (average temperature of 82° F) and mild winters (average temperature of 52°F). The mean annual precipitation is 63.5 inches, and individual storms are often intense and may produce large 24-hour precipitation totals. The Mississippi coast is subject to hurricanes between June 1st and November 30th.

3.3 SURFACE WATER HYDROLOGY

NCBC Gulfport is located in the Coastal Plain physiographic province of southern Mississippi. This area is typically drained by small streams flowing southeastward toward the coast. Surface water in the vicinity of NCBC Gulfport is abundant. Storm water runoff is collected in a series of ditches and canals and directed off base. Large precipitation events tend to produce small stream and ditch flooding due to relatively high stream flow velocities.

Stormwater runoff from the paved areas surrounding Site 10 flows into various tributary ditches that feed into the larger primary ditch. Surface water runoff in the primary ditch is conveyed to the west into

Canal No. 1, which collects the runoff from Drainage Area 5 (Figure 1-2). Surface water in Canal No. 1 flows to the north and eventually leaves the NCBC Gulfport at Outfall 1, located at 28th Street.

3.4 GEOLOGY

Data collected from soil borings advanced at Site 10 were used to evaluate the lithologic and stratigraphic conditions that may influence contaminant fate and transport at the site.

3.4.1 Stratigraphy

Surface and shallow subsurface soils in this area are primarily gray and brown sand to sandy clay with varying amounts of gravel and minor clay horizons. The top of the local confining clay layer was encountered at a depth of approximately 23 feet at Site 10. Figure 3-2 is a site plan showing the line of cross section for Figure 3-3, an east/west-oriented cross section of Site 10.

3.4.2 Regional Geology

NCBC Gulfport is located in the coastal plain of southern Mississippi, which is underlain by a series of estuarine or deltaic sediments that dip southwestward toward the delta of the Mississippi River. These sediments range in age from Miocene to Recent and are not readily separated into stratigraphic units. The uppermost beds are Pleistocene and Recent terrace and stream valley deposits. The uppermost stratigraphic formation in the coastal plain area is the Pamlico Sand. The Pamlico Sand formation is approximately 60 to 70 feet thick and is composed of fine sands and shale or clay. The Pamlico Sand is underlain by the following formations:

- Citronelle Formation, sand approximately 100 feet thick.
- Graham Ferry Formation, alternating layers of sand, shale, and clay ranging from 125 to 250 feet thick.
- Upper and Lower Pascagoula Formations, alternating layers of sand, shale, and clay with shell and boulders approximately 1,100 feet thick.

3.5 SOILS

Surface and shallow subsurface soils identified from soil borings at Site 10 are primarily sand and sandy loam with minor clay horizons.

3.5.1 Soil Classification

The Soil Survey of Harrison County (USDA, 1975) identifies two soil types at Site 10. Soils in the eastern part of Site 10 are Ocilla loamy sand, a somewhat poorly drained soil commonly found on broad topographic flats. This soil type is typically comprised of a thick sandy surface layer over loamy material and is strongly acidic or very strongly acidic. Permeability is moderate throughout the soil. Available water capacity is low to medium, and runoff is slow. Soil blowing is a hazard on bare and unprotected soil during dry periods.

Soils in the western part of Site 10 are Atmore silt loam, a poorly drained soil developed in loamy material and commonly found on broad flats and in drainage ways. This soil type is typically silt loam and clay loam and is strongly acidic to extremely acidic. Permeability is moderate in the upper part of the soil horizon and slow in the lower part. Available water capacity is medium to high. The water table is at the surface during wet periods, and runoff is slow.

3.6 HYDROGEOLOGY

Hydrogeologic data were collected to evaluate movement of groundwater in the shallow surficial aquifer at the site. Depths to groundwater and groundwater elevations were used to determine the site-specific groundwater flow direction and hydraulic gradient. Groundwater flow velocity at the site was estimated using the hydraulic conductivity values determined for Site 6 and the Site 10 gradient data.

3.6.1 Static Water Levels and Groundwater Elevations

The depth to groundwater at NCBC Gulfport ranges from approximately 2 to 10 feet and is controlled primarily by surface topography. Static water level (SWL) measurement data were recorded from Site 10 monitoring wells in February 2002 and December 2003 (Table 3-1). The top of casing (TOC) elevations of the monitoring wells were surveyed by a professional land surveyor on February 21, 2002. The SWL measurement data and the elevations from the well TOC survey were used to determine relative groundwater elevations at each well.

In February 2002, the SWL measurements in the shallow wells ranged from 1.46 feet below TOC (BTOC) in NCBC10G04 to 2.15 feet BTOC in NCBC10G01. The groundwater elevations in the shallow wells ranged from 26.00 feet above mean sea level (msl) in NCBC10G02 to 26.24 feet above msl in NCBC10G05.

In December 2003, the SWL measurements in the shallow wells ranged from 1.26 feet BTOC in NCBC10G04 to 1.91 feet BTOC in NCBC10G01. The groundwater elevations in the shallow wells ranged from 26.17 feet above msl in NCBC10G02 to 26.49 feet above msl in NCBC10G05.

3.6.2 Groundwater Flow Direction

To evaluate the direction of groundwater flow at the site, the groundwater elevations from the site monitoring wells were plotted on a site map (Figures 3-4 and 3-5). Groundwater elevation isocontours were drawn from the plotted data; groundwater flow direction is perpendicular to the elevation isocontours. Interpretation of data from the gauging events at Site 10 indicates that groundwater flow in the shallow groundwater interval is to the northwest.

3.6.3 Hydraulic Gradient

The average horizontal groundwater gradient across the site was calculated from the groundwater elevations measured in shallow monitoring wells and the estimated groundwater flow direction.

The groundwater flow gradient was determined using the following equation:

$$I = \frac{h_1 - h_2}{d}$$

Where:

I = the hydraulic gradient
h_1 = the water elevation at point 1, the highest value
h_2 = the water elevation at point 2, the lowest value
d = the horizontal distance between point 1 and point 2 parallel to the direction of groundwater flow

The highest and lowest groundwater elevation values measured in the shallow monitoring wells were used to determine the difference in groundwater elevation across the site. The horizontal distance between the high and low groundwater elevation points was measured parallel to the estimated groundwater flow direction.

In February 2002, the groundwater elevation in NCBC10G05, 26.24 feet above msl, was the highest value and the groundwater elevation in NCBC10G02, 26.00 feet above msl, was the lowest value in the shallow monitoring wells. The horizontal distance between these two wells parallel to groundwater flow is approximately 124 feet. These data indicate the average hydraulic gradient of 0.0019 foot per foot for the shallow wells.

In December 2003, NCBC10G05 again had the highest groundwater elevation value, 26.49 feet above msl, and NCBC10G02 had the lowest value, 26.17 feet above msl. These data indicate the average hydraulic gradient of 0.0026 foot per foot for the shallow wells.

3.6.4 Hydraulic Conductivity

Hydraulic conductivity values for Site 10 were estimated from the slug test data from monitoring wells at Site 6 (ABB-ES, 1994). Site 6 is located approximately 2,000 feet to the west-northwest of Site 10 and has similar lithologies and a similar hydrogeologic setting. The geometric mean of the hydraulic conductivity values reported for the shallow wells at Site 6 is approximately 0.0057 foot per minute ($2.9X10^{-3}$ centimeters per second) or 8.2 feet per day (ABB-ES, 1994). The slug test data indicate an order of magnitude variation in hydraulic conductivity in the shallow surficial aquifer (ABB-ES, 1994).

3.6.5 Groundwater Flow Velocity

Potential movement of groundwater at the site may be described by Darcy's Law which is expressed as:

$$V = \frac{(Kxl)}{n}$$

Where:

V = average velocity
K = hydraulic conductivity
n = effective porosity
I = average hydraulic gradient

Data from soil borings advanced during the DPT investigation indicate that fine-grained sand and silty or clayey sand are the typical lithologies at the site. Review of standard literature suggests that a representative effective porosity for this lithology is approximately 30 percent (Heath, 1983).

Using an average hydraulic conductivity of 8.2 feet per day, an average hydraulic gradient of 0.002 foot per foot, and an effective porosity value of 30 percent, the estimated average groundwater velocity for the shallow zone at the site was calculated at 0.055 foot/day.

3.6.6 Regional Hydrogeology

In the Gulfport area, geologic units containing fresh water are of Miocene to Recent age. Aquifers are composed predominantly of sand beds that are irregular in thickness and horizontal extent. In the coastal area of southern Mississippi, the surficial aquifer is typically separated from the Miocene aquifer by a widespread clay aquitard.

The uppermost aquifer is the surficial aquifer. The surficial aquifer sediments are composed of undifferentiated alluvium and the Pamlico sand terrace deposits (Recent to Pleistocene in age). The Pamlico Sand formation is approximately 60 to 70 feet thick and is composed of fine sands and shale or clay. Depth to ground water in the surficial aquifer is variable, depending on local topography and precipitation, but generally ranges from 4 to 7 feet. Locally, shallow groundwater flow in the surficial aquifer is northwest toward Turkey Creek, which empties into Bernard Bayou and eventually into the Gulf of Mexico via the Mississippi Sound. Generally, this aquifer is not used for potable water supply.

Beneath the surficial aquifer are hydrogeologic units referred to collectively as the Miocene aquifers. The Miocene aquifers include the Citronelle Formation and the Graham Ferry Formation (Pliocene), and the Pascagoula, Hattiesburg, and Catahoula Formations (Micoene). Boundaries between the aquifers are vaguely, if at all, defined. These aquifers are composed of sands and discontinuous clays. The Miocene aquifers are a major source of potable water in the Gulfport area.

The water wells in the Citronelle Formation are used for both domestic and industrial water supply. Supply wells in the Upper and Lower Pascagoula Formations provide the majority of fresh water used in the Coastal Plain. The Hattiesburg Formation becomes increasingly brackish with depth, and salt water is encountered near the base of this unit (approximately 2,000 feet below sea level).

3.7 DEMOGRAPHY AND LAND USE

NCBC Gulfport is located in the western part of the City of Gulfport, Mississippi, in southeastern Harrison County. Biloxi, the largest city in Harrison County is located 7 miles east of Gulfport and Pass Christian is located 7 miles to the west.

NCBC Gulfport is an active military facility. The primary mission is the support of battalions of the Naval Construction Force (NCF) and the storage and maintenance of pre-positioned War Reserve Material Stock. NCF support consists of both homeport services and deployed support. Additional missions include tenant support and services to other activities in the region.

Land uses on base include training activities, equipment and materials storage, maintenance areas, recreational facilities, and residential housing for military personnel. Land use in the off-base areas adjacent to NCBC Gulfport is primarily residential.

3.8 ECOLOGY

Site 10 is located in a developed area of the base and includes part of a man-made ditch and the adjacent paved parade ground area.

3.8.1 Aquatic Habitats

The ditch at Site 10 is part of the network of interconnected ditches and canals that convey storm water on the base. The on-base ditches at NCBC Gulfport are generally straight and uniform in width, lacking the morphological properties of natural streams. Aquatic plants may grow in stable sand and gravel banks near and below water levels. The steep slopes on both sides of the ditches limit over bank flooding. Wading birds, fish, and benthic organisms have been observed in the ditches and canals on the base.

Based on the criteria established in Mississippi Commission on Environmental Quality Regulation WPC-2, the ditch at Site 10 would be classified as an ephemeral stream. As defined in Regulation WPC-2, ephemeral streams:

- Do not support a fisheries resource.
- Are not useable for human consumption or aquatic life.
- Include manmade drainage ditches that flow only in direct response to precipitation with channels that are normally above the groundwater table.

Regulation WPC-2 further states the following:

"These streams may contain a transient population of aquatic life during the portion of the year when there is suitable habitat for fish survival. Normally aquatic habitat in these streams is not adequate to support a reproductive cycle for fish and other aquatic life."

3.8.2 Terrestrial Habitats

Site 10 is located in a developed part of the base. Ground cover at the site is predominantly pavement and maintained lawn. Large trees are present on the northern side of the ditch, but native understory is absent. Vegetation along the sides of the ditch is periodically cut to control tree growth. No wetlands are located adjacent to the ditch in the vicinity of Site 10. On-site wildlife may temporarily use Site 10 but, due to lack of suitable cover, wildlife use is assumed to be infrequent.

3.8.3 Species of Concern

A request for a listing of species of concern was sent to the Heritage Program of the Mississippi Museum of Natural Science. A response from the Heritage Program dated February 24, 2003 cited no occurrences of State or federal listed or proposed endangered or threatened plants or animals on NCBC Gulfport.

TABLE 3-1

GROUNDWATER ELEVATION DATA
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI

Well ID	Installation Date	Installed Depth	Top of Casing Elevation	February 2002			December 16 2003		
				Measured Well Depth	Depth to Water (BTOC)	Groundwater Elevation (ft above msl)	Measured Well Depth	Depth to Water (BTOC)	Groundwater Elevation (ft above msl)
NCBC10G01	2/13/2002	19.5	28.29	19.05	2.15	26.14	19.02	1.91	26.38
NCBC10G02	2/13/2002	23.5	27.85	22.97	1.85	26.00	22.75	1.68	26.17
NCBC10G03	2/11/2002	23.5	27.81	23.15	1.65	26.16	22.80	1.49	26.32
NCBC10G04	2/11/2002	23.5	27.54	22.94	1.46	26.08	22.76	1.26	26.28
NCBC10G05	2/13/2002	23.5	28.29	23.20	2.05	26.24	23.13	1.80	26.49

NOTES:
BTOC = Below top of casing.
msl = Mean sea level.

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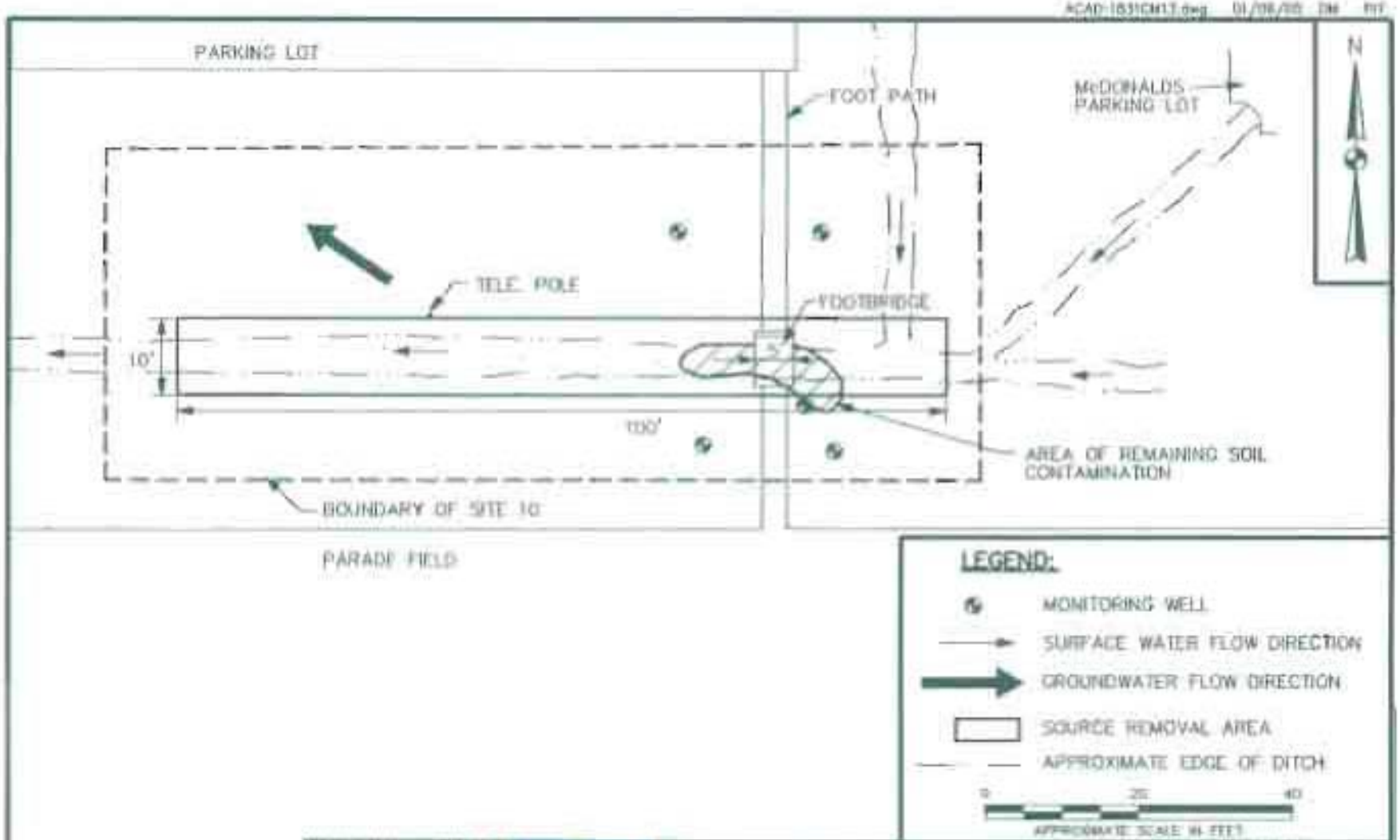

DRAWN BY DM	DATE 1/8/05	SURFACE FEATURES OF STUDY AREA SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT NCBC GULFPORT GULFPORT, MISSISSIPPI	CONTRACT NO. 1831
CHECKED BY	DATE		OWNER NO. 0000
REVISED BY	DATE		APPROVED BY / DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3-1 / REV. 0

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SITE PLAN FOR CROSS SECTION

SITE 90 RI/FS

NSWC GULFPORT

GULFPORT, MISSISSIPPI

FIGURE 3 - 2

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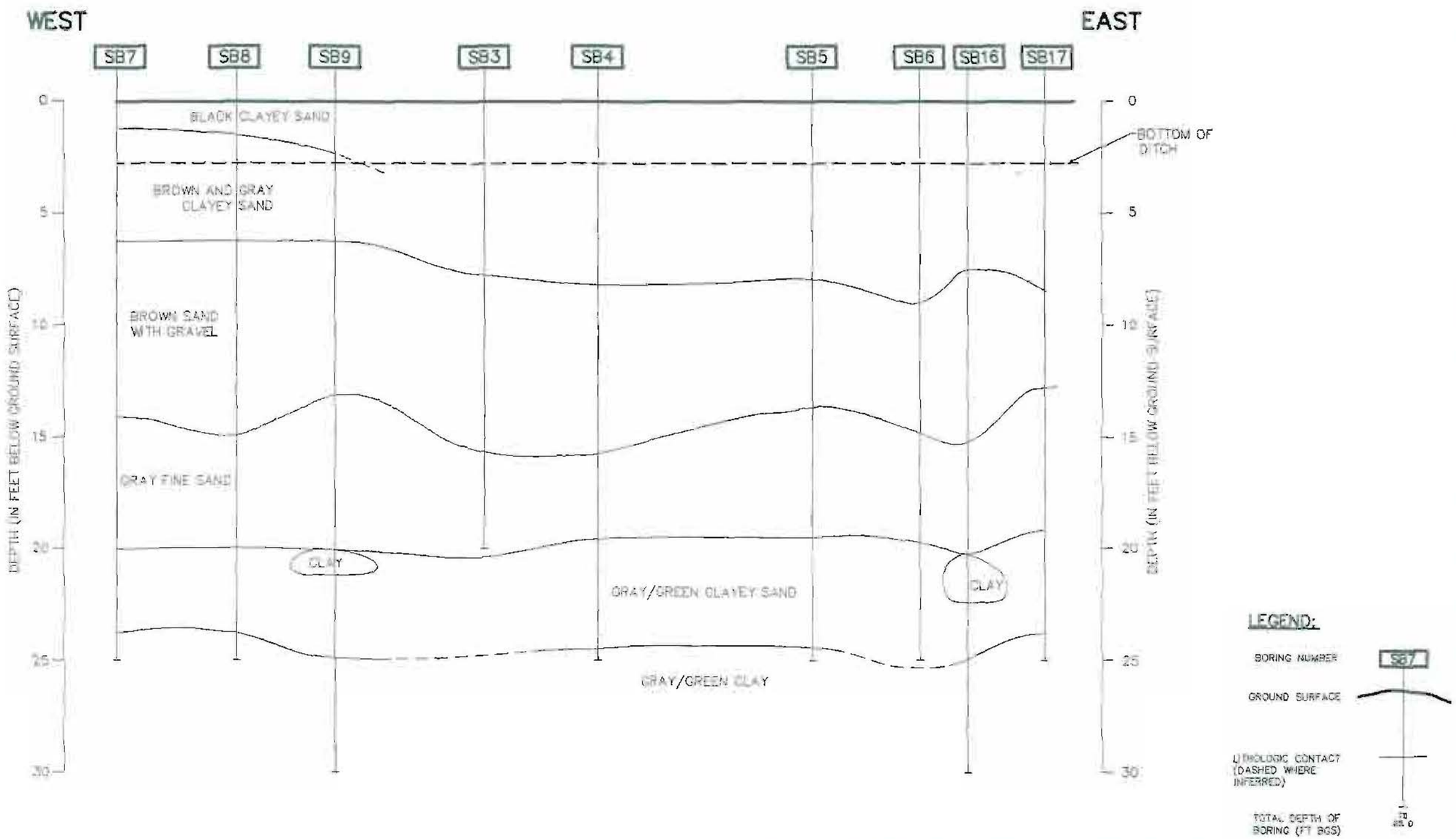

0 20 40
HORIZONTAL SCALE IN FEET

0 5 10
VERTICAL SCALE IN FEET

DRAWN BY DM	DATE 1/7/05	EAST/WEST CROSS SECTION SITE 10 REMEDIAL INVESTIGATION AND FEASIBILTY STUDY REPORT NCBC GULFPORT GULFPORT, MISSISSIPPI	CONTRACT NO. 1831
CHECKED BY	DATE		OWNER NO. 0000
REVISED BY	DATE		APPROVED BY / DATE
SCALE AS NOTED		NAVFAC	DRAWING NO. FIGURE 3-3 / REV. 0

GROUNDWATER POTENTIOMETRIC SURFACE – FEBRUARY 2002

SITE 13 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT

NCBC GULFPORT

GULFPORT, MISSISSIPPI

AS NOTED

FIGURE 3-4

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GROUNDWATER POTENTIOMETRIC SURFACE - DECEMBER 2003

SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT

NCBC GULFPORT

GULFPORT, MISSISSIPPI

AS NOTED

FIGURE 3 - 4

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4.0 NATURE AND EXTENT OF CONTAMINATION

Analytical data from the Phase I, Phase II, and Phase III investigations were used to evaluate the nature and extent of contamination at Site 10 including the types of contaminants detected in the sampled media and the concentrations of these contaminants compared to MDEQ screening criteria. The analytical data gathered during the RI can be found in Appendix B. Soil and sediment sample results were compared to Tier 1 restricted and unrestricted soil TRGs. Groundwater and surface water sample results were compared to Tier 1 groundwater TRGs. Surface water sample results were also compared to MDEQ surface water criteria when available.

Much of the Phase I and Phase II sampling analysis focused on PCB-related contaminants. Samples from all media collected during the Phase III investigation were analyzed for a wider range of contaminants to verify that the environmental impact at Site 10 was limited to the suspected release area and contaminants.

4.1 CONTAMINANT SOURCES

The detections of OCBE, chlorobenzene, and Aroclor-1260 at Site 10 indicate the release of electrical transformer oil as the probable source of contamination. The distribution of contaminants in the drainage ditch adjacent to the footbridge suggests that the release occurred in this area (Figure 3-1).

4.2 SOILS AND VADOSE ZONE

Soil samples were collected from 29 soil boring locations at Site 10. Due to the shallow water table at Site 10, the majority of the samples were collected from the saturated zone below the water table. Soil samples collected during the Phase I and Phase II sampling events were analyzed for pesticides and PCBs, TCL VOCs and EDB. Soil samples collected during the Phase III sampling event were analyzed for a full suite of analytes (TCL VOCs and SVOCs, pesticides and PCBs, herbicides, TAL metals and cyanide). The soil boring locations are shown on Figure 2-2. Analytes detected in the Phase I and Phase II soil samples are summarized in Table 4-1. Analytes detected in the Phase III soil samples are summarized in Table 4-2

4.2.1 <u>Volatile Organics</u>

Several VOCs were detected in Phase I and Phase II soil samples (Table 4-1). The reported concentrations of 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, acetone, benzene, carbon disulfide, and chlorobenzene were less than unrestricted Tier 1 TRGs. Additional VOCs reported from Phase III soil samples, also at concentrations less than unrestricted TRGs, included

1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, toluene, and trichlorofluoromethane (Table 4-2). The frequent occurrence of chlorobenzene compounds in the VOC analyses suggests a transformer oil source.

4.2.2 Pesticides/PCBs

Several pesticides and PCBs were detected in Phase I and Phase II soil samples (Table 4-1). The reported concentrations of alpha-BHC, Aroclor-1254, delta-BHC, DDD, DDE, DDT, endosulfan II, endrin, and endrin aldehyde were less than unrestricted Tier 1 TRGs. Aroclor-1260 and dieldrin were detected in one or more of the soil samples at concentrations exceeding Tier 1 TRGs (Figure 4-1).

Aroclor-1260 was detected in 10 of the 57 Phase I and Phase II soil samples submitted for laboratory analysis. Aroclor-1260 concentrations in five of these samples were less than the unrestricted Tier 1 TRG of 1,000 micrograms per kilogram (µg/kg). The following three soil samples had Aroclor-1260 concentrations greater than the unrestricted TRG but less than the restricted TRG of 10,000 µg/kg:

Location	Depth (ft bgs)	Concentration (µg/kg)
NCBC10S04	1	6,000
NCBC10S05	2	5,200
NCBC10S16	5	1,800

Aroclor-1260 concentrations were greater than the restricted Tier 1 TRG of 10,000 µg/kg in the following two soil samples:

Location	Depth (ft bgs)	Concentration (µg/kg)
NCBC10S06	2	83,000
NCBC10S06	8	19,000

PCB concentrations reported for the six Phase III soil samples submitted for laboratory analysis were less than the unrestricted Tier 1 TRGs (Table 4-2). An Aroclor-1260 detection was reported from one soil sample. Other PCB concentrations were less than standard laboratory detection limits.

Dieldrin was detected in 4 of the 51 Phase I and Phase II soil samples submitted for pesticide analysis (Table 4-1). Dieldrin concentrations in three of these samples were less than the unrestricted Tier 1 TRG of 39.9 µg/kg. One of the soil samples, NCBC10S16 (5 feet bgs), had a dieldrin concentration of 46 µg/kg, which is greater than the unrestricted TRG but less than the restricted TRG of 358 µg/kg. The reported dieldrin concentration for soil samples NCBC10S06 (2 feet bgs) (240 µg/kg) and NCBC10S06

(8 feet bgs) (60 µg/kg) were rejected in data validation due to interference from the high levels of PCBs present in these samples. Pesticide concentrations reported for the six Phase III soil samples submitted for laboratory analysis were less than standard laboratory detection limits.

4.2.3 Semivolatile Organics

SVOC concentrations reported for the six Phase III soil samples submitted for laboratory analysis were less than unrestricted Tier 1 TRGs (Table 4-2). Acenaphthene detections were reported from two of the soil samples and di-N-butyl phthalate was reported from four of the soil samples. Phase I and Phase II soil samples were not analyzed for SVOCs.

4.2.4 Herbicides

Herbicide concentrations in the six Phase III soil samples submitted for laboratory analysis were less than standard laboratory detection limits. Phase I and Phase II soil samples were not analyzed for herbicides.

4.2.5 Inorganics

Metals were frequently detected in the six Phase III soil samples submitted for inorganic analyses (Table 4-2). Aluminum, barium, calcium, chromium, copper, iron, magnesium, sodium, vanadium, and zinc were detected in all of the Phase III samples at concentrations less than Tier 1 unrestricted TRGs (TRGs are not established for calcium, magnesium, or sodium). Cobalt, manganese, nickel, potassium, and selenium were detected in one or more of the Phase III soil samples at concentrations less than TRGs (a TRG has not been established for potassium). Cyanide was not detected in the Phase III soil samples.

Arsenic was detected in the six Phase III soil samples submitted for inorganic analyses (Table 4-2). Arsenic concentrations in the following five samples (Figure 4-2) were greater than the Tier 1 unrestricted TRG of 0.426 milligram per kilogram (mg/kg) but less than the restricted TRG of 3.82 mg/kg:

Location	Depth (ft bgs)	Concentration mg/kg)
NCBC10S24	6	1.5
NCBC10S25	7	0.5
NCBC10S26	18	0.6
NCBC10S28	6	0.44
NCBC10S29	6	0.45

The arsenic concentration reported for NCBC10S27 (6 feet bgs), 0.21 mg/kg, was less than the unrestricted TRG. The detected concentrations of arsenic in the Phase III soil samples are typical for coastal plain soils in Mississippi and are not attributable to a release of electrical transformer oil.

4.2.6 Summary of Soil Analytical Results

- Detected VOC concentrations in soil samples were less than Tier 1 unrestricted TRGs.

- Aroclor-1260 was detected in three soil samples at concentrations greater than the unrestricted TRG and in two samples at concentrations greater than the restricted TRG (Figure 4-1). The dieldrin concentration in one soil sample was greater than the unrestricted TRG but less than the restricted TRG. Other pesticides and PCBs were detected at concentrations less than Tier 1 unrestricted TRGs.

- Detected SVOC concentrations in soil samples were less than Tier 1 unrestricted TRGs.

- Herbicide concentrations in soil samples were less than standard laboratory detection limits.

- Arsenic was detected in five of the six soil samples at concentrations greater than the Tier 1 unrestricted TRG but less than the restricted TRG (Figure 4-2). Other metals were detected at concentrations less than Tier 1 unrestricted TRGs.

- Cyanide concentrations in the soil samples were less than standard laboratory detection limits.

4.3 GROUNDWATER

Groundwater samples were collected during the Phase II and Phase III sampling events from the five monitoring wells installed at Site 10. Groundwater samples collected during the Phase II sampling event were analyzed for pesticides and PCBs, TCL VOCs, and EDB. Groundwater samples collected during the Phase III sampling event were analyzed for a full suite of analytes (TCL VOCs and SVOCs, pesticides and PCBs, herbicides, TAL metals and cyanide). Analytes detected in Phase II groundwater samples are summarized in Table 4-3. Analytes detected in Phase III groundwater samples are summarized in Table 4-4.

4.3.1 Volatile Organics

Two VOCs, 1,3-dichlorobenzene and 1,4-dichlorobenzene, were reported in groundwater samples collected during Phase II (Table 4-3). Both detections were from MW-02 and at concentrations less than

the Tier 1 TRG. Additional VOCs reported from Phase III groundwater samples included 1,2-dichlorobenzene, 1,2,4-trichlorobenzene, chlorobenzene, and benzene. Most of the Phase III detections were from MW-02 and were again at concentrations less than TRGs. Chlorobenzene was detected in the Phase III groundwater sample from MW-01 at a concentration less than the TRG (Table 4-4).

4.3.2 Pesticides/PCBs

The pesticide and PCB concentrations reported for the five Phase II groundwater samples submitted for laboratory analysis were less than standard laboratory detection limits (Table 4-3).

Several pesticides were detected in Phase III groundwater samples (Table 4-4). The reported concentrations of DDD and DDT (NCBC10G05) and delta-BHC (NCBC10G01) were less than unrestricted Tier 1 TRGs. The delta-BHC concentration was compared to the TRG for technical BHC because a TRG for delta-BHC has not been established. Dieldrin was detected in the groundwater sample from NCBC10G01 at a concentration of 0.057 µg/L, exceeding the Tier 1 TRG of 0.00419 µg/L (Figure 4-3). The detected concentrations of pesticides in the Phase III groundwater samples may be due to pesticide applications at NCBC Gulfport and are not attributable to a release of electrical transformer oil.

4.3.3 Semivolatile Organics

One SVOC, benzo(k)fluoranthene, was detected in Phase III groundwater samples (Table 4-4). The reported benzo(k)fluoranthene concentrations in NCBC10G02, an estimated 11 µg/L, and NCBC10G05, 11 µg/L, were greater than the Tier 1 TRG of 0.917 µg/L (Figure 4-3). Concentrations of other SVOCs in Phase III groundwater samples were less than standard laboratory detection limits.

4.3.4 Herbicides

Herbicide concentrations in the five Phase III groundwater samples submitted for laboratory analysis were less than standard laboratory detection limits. Phase II groundwater samples were not analyzed for herbicides.

4.3.5 Inorganics

Metals were frequently detected in the five Phase III groundwater samples submitted for inorganic analyses (Table 4-4). Barium, calcium, iron, manganese, magnesium, and sodium were detected in all of the Phase III samples at concentrations less than the TRGs (TRGs are not established for calcium, magnesium, or sodium). Chromium, copper, vanadium, zinc, and cyanide were detected in one or more

of the Phase III groundwater samples at concentrations less than the TRGs (a TRG has not been established for potassium).

4.3.6 Summary of Groundwater Analytical Results

- Detected VOC concentrations in groundwater samples were less than Tier 1 TRGs.

- Pesticides were detected in groundwater samples from two monitoring wells. The dieldrin concentration in one Phase III groundwater sample was greater than Tier 1 TRG (Figure 4-3). Other pesticides were detected at concentrations less than Tier 1 TRGs. PCB concentrations in groundwater samples were less than standard laboratory detection limits.

- Detected benzo(k)fluoranthene concentrations in two groundwater samples were greater than the Tier 1 TRG (Figure 4-3). Concentrations of other SVOCs in groundwater samples were less than standard laboratory detection limits.

- Herbicide concentrations in groundwater samples were less than standard laboratory detection limits.

- Metals were detected in groundwater samples at concentrations less than Tier 1 TRGs.

- Detected cyanide concentrations in groundwater samples were less than the Tier 1 TRG.

4.4 SURFACE WATER AND SEDIMENTS

Surface water samples were collected during the Phase I and Phase III sampling events. Sediment samples were collected during Phase I, Phase II, and Phase III sampling events. Surface water and sediment samples collected during the Phase I and Phase II sampling event were analyzed for pesticides and PCBs, TCL VOCs, and EDB. The surface water and sediment samples collected during the Phase III sampling event were analyzed for a full suite of analytes (TCL VOCs and SVOCs, pesticides and PCBs, herbicides, TAL metals and cyanide). Analytes detected in Phase I surface water samples are summarized in Table 4-5. Analytes detected in Phase III surface water samples are summarized in Table 4-6. Analytes detected in Phase I and Phase II sediment samples are summarized in Table 4-7. Analytes detected in Phase III sediment samples are summarized in Table 4-8.

4.4.1 Volatile Organics

VOC concentrations in surface water samples collected during Phase I were less than standard laboratory detection limits. Chlorobenzene was detected in one of the Phase III surface water samples at

a concentration less than the Tier 1 TRG (Table 4-6). Neither aquatic life nor human health standards for chlorobenzene in surface water have been established by the State of Mississippi.

Several VOCs were detected in Phase I and Phase II sediment samples (Table 4-7). The reported concentrations of 2-butanone, acetone, and toluene were less than unrestricted Tier 1 TRGs. The VOCs reported from Phase III sediment samples, also at concentrations less than unrestricted TRGs, included acetone, methylene chloride, and trichlorofluoromethane (Table 4-8).

4.4.2 Pesticides/PCBs

Several pesticides were detected in Phase I surface water samples (Table 4-4). The reported concentrations of endosulfan II and endrin aldehyde were less than Tier 1 TRGs and MDEQ surface water criteria. Dieldrin was detected in surface water sample NCBC10W02-D02 at an estimated concentration of 0.005 µg/L, which is less than the TRG and fresh water aquatic life criteria but greater than the human health criteria of 0.000144 µg/L for consumption of organisms and the consumption of organisms and water criteria of 0.000135 µg/L (Figure 4-5).

Aroclor-1260 was also detected in surface water sample NCBC10W02-D02 at a concentration of 1.1 µg/L, exceeding the Tier 1 TRG of 0.0335 µg/L and the acute (0.2 µg/L) and chronic (0.014 µg/L) criteria for fresh water aquatic life (Figure 4-4).

The pesticide and PCB concentrations reported for Phase III surface water samples submitted for laboratory analysis were less than standard laboratory detection limits (Table 4-6). The detected concentrations of pesticides in Phase I surface water samples may be due pesticide applications at NCBC Gulfport and are not attributable to a release of electrical transformer oil.

Several pesticides and Aroclor-1260 were detected in Phase I and Phase II sediment samples (Table 4-7). The reported concentrations of alpha-BHC, dieldrin, endosulfan II, gamma-BHC, heptachlor, and Aroclor-1260 were less than unrestricted Tier 1 TRGs. Aroclor-1260 and the pesticide delta-BHC were detected in Phase III sediment samples at concentrations less than unrestricted TRGs (Table 4-8).

4.4.3 Semivolatile Organics

Indeno(1,2,3-CD)pyrene was detected in sample NCBC10W10-D10 at an estimated concentration of 7 µg/L, exceeding the Tier 1 TRG of 0.917 µg/L. Surface water criteria have not been established for this SVOC by the State of Mississippi. Other SVOCs, fluoranthene and phenanthrene, were detected in both Phase III surface water samples at concentrations less than TRGs.

Several SVOCs were detected in Phase III sediment samples (Table 4-8). The reported concentrations of di-n-butyl phthalate, diethyl phthalate, fluoranthene, and phenanthrene were less than the unrestricted Tier 1 TRGs. Benzo(a)pyrene was detected in sediment sample NCBC10D07, at an estimated concentration of 170 mg/kg, which is greater than the unrestricted TRG of 0.426 mg/kg but less than the restricted TRG of 3.82 mg/kg (Figure 4-5). The detected concentration of benzo(a)pyrene in this sediment sample may be due to storm water runoff from paved areas and roads that is collected by the drainage system and is not attributable to a release of electrical transformer oil.

4.4.4 Herbicides

Herbicide concentrations in the Phase III surface water and sediment samples submitted for laboratory analysis were less than standard laboratory detection limits. Phase I and Phase II samples were not analyzed for herbicides.

4.4.5 Inorganics

Metals were frequently detected in Phase III surface water samples (Table 4-6). Barium, calcium, chromium, iron, manganese, magnesium, sodium, and vanadium were detected in both Phase III samples at concentrations less than TRGs (TRGs are not established for calcium, magnesium, or sodium). Chromium concentrations were also less than the aquatic life and human health surface water criteria. Aluminum was detected in one of the Phase III surface water samples at a concentration less than the TRG.

Copper was detected in both surface water samples at concentrations less than the TRG of 1,300 µg/L and the human health surface water criteria of 1,000 µg/L but greater than the acute (7 µg/L) and chronic (5 µg/L) aquatic life criteria (Table 4-6).

Metals were frequently detected in the five Phase III sediment samples submitted for inorganic analyses (Table 4-8). Aluminum, barium, calcium, chromium, copper, iron, lead, magnesium, manganese, selenium, sodium, vanadium, and zinc were detected in all of the Phase III samples at concentrations less than Tier 1 unrestricted TRGs (TRGs are not established for calcium, magnesium, or sodium). Cobalt, nickel, and potassium were detected in one or more of the Phase III sediment samples at concentrations less than TRGs (a TRG has not been established for potassium). Cyanide was not detected in Phase III sediment samples.

Arsenic was detected in the five Phase III sediment samples submitted for inorganic analyses (Figure 4-5). Arsenic concentrations in the following four samples (Table 4-8) were greater than the Tier 1 unrestricted TRG of 0.426 mg/kg but less than the restricted TRG of 3.82 mg/kg:

Location	Concentration (mg/kg)
NCBC10D08	2.1
NCBC10D09	1.8
NCBC10W10-D10	1.7
NCBC10W11-D11	1.4

The arsenic concentration reported for NCBC10D07, 0.35 mg/kg, was less than the unrestricted TRG. The detected concentrations of arsenic in Phase III sediment samples are typical for sediments derived from coastal plain soils in Mississippi and are not attributable to a release of electrical transformer oil.

4.4.6 Summary of Surface Water and Sediment Analytical Results

- Detected VOC concentrations in surface water and sediment samples were less than Tier 1 TRGs.

- Pesticides were detected in Phase I surface water samples. The dieldrin concentration in one Phase I surface water sample was greater than the human health surface water criteria but less than the Tier 1 TRG and the aquatic life surface water criteria. Aroclor-1260 was detected in a Phase I surface water sample at a concentration exceeding the Tier 1 TRG and the acute and chronic criteria for fresh water aquatic life (Figure 4-4). Both samples were collected following the remedial action at the site. Pesticides were not detected in the Phase III surface water samples collected approximately 1 year later. Pesticide and PCB concentrations in sediment samples were less than Tier 1 TRGs.

- Indeno(1,2,3-CD)pyrene was detected in a Phase III surface water sample at a concentration greater than the Tier 1 TRG (Figure 4-4). Concentrations of other SVOCs in surface water samples were less than Tier 1 TRGs. Benzo(a)pyrene was detected in a Phase III sediment sample at a concentration greater than the unrestricted TRG of 0.426 mg/kg but less than the restricted TRG of 3.82 mg/kg. Concentrations of other SVOCs in sediment samples were less than Tier 1 TRGs.

- Herbicide concentrations in surface water and sediment samples were less than standard laboratory detection limits.

- Copper was detected in surface water samples at concentrations less than the Tier 1 TRG and the human health surface water criteria but greater than the acute and chronic aquatic life criteria. Concentrations of other metals in surface water samples were less than screening criteria. Arsenic concentrations in four sediment samples were greater than the Tier 1 unrestricted TRG but less than

the restricted TRG (Figure 4-5). Concentrations of other metals detected in sediment samples were less than Tier 1 TRGs.

- Cyanide concentrations in surface water and sediment samples were less than standard laboratory detection limits.

4.5 AIR

Air samples were not collected at Site 10 during the RI/FS.

TABLE 4-1

PHASES I AND II SOIL DETECTION SUMMARY
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
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Analytical Parameter	REGULATORY CRITERIA Tier 1 TRG		NCBC10S01	NCBC10S01	NCBC10S01	NCBC10S02	NCBC10S02	NCBC10S02	NCBC10S03	NCBC10S03
	Restricted	Unrestricted	5 - 5	10 - 10	23 - 23	5 - 5	10 - 10	23 - 23	1 - 1	13 - 13
			01/12/02	01/12/02	01/12/02	01/12/02	01/12/02	01/12/02	01/11/02	01/11/02
Volatile Organics (µg/kg)										
1,2-DICHLOROBENZENE	279,000	279,000							5.1 U	5.5 U
1,3-DICHLOROBENZENE	1,840,000	70,400							5.1 U	5.5 U
1,4-DICHLOROBENZENE	238,000	26,600							5.1 U	5.5 U
ACETONE	104,000,000	7,820,000							21 UJ	22 UJ
BENZENE	1,360	887							5.1 U	5.5 U
CARBON DISULFIDE	7,970	7,970							5.1 U	5.5 U
CHLOROBENZENE	1,190	1,190							5.1 U	5.5 U
Pesticides (µg/kg)										
4,4'-DDD	23,800	2,660	0.12 R	2.1 U	2.2 U	2.0 U	0.33 J	0.14 R	8.4 U	2.0 U
4,4'-DDE	16,800	1,880	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	8.4 U	2.0 U
4,4'-DDT	16,800	1,880	2.0 U	2.1 U	2.2 U	2.0 U	2	0.39 J	8.4 U	2.0 UJ
ALPHA-BHC	908	101	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	8.4 U	0.083 J
ALPHA-CHLORDANE	12,300	1,820	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	8.4 U	2.0 U
AROCLOR-1254	10,000	1,000	38 U	41 U	42 U	39 U	40 U	41 U	41 U	39 U
AROCLOR-1260	10,000	1,000	38 U	41 U	42 U	39 U	40 U	41 U	740	39 U
DELTA-BHC	3,180	355	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	8.4 U	2.0 U
DIELDRIN	358	40	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	2.1 R	2.0 U
ENDOSULFAN II	1,230,000	469,000	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	17	2.0 U
ENDRIN	61,300	23,500	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	5.7 R	2.0 U
ENDRIN ALDEHYDE	61,300	23,500	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	1.9 R	2.0 U

TABLE 4-1

PHASES I AND II SOIL DETECTION SUMMARY
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Analytical Parameter	REGULATORY CRITERIA Tier 1 TRG Restricted	REGULATORY CRITERIA Tier 1 TRG Unrestricted	NCBC10S03 13 - 13 01/11/02	NCBC10S03 18 - 18 01/11/02	NCBC10S04 1 - 1 01/11/02	NCBC10S04 11 - 11 01/11/02	NCBC10S04 20 - 20 01/11/02	NCBC10S05 2 - 2 01/11/02	NCBC10S05 11 - 11 01/11/02	NCBC10S05 20 - 20 01/11/02
Volatile Organics (µg/kg)										
1,2-DICHLOROBENZENE	279,000	279,000	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
1,3-DICHLOROBENZENE	1,840,000	70,400	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	12	6.5 U	6.2 U
1,4-DICHLOROBENZENE	238,000	26,600	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	34	6.5 U	6.2 U
ACETONE	104,000,000	7,820,000	22 UJ	25 UJ	8.7 J	21 UJ	23 UJ	6 J	26 UJ	25 UJ
BENZENE	1,360	887	5.6 U	6.2 U	110	5.2 U	5.8 U	120	6.5 U	6.2 U
CARBON DISULFIDE	7,970	7,970	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
CHLOROBENZENE	1,190	1,190	5.6 U	6.2 U	35	5.2 U	5.8 U	130	6.5 U	6.2 U
Pesticides (µg/kg)										
4,4'-DDD	23,800	2,660	2.0 U	2.0 U	10 U	2.0 U	2.2 UJ	10 U	2.1 U	0.24 J
4,4'-DDE	16,800	1,880	2.0 U	2.0 U	10 U	2.0 U	2.2 U	10 U	2.1 U	2.1 U
4,4'-DDT	16,800	1,880	2.0 UJ	2.0 UJ	30 R	2.0 UJ	2.2 UJ	24 R	2.1 UJ	2.1 UJ
ALPHA-BHC	908	101	2.0 U	2.0 U	10 U	2.0 U	2.2 U	10 U	2.1 U	2.1 U
ALPHA-CHLORDANE	12,300	1,820	2.0 U	2.0 U	9.5 R	2.0 U	2.2 U	5.2 R	2.1 U	2.1 U
AROCLOR-1254	10,000	1,000	39 U	39 U	390 U	39 U	43 U	400 U	40 U	41 U
AROCLOR-1260	10,000	1,000	39 U	39 U	6000	39 U	43 U	5200	40 U	41 U
DELTA-BHC	3,180	355	2.0 U	2.0 U	10 U	2.0 UJ	0.11 J	10 U	2.1 U	2.1 U
DIELDRIN	358	40	2.0 U	2.0 U	26 J	2.0 U	2.2 U	18 J	2.1 U	2.1 U
ENDOSULFAN II	1,230,000	469,000	2.0 U	2.0 U	120 J	2.0 U	2.2 U	110	2.1 U	2.1 U
ENDRIN	61,300	23,500	2.0 U	2.0 U	65 R	2.0 U	2.2 U	44 R	2.1 U	2.1 U
ENDRIN ALDEHYDE	61,300	23,500	2.0 U	2.0 U	15 R	0.38 J	2.2 U	13 R	2.1 U	2.1 U

TABLE 4-1

PHASES I AND II SOIL DETECTION SUMMARY
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Analytical Parameter	REGULATORY CRITERIA Tier 1 TRG Restricted	REGULATORY CRITERIA Tier 1 TRG Unrestricted	NCBC10S06 2 - 2 01/11/02	NCBC10S06 8 - 8 01/11/02	NCBC10S06 20 - 20 01/11/02	NCBC10S06 20 - 20 01/11/02	NCBC10S07 5 - 5 01/10/02	NCBC10S07 10 - 10 01/10/02	NCBC10S07 23 - 23 01/10/02	NCBC10S08 5 - 5 01/10/02
Volatile Organics (µg/kg)										
1,2-DICHLOROBENZENE	279,000	279,000	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
1,3-DICHLOROBENZENE	1,840,000	70,400	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
1,4-DICHLOROBENZENE	238,000	26,600	6.1 U	1.4 J	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
ACETONE	104,000,000	7,820,000	8.7 J	5.4 J	7.5 J	25 UJ	6.2 J	24 UJ	24 UJ	5.6 J
BENZENE	1,360	887	230	65	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	1.4 J
CARBON DISULFIDE	7,970	7,970	6.1 U	4.9 U	6.1 U	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
CHLOROBENZENE	1,190	1,190	110	75	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
Pesticides (µg/kg)										
4,4'-DDD	23,800	2,660	110 U	100 U	2.1 U	2.2 U	2.0 UJ	2.2 UJ	2.2 UJ	2.0 UJ
4,4'-DDE	16,800	1,880	110 U	100 U	2.1 U	2.2 U	2.0 U	2.2 U	2.2 U	2.0 U
4,4'-DDT	16,800	1,880	360 R	100 R	2.1 UJ	2.2 UJ	2.0 UJ	2.2 UJ	2.2 UJ	2.0 UJ
ALPHA-BHC	908	101	110 U	100 U	2.1 U	2.2 U	2.0 U	2.2 U	2.2 U	2.0 U
ALPHA-CHLORDANE	12,300	1,820	64 J	25 R	0.40 J	2.2 U	2.0 U	2.2 U	2.2 U	2.0 U
AROCLOR-1254	10,000	1,000	8600 U	2000 U	42 U	42 U	39 U	42 U	42 U	39 U
AROCLOR-1260	10,000	1,000	83000	19000	42 U	38 J	39 U	42 U	42 U	39 U
DELTA-BHC	3,180	355	110 U	100 U	2.1 U	2.2 U	2.0 U	2.2 U	2.2 U	2.0 U
DIELDRIN	358	40	240 R	60 R	2.1 U	0.14 J	2.0 U	2.2 U	2.2 U	2.0 U
ENDOSULFAN II	1,230,000	469,000	1500	370	2.1 U	0.76 J	2.0 U	2.2 U	2.2 U	2.0 U
ENDRIN	61,300	23,500	700 R	230 R	0.82 J	0.29 R	2.0 U	2.2 U	2.2 U	2.0 U
ENDRIN ALDEHYDE	61,300	23,500	190 R	53 R	2.1 U	2.2 U	2.0 U	2.2 U	2.2 U	2.0 U

TABLE 4-1

PHASES I AND II SOIL DETECTION SUMMARY
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
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Analytical Parameter	REGULATORY CRITERIA Tier 1 TRG		NCBC10S08	NCBC10S08	NCBC10S09	NCBC10S09	NCBC10S09	NCBC10S09	NCBC10S10	NCBC10S10
	Restricted	Unrestricted	10 - 10	23 - 23	5 - 5	10 - 10	10 - 10	23 - 23	5 - 5	10 - 10
			01/10/02	01/10/02	01/10/02	01/10/02	01/10/02	01/10/02	01/09/02	01/09/02
Volatile Organics (µg/kg)										
1,2-DICHLOROBENZENE	279,000	279,000	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
1,3-DICHLOROBENZENE	1,840,000	70,400	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
1,4-DICHLOROBENZENE	238,000	26,600	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
ACETONE	104,000,000	7,820,000	9.7 J	23 UJ	18 UJ	15 J	13 J	9.2 J	21 UJ	9.5 J
BENZENE	1,360	887	1.3 J	5.8 U	0.94 J	1.6 J	1.4 J	8.4 U	5.4 U	5.8 U
CARBON DISULFIDE	7,970	7,970	5.7 U	5.8 U	4.6 U	3.8 J	2.5 J	8.4 U	5.4 U	5.8 U
CHLOROBENZENE	1,190	1,190	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
Pesticides (µg/kg)										
4,4'-DDD	23,800	2,660	2.0 U	2.1 U	1.9 UJ	2.0 UJ	2.1 UJ	2.2 UJ	2.0 U	0.30 J
4,4'-DDE	16,800	1,880	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
4,4'-DDT	16,800	1,880	2.0 UJ	2.1 UJ	1.9 UJ	2.0 UJ	2.1 UJ	2.2 UJ	2.0 UJ	2.1 U
ALPHA-BHC	908	101	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
ALPHA-CHLORDANE	12,300	1,820	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
AROCLOR-1254	10,000	1,000	39 U	42 U	37 U	39 U	40 U	42 U	39 U	41 U
AROCLOR-1260	10,000	1,000	39 U	42 U	37 U	39 U	40 U	42 U	39 U	41 U
DELTA-BHC	3,180	355	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
DIELDRIN	358	40	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
ENDOSULFAN II	1,230,000	469,000	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
ENDRIN	61,300	23,500	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
ENDRIN ALDEHYDE	61,300	23,500	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 UJ	2.1 U

TABLE 4-1

PHASES I AND II SOIL DETECTION SUMMARY
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NCBC GULFPORT, MISSISSIPPI
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Analytical Parameter	REGULATORY CRITERIA Tier 1 TRG		NCBC10S10	NCBC10S10	NCBC10S11	NCBC10S11	NCBC10S11	NCBC10S12	NCBC10S12	NCBC10S12
			23 - 23	23 - 23	5 - 5	10 - 10	23 - 23	5 - 5	10 - 10	23 - 23
	Restricted	Unrestricted	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02
Volatile Organics (µg/kg)										
1,2-DICHLOROBENZENE	279,000	279,000	6.9 U	6 U	2.3 J	5 J	6 U	4.6 U	5.6 U	6.8 U
1,3-DICHLOROBENZENE	1,840,000	70,400	6.9 U	6 U	12	34	6 U	4.6 U	5.6 U	6.8 U
1,4-DICHLOROBENZENE	238,000	26,600	6.9 U	6 U	13	83	6 U	4.6 U	5.6 U	6.8 U
ACETONE	104,000,000	7,820,000	28 UJ	24 UJ	20 UJ	9.3 J	10 J	19 UJ	8.2 J	9.1 J
BENZENE	1,360	887	6.9 U	6 U	26	6.5	6 U	4.6 U	5.6 U	6.8 U
CARBON DISULFIDE	7,970	7,970	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
CHLOROBENZENE	1,190	1,190	6.9 U	6 U	110	76	6 U	4.6 U	5.6 U	6.8 U
Pesticides (µg/kg)										
4,4'-DDD	23,800	2,660	2.2 U	0.39 J	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
4,4'-DDE	16,800	1,880	2.2 U	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
4,4'-DDT	16,800	1,880	2.2 UJ	2.1 U	1.9 UJ	2.0 UJ	2.1 UJ	1.9 U	2.0 U	2.2 U
ALPHA-BHC	908	101	2.2 U	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
ALPHA-CHLORDANE	12,300	1,820	2.2 U	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
AROCLOR-1254	10,000	1,000	42 U	41 U	38 U	40 U	41 U	7.7 J	40 U	43 U
AROCLOR-1260	10,000	1,000	42 U	41 U	38 U	40 U	41 U	36 U	40 U	43 U
DELTA-BHC	3,180	355	2.2 UJ	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
DIELDRIN	358	40	2.2 U	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
ENDOSULFAN II	1,230,000	469,000	2.2 U	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
ENDRIN	61,300	23,500	2.2 U	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
ENDRIN ALDEHYDE	61,300	23,500	2.2 U	2.1 U	1.9 UJ	2.0 UJ	2.1 UJ	1.9 U	2.0 U	2.2 U

TABLE 4-1

PHASES I AND II SOIL DETECTION SUMMARY
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
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Analytical Parameter	REGULATORY CRITERIA Tier 1 TRG Restricted	REGULATORY CRITERIA Tier 1 TRG Unrestricted	NCBC10S13 5 - 5 01/09/02	NCBC10S13 10 - 10 01/09/02	NCBC10S13 23 - 23 01/09/02	NCBC10S14 5 - 5 01/09/02	NCBC10S14 5 - 5 01/09/02	NCBC10S14 10 - 10 01/09/02	NCBC10S14 20 - 20 01/09/02	NCBC10S15 5 - 5 01/08/02
Volatile Organics (µg/kg)										
1,2-DICHLOROBENZENE	279,000	279,000	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
1,3-DICHLOROBENZENE	1,840,000	70,400	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
1,4-DICHLOROBENZENE	238,000	26,600	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
ACETONE	104,000,000	7,820,000	21 UJ	6.3 J	12 J	20 U	19 UJ	23 UJ	29 UJ	21 UJ
BENZENE	1,360	887	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
CARBON DISULFIDE	7,970	7,970	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
CHLOROBENZENE	1,190	1,190	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
Pesticides (µg/kg)										
4,4'-DDD	23,800	2,660	2.0 U	2.0 U	2.2 U	1.9 U	0.18 R	2.1 U	2.6 U	1.9 U
4,4'-DDE	16,800	1,880	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
4,4'-DDT	16,800	1,880	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
ALPHA-BHC	908	101	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
ALPHA-CHLORDANE	12,300	1,820	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
AROCLOR-1254	10,000	1,000	39 U	39 U	42 U	38 U	38 U	40 U	50 U	38 U
AROCLOR-1260	10,000	1,000	39 U	39 U	42 U	38 U	38 U	40 U	50 U	11 J
DELTA-BHC	3,180	355	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
DIELDRIN	358	40	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
ENDOSULFAN II	1,230,000	469,000	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	0.17 J
ENDRIN	61,300	23,500	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
ENDRIN ALDEHYDE	61,300	23,500	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 UR	1.9 U

TABLE 4-1

PHASES I AND II SOIL DETECTION SUMMARY
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
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Analytical Parameter	REGULATORY CRITERIA Tier 1 TRG		NCBC10S15 10 - 10 01/08/02	NCBC10S15 19 - 19 01/08/02	NCBC10S16 5 - 5 01/08/02	NCBC10S16 10 - 10 01/08/02	NCBC10S16 20 - 20 01/08/02	NCBC10S17 2 - 2 01/12/02	NCBC10S17 11 - 11 01/12/02	NCBC10S17 20 - 20 01/12/02
	Restricted	Unrestricted								
Volatile Organics (µg/kg)										
1,2-DICHLOROBENZENE	279,000	279,000	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
1,3-DICHLOROBENZENE	1,840,000	70,400	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
1,4-DICHLOROBENZENE	238,000	26,600	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
ACETONE	104,000,000	7,820,000	6.6 J	8.6 J	21 UJ	7.6 J	27 UJ			
BENZENE	1,360	887	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
CARBON DISULFIDE	7,970	7,970	5.8 U	7.4 U	5.2 U	6.2 U	3.9 J			
CHLOROBENZENE	1,190	1,190	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
Pesticides (µg/kg)										
4,4'-DDD	23,800	2,660	2.1 U	2.1 U	10 U	2.0 U	2.1 U	1.1 J	2.1 U	2.4 U
4,4'-DDE	16,800	1,880	2.1 U	2.1 U	10 U	2.0 U	2.1 U	0.29 J	2.1 U	2.4 U
4,4'-DDT	16,800	1,880	2.1 U	2.1 U	11 R	2.0 U	2.1 U	0.20 R	2.1 U	0.29 J
ALPHA-BHC	908	101	2.1 U	2.1 U	10 U	2.0 U	2.1 U	2.0 U	2.1 U	2.4 U
ALPHA-CHLORDANE	12,300	1,820	2.1 U-	2.1 U	2.2 R	2.0 U	2.1 U	2.0 U	2.1 U	2.4 U
AROCLOR-1254	10,000	1,000	40 U	40 U	160 U	38 U	41 U	38 U	40 U	46 U
AROCLOR-1260	10,000	1,000	40 U	40 U	1800	38 U	41 U	13 J	40 U	46 U
DELTA-BHC	3,180	355	0.094 R	2.1 U	10 U	2.0 U	2.1 U	2.0 U	2.1 U	2.4 U
DIELDRIN	358	40	2.1 U	2.1 U	46	2.0 U	2.1 U	2.0 U	2.1 U	2.4 U
ENDOSULFAN II	1,230,000	469,000	2.1 U	2.1 U	47 J	2.0 U	2.1 U	0.25 J	2.1 U	2.4 U
ENDRIN	61,300	23,500	2.1 U	2.1 U	19 R	2.0 U	2.1 U	2.0 U	2.1 U	2.4 U
ENDRIN ALDEHYDE	61,300	23,500	2.1 U	2.1 U	6.1 R	2.0 U	2.1 U	2.0 U	2.1 U	2.4 U

TABLE 4-1

PHASES I AND II SOIL DETECTION SUMMARY
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
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Analytical Parameter	REGULATORY CRITERIA Tier 1 TRG Restricted	REGULATORY CRITERIA Tier 1 TRG Unrestricted	NCBC10S18 5 - 5 01/12/02	NCBC10S18 10 - 10 01/12/02	NCBC10S18 10 - 10 01/12/02	NCBC10S18 23 - 23 01/12/02	NCBC10S19 5 - 5 02/12/02	NCBC10S20 5 - 5 02/12/02	NCBC10S21 5 - 5 02/12/02	NCBC10S22 5 - 5 02/13/02
Volatile Organics (µg/kg)										
1,2-DICHLOROBENZENE	279,000	279,000								4.8 U
1,3-DICHLOROBENZENE	1,840,000	70,400								4.8 U
1,4-DICHLOROBENZENE	238,000	26,600								4.8 U
ACETONE	104,000,000	7,820,000								19 U
BENZENE	1,360	887								4.8 U
CARBON DISULFIDE	7,970	7,970								4.8 U
CHLOROBENZENE	1,190	1,190								4.8 U
Pesticides (µg/kg)										
4,4'-DDD	23,800	2,660	1.9 U	2.1 U	2.2 U	2.1 U				
4,4'-DDE	16,800	1,880	1.9 U	2.1 U	2.2 U	2.1 U				
4,4'-DDT	16,800	1,880	0.23 J	2.1 U	2.2 U	2.1 U				
ALPHA-BHC	908	101	1.9 U	2.1 U	2.2 U	2.1 U				
ALPHA-CHLORDANE	12,300	1,820	1.9 U	2.1 U	2.2 U	2.1 U				
AROCLOR-1254	10,000	1,000	38 U	41 U	42 U	42 U	39 U	38 U	37 U	
AROCLOR-1260	10,000	1,000	38 U	41 U	42 U	42 U	39 U	15 J	37 U	
DELTA-BHC	3,180	355	1.9 U	2.1 U	2.2 U	2.1 U				
DIELDRIN	358	40	1.9 U	2.1 U	2.2 U	2.1 U				
ENDOSULFAN II	1,230,000	469,000	1.9 U	2.1 U	2.2 U	2.1 U				
ENDRIN	61,300	23,500	1.9 U	2.1 U	2.2 U	2.1 U				
ENDRIN ALDEHYDE	61,300	23,500	1.9 U	2.1 U	2.2 U	2.1 U				

TABLE 4-1

PHASES I AND II SOIL DETECTION SUMMARY
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
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Analytical Parameter	REGULATORY CRITERIA Tier 1 TRG Restricted	REGULATORY CRITERIA Tier 1 TRG Unrestricted	NCBC10S23 5 - 5 02/13/02	SUMMARY OF DETECTIONS Frequency of Detection	SUMMARY OF DETECTIONS Range of Detection	SUMMARY OF DETECTIONS Range of Nondetects
Volatile Organics (µg/kg)						
1,2-DICHLOROBENZENE	279,000	279,000	5 U	2/44	2.3 - 5	4.6 - 8.4
1,3-DICHLOROBENZENE	1,840,000	70,400	5 U	3/44	12 - 34	4.6 - 8.4
1,4-DICHLOROBENZENE	238,000	26,600	5 U	4/44	1.4 - 83	4.6 - 8.4
ACETONE	104,000,000	7,820,000	20 U	20/44	5.4 - 15	18 - 29
BENZENE	1,360	887	5 U	10/44	0.94 - 230	4.6 - 8.4
CARBON DISULFIDE	7,970	7,970	5 U	2/44	2.5 - 3.9	4.6 - 8.4
CHLOROBENZENE	1,190	1,190	5 U	6/44	35 - 130	4.6 - 8.4
Pesticides (µg/kg)						
4,4'-DDD	23,800	2,660		5/52	0.24 - 1.1	1.9 - 110
4,4'-DDE	16,800	1,880		1/54	0.29	1.9 - 110
4,4'-DDT	16,800	1,880		4/48	0.23 - 2	1.9 - 8.4
ALPHA-BHC	908	101		1/54	0.083	1.9 - 110
ALPHA-CHLORDANE	12,300	1,820		2/50	0.4 - 64	1.9 - 8.4
AROCLOR-1254	10,000	1,000		1/57	7.7	37 - 8600
AROCLOR-1260	10,000	1,000		10/57	11 - 83000	36 - 50
DELTA-BHC	3,180	355		1/53	0.11	1.9 - 110
DIELDRIN	358	40		4/51	0.14 - 46	1.9 - 2.6
ENDOSULFAN II	1,230,000	469,000		9/54	0.17 - 1500	1.9 - 2.6
ENDRIN	61,300	23,500		1/48	0.82	1.9 - 2.6
ENDRIN ALDEHYDE	61,300	23,500		1/47	0.38	1.9 - 2.4

NOTES

TRG = Tier 1 Target Remedial Goal.
U = Below detection limit.
J = Estimated concentration.
R = Rejected.

Empty cells indicate sample was not analyzed for that parameter.

TABLE 4-2

PHASE III SOIL DETECTION SUMMARY
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
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Analytical Parameter	REGULATORY CRITERIA Tier 1 TRG		NCBC10S24	NCBC10S25	NCBC10S26	NCBC10S27	NCBC10S28	NCBC10S29
	Restricted	Unrestricted	6 - 7	7 - 8	18 - 19	6 - 7	6 - 7	6 - 7
			12/16/03	12/16/03	12/16/03	12/16/03	12/16/03	12/16/03
Inorganics (mg/kg)								
ALUMINUM	2040000	78200	2050	795	447	1310	1520	1330
ARSENIC	3.82	0.426	1.5	0.5	0.6	0.21	0.44	0.45
BARIUM	14300	5480	4.4	2.7	1.5	4.4	4.4	5.4
CALCIUM			51.2	33.1	31.3	48	30.9	30
CHROMIUM	381	227	3.3	1.4	0.73	1.4	1.8	1.2
COBALT	12300	4690	0.73	0.31 U	0.26 U	0.30 U	0.32	0.32
COPPER	8170	3130	1.1	0.65	0.68	1.1	1.2	1.4
IRON	613000	23500	278	132	303	170	185	207
MAGNESIUM			32.2	21	17.2	43.6	43.6	48.6
MANGANESE	4080	1560	1.1 U	1.6	1.1	1.1 U	1.3	1.1 U
NICKEL	4080	1560	1.5	1.26 U	1.06 U	1.22 U	1.28 U	1.29 U
POTASSIUM			48.19 U	49.80 U	41.85 U	48.31 U	58.2	51.12 U
SELENIUM	1020	391	0.27	0.24 U	0.20 U	0.23 U	0.25 U	0.25 U
SODIUM			9.2	10.4	9.4	10.3	13.7	14.8
VANADIUM	1430	548	3.1	1.4	0.99	1.8	2.5	1.6
ZINC	61300	23500	0.54	0.35	2.3	0.54	0.74	0.6
Semivolatile Organics (µg/kg)								
ACENAPHTHENE	123,000,000	4,690,000	280 J	400 U	390 U	280 J	410 U	400 U
DI-N-BUTYL PHTHALATE	2,280,000	2,280,000	260 J	280 J	260 J	390 U	410 U	260 J
Volatile Organics (µg/kg)								
1,2,3-TRICHLOROBENZENE			0.5 J	27	6 U	6 U	11 J	3 J
1,2,4-TRICHLOROBENZENE	824,000	782,000	6 U	660	6 U	6 U	550	160 J
1,3-DICHLOROBENZENE	1,840,000	70,400	6 U	160 J	6 U	6 U	87 J	57
1,4-DICHLOROBENZENE	238,000	26,600	6 U	390 J	6 U	6 U	290 J	140
ACETONE	104,000,000	7,820,000	18 J	30 U	30 U	29 U	33 UJ	28 U
BENZENE	1,360	887	6 U	8	6 U	6 U	4 J	6 U
CHLOROBENZENE	1,190	1,190	6 U	150	6 U	6 U	160 J	43
TOLUENE	38,000	38,000	1 J	6 U	6 U	6 U	7 UJ	6 U
TRICHLOROFLUOROMETHANE	143,000,000	23,500,000	6	1 J	4 J	1 J	7 UJ	3 J
Pesticides/PCBs (µg/kg)								
AROCLOR-1260	10,000	1,000	20 U	21 U	14 J	20 UJ	21 U	20 U

TABLE 4-2

PHASE III SOIL DETECTION SUMMARY
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
PAGE 2 OF 2

Analytical Parameter	REGULATORY CRITERIA Tier 1 TRG Restricted	REGULATORY CRITERIA Tier 1 TRG Unrestricted	NCBC10S29 6 - 7 12/16/03	SUMMARY OF DETECTIONS Frequency of Detection	SUMMARY OF DETECTIONS Range of Detection	SUMMARY OF DETECTIONS Range of Nondetects
Inorganics (mg/kg)						
ALUMINUM	2040000	78200	1360	6/6	447 - 2050	0
ARSENIC	3.82	0.426	0.42	6/6	0.21 - 1.5	0
BARIUM	14300	5480	6	6/6	1.5 - 6	0
CALCIUM			32.1	6/6	30 - 51.2	0
CHROMIUM	381	227	1.3	6/6	0.73 - 3.3	0
COBALT	12300	4690	0.28 U	3/6	0.32 - 0.73	0.26 - 0.31
COPPER	8170	3130	1.2	6/6	0.65 - 1.4	0
IRON	613000	23500	207	6/6	132 - 303	0
MAGNESIUM			48.3	6/6	17.2 - 48.6	0
MANGANESE	4080	1560	1.2	4/6	1.1 - 1.6	1.1
NICKEL	4080	1560	1.13 U	1/6	1.5	1.06 - 1.29
POTASSIUM			44.92 U	1/6	58.2	41.85 - 51.12
SELENIUM	1020	391	0.22 U	1/6	0.27	0.2 - 0.25
SODIUM			12.8	6/6	9.2 - 14.8	0
VANADIUM	1430	548	1.6	6/6	0.99 - 3.1	0
ZINC	61300	23500	0.54	6/6	0.35 - 2.3	0
Semivolatile Organics (µg/kg)						
ACENAPHTHENE	123,000,000	4,690,000	390 U	2/6	280	390 - 410
DI-N-BUTYL PHTHALATE	2,280,000	2,280,000	250 J	4/6	250 - 280	390 - 410
Volatile Organics (µg/kg)						
1,2,3-TRICHLOROBENZENE			2 J	4/6	0.5 - 27	6
1,2,4-TRICHLOROBENZENE	824,000	782,000	100	3/6	100 - 660	6
1,3-DICHLOROBENZENE	1,840,000	70,400	59	3/6	57 - 160	6
1,4-DICHLOROBENZENE	238,000	26,600	160	3/6	140 - 390	6
ACETONE	104,000,000	7,820,000	31 U	1/6	18	28 - 33
BENZENE	1,360	887	6 U	2/6	4 - 8	6
CHLOROBENZENE	1,190	1,190	34	3/6	34 - 160	6
TOLUENE	38,000	38,000	6 U	1/6	1	6 - 7
TRICHLOROFLUOROMETHANE	143,000,000	23,500,000	7	5/6	1 - 7	7
Pesticides/PCBs (µg/kg)						
AROCLOR-1260	10,000	1,000	20 U	1/6	14	20 - 21

NOTES

TRG = Tier 1 Target Remedial Goal.
U = Below detection limit.
J = Estimated concentration.

Empty cells indicate sample was not analyzed for that parameter.

TABLE 4-3

PHASE II GROUNDWATER DETECTION SUMMARY
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
PAGE 1 OF 2

Analytical Parameter	REGULATORY CRITERION Tier 1 TRG	MW-01 NCBC10G01 02/14/02	MW-02 NCBC10G02 02/14/02	MW-03 NCBC10G03 02/13/02	MW-04 NCBC10G04 02/13/02	MW-04 NCBC10G04D 02/13/02	MW-05 NCBC10G05 02/14/02
Volatile Organics (mg/L)							
1,3-DICHLOROBENZENE	5.48	1 U	2.7	1 U	1 U	1 U	1 U
1,4-DICHLOROBENZENE	75	1 U	1.1	1 U	1 U	1 U	1 U

TABLE 4-3

PHASE II GROUNDWATER DETECTION SUMMARY
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
PAGE 2 OF 2

Analytical Parameter	REGULATORY CRITERION Tier 1 TRG	SUMMARY OF DETECTIONS			NOTES
		Frequency of Detection	Range of Detection	Range of Nondetects	TRG = Tier 1 Target Remedial Goal. U = Below detection limit.
Volatile Organics (mg/L)					
1,3-DICHLOROBENZENE	5.48	1/5	2.7	1	
1,4-DICHLOROBENZENE	75	1/5	1.1	1	

TABLE 4-4

PHASE III GROUNDWATER DETECTION SUMMARY
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
PAGE 1 OF 2

Analytical Parameter	REGULATORY CRITERON Tier 1 TRG	MW-01 MW1001G02 12/18/03	MW-02 MW1002G02 12/18/03	MW-02 MW1002G02D 12/18/03	MW-03 MW1003G02 12/18/03	MW-04 MW1004G02 12/18/03	MW-05 MW1005G02 12/18/03
Inorganics (µg/L)							
BARIUM	2,000	42.9	45.8	45.7	42.4	45.4	34
CALCIUM		7250	7990	7690	5950	3670	7180
CHROMIUM		0.88 U	1.1	0.88 U	0.88	0.88	0.88 U
COPPER	1,300	1.14 U	3.3 U	3.3 U	3.3 U	10	3.3 U
IRON	11,000	2610 J	3930	3790	3010	2780 J	1920
MAGNESIUM		1610	2220	2220	2170	1710	1420
MANGANESE	730	14.8	77.9	75.4	63.6	36.4	12.4
SODIUM		4220	9590	9710	6070	5180	3750
VANADIUM	256	1.2	3.6 U	3.6 U	3.6 U	0.74 U	3.6 U
ZINC	11,000	28.8 U	3.1 U	2.0 U	23	22.4 U	2.8 U
CYANIDE	200	10 U	10 U	10 U	10 U	7.3 J	10 U
Semivolatile Organics (µg/L)							
BENZO(K)FLUORANTHENE	0.917	10 U	11 J	10 UJ	10 U	10 U	11
Volatile Organics (µg/L)							
1,2,4-TRICHLOROBENZENE	70	1 U	25	24	1 U	1 U	1 U
1,2-DICHLOROBENZENE	600	1 U	0.4 J	0.4 J	1 U	1 U	1 U
1,3-DICHLOROBENZENE	5.48	1 U	4	4	1 U	1 U	1 U
1,4-DICHLOROBENZENE	75	1 U	6	6	1 U	1 U	1 U
BENZENE	5	1 U	3	3	1 U	1 U	1 U
CHLOROBENZENE	100	0.3 J	2	2	1 U	1 U	1 U
Pesticides/PCBs (µg/L)							
4,4'-DDD	0.279	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.03 J
4,4'-DDT	0.197	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.026 J
DELTA-BHC		0.02 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
DIELDRIN	0.00419	0.057	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U

TABLE 4-4

PHASE III GROUNDWATER DETECTION SUMMARY
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
PAGE 2 OF 2

Analytical Parameter	REGULATORY CRITERON Tier 1 TRG	SUMMARY OF DETECTIONS			NOTES
		Frequency of Detection	Range of Detection	Range of Nondetects	TRG = Tier 1 Target Remedial Goal.
					U = Below detection limit.
Inorganics (µg/L)					J = Estimated concentration.
BARIUM	2,000	5/5	34 - 45.8		
CALCIUM		5/5	3670 - 7990		
CHROMIUM		3/5	0.88 - 1.1	0.88	
COPPER	1,300	1/5	10	1.14 - 3.3	
IRON	11,000	5/5	1920 - 3930		
MAGNESIUM		5/5	1420 - 2220		
MANGANESE	730	5/5	12.4 - 77.9		
SODIUM		5/5	3750 - 9710		
VANADIUM	256	1/5	1.2	0.74 - 3.6	
ZINC	11,000	1/5	23	2 - 28.8	
CYANIDE	200	1/5	7.3	10	
Semivolatile Organics (µg/L)					
BENZO(K)FLUORANTHENE	0.917	2/5	11	10	
Volatile Organics (µg/L)					
1,2,4-TRICHLOROBENZENE	70	1/5	24 - 25	1	
1,2-DICHLOROBENZENE	600	1/5	0.4	1	
1,3-DICHLOROBENZENE	5.48	1/5	4	1	
1,4-DICHLOROBENZENE	75	1/5	6	1	
BENZENE	5	1/5	3	1	
CHLOROBENZENE	100	2/5	0.3 - 2	1	
Pesticides/PCBs (µg/L)					
4,4'-DDD	0.279	1/5	0.03	0.05	
4,4'-DDT	0.197	1/5	0.026	0.05	
DELTA-BHC		1/5	0.02	0.05	
DIELDRIN	0.00419	1/5	0.057	0.05	

TABLE 4-5

PHASE I SURFACE WATER DETECTION SUMMARY
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
PAGE 1 OF 2

Analytical Parameter	REGULATORY CRITERIA					NCBC10W01-D01 1/10/2002	NCBC10W01-D01-D 1/10/2002	NCBC10W02-D02 1/10/2002	NCBC10W03-D03 1/10/2002
	Groundwater	WPC-2							
		Aquatic Life - Fresh Water		Human Health					
	Tier 1 TRG	Acute	Chronic	Organisms	Water + Organisms				
Pesticides (µg/L)									
Aroclor-1260	0.0335	0.2	0.014			1.0 U	1.0 U	1.1	1.0 U
Dieldrin	0.00419	0.24	0.056	0.000144	0.000135	0.050 U	0.050 U	0.005 J	0.050 U
Endosulfan II		0.22	0.56	240	110	0.050 U	0.050 U	0.018 J	0.050 U
Endrin Aldehyde		0.086	0.036	0.814	0.76	0.050 U	0.006 J	0.050 U	0.050 U

TABLE 4-5

PHASE I SURFACE WATER DETECTION SUMMARY
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
PAGE 2 OF 2

Analytical Parameter	SUMMARY OF DETECTIONS			NOTES
	Frequency of Detection	Range of Detection	Range of Nondetects	WPC-2 = Water Quality Criteria for Intrastate, Interstate and Coastal Waters TRG = Tier 1 Target Remedial Goal. U = Below detection limit. J = Estimated concentration.
Pesticides (µg/L)				
Aroclor-1260	1/3	1.1	1	
Dieldrin	1/3	0.005	0.05	
Endosulfan II	1/3	0.018	0.05	
Endrin Aldehyde	1/3	0.006	0.05	

TABLE 4-6

PHASE III SURFACE WATER DETECTION SUMMARY
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
PAGE 1 OF 2

Analytical Parameter	REGULATORY CRITERIA					NCBC10W10-D10 12/18/2003	NCBC10W11-D11 12/18/2003
	Groundwater	WPC-2					
		Aquatic Life - Fresh Water		Human Health			
	Tier 1 TRG	Acute	Chronic	Organisms	Water + Organisms		
Inorganics (µg/L)							
ALUMINUM	36,500					874	496 U
BARIUM	2,000					22.2	17
CALCIUM						7450	11600
CHROMIUM		16	11	1470	98	1.4	1.4
COPPER	1,300	7	5	1000	1000	13.1	11.1
IRON	11,000					1420 J	616 J
MAGNESIUM						1580	1640
MANGANESE	730					24.1	8.3
SODIUM						6000	5610
VANADIUM	256					1.9	1.6
Semivolatile Organics (µg/L)							
FLUORANTHENE	1,460					9 J	8 J
INDENO(1,2,3-CD)PYRENE	0.0917					7 J	11 U
PHENANTHRENE	1,100					7 J	6 J
Volatile Organics (µg/L)							
CHLOROBENZENE	100					0.2 J	1 U

TABLE 4-6

PHASE III SURFACE WATER DETECTION SUMMARY
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
PAGE 2 OF 2

Analytical Parameter	SUMMARY OF DETECTIONS			NOTES
	Frequency of Detection	Range of Detection	Range of Nondetects	WPC-2 = Water Quality Criteria for Intrastate, Interstate and Coastal Waters TRG = Tier 1 Target Remedial Goal. U = Below detection limit. J = Estimated concentration.
Inorganics (µg/L)				
ALUMINUM	1/2	874	496	
BARIUM	2/2	17 - 22.2		
CALCIUM	2/2	7,450 - 11,600		
CHROMIUM	2/2	1.4		
COPPER	2/2	11.1 - 13.1		
IRON	2/2	616 - 1420		
MAGNESIUM	2/2	1,580 - 1,640		
MANGANESE	2/2	8.3 - 24.1		
SODIUM	2/2	5,610 - 6,000		
VANADIUM	2/2	1.6 - 1.9		
Semivolatile Organics (µg/L)				
FLUORANTHENE	2/2	8 - 9		
INDENO(1,2,3-CD)PYRENE	1/2	7	11	
PHENANTHRENE	2/2	6 - 7		
Volatile Organics (µg/L)				
CHLOROBENZENE	1/2	0.2	1	

TABLE 4-7

PHASES I AND II SEDIMENT DETECTION SUMMARY
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
PAGE 1 OF 2

Analytical Parameter	REGULATORY CRITERIA Tier 1 TRG Restricted	REGULATORY CRITERIA Tier 1 TRG Unrestricted	NCBC10W01-D01 0 - 0.5 01/10/02	NCBC10W01-D01-D 0 - 0.5 01/10/02	NCBC10W02-D02 0 - 0.5 01/10/02	NCBC10W03-D03 0 - 0.5 01/10/02	NCBC10D04 0 - 0.5 02/12/02	NCBC10D05 0 - 0.5 02/12/02	NCBC10D06 0 - 0.5 02/12/02
Volatile Organics (µg/kg)									
2-BUTANONE	84,500	84,500	27 UJ	28 UJ	31 UJ	25 UJ	22 U	3.8 J	22 U
ACETONE	104,000,000	7,820,000	27 UJ	28 UJ	31 UJ	10 J	6.3 J	11 J	14 J
TOLUENE	38,000	38,000	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	5.3 J	5.5 U
Pesticides (µg/kg)									
ALPHA-BHC	908	101	0.30 J	2.3 U	2.2 U	2.1 U			
AROCLOR-1260	10,000	1,000	710 J	220 J	94	630	19 J	260	190
DIELDRIN	358	40	3.4 J	0.40 R	0.27 R	1.4 R			
ENDOSULFAN II	1,230,000	469,000	17 J	2.5 J	1.9 J	11			
GAMMA-BHC (LINDANE)	4,400	491	0.42 J	2.3 U	2.2 U	2.1 U			
HEPTACHLOR	195	127	0.34 J	2.3 U	2.2 U	2.1 U			

TABLE 4-7

PHASES I AND II SEDIMENT DETECTION SUMMARY
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
PAGE 2 OF 2

Analytical Parameter	REGULATORY CRITERIA		SUMMARY OF DETECTIONS		
	Tier 1 TRG		Frequency of Detection	Range of Detection	Range of Nondetects
	Restricted	Unrestricted			
Volatile Organics (µg/kg)					
2-BUTANONE	84,500	84,500	1/6	3.8	22 - 31
ACETONE	104,000,000	7,820,000	4/6	6.3 - 14	27 - 31
TOLUENE	38,000	38,000	1/6	5.3	5.5 - 7.8
Pesticides (µg/kg)					
ALPHA-BHC	908	101	1/3	0.3	2.1 - 2.3
AROCLOR-1260	10,000	1,000	6/6	19 - 710	
DIELDRIN	358	40	1/1	3.4	
ENDOSULFAN II	1,230,000	469,000	3/3	1.9 - 17	
GAMMA-BHC (LINDANE)	4,400	491	1/3	0.42	2.1 - 2.3
HEPTACHLOR	195	127	1/3	0.34	2.1 - 2.3

NOTES

TRG = Tier 1 Target Remedial Goal.
U = Below detection limit.
J = Estimated concentration.
R = Rejected.
Empty cells indicate sample was not analyzed for that parameter.

TABLE 4-8

PHASE III SEDIMENT DETECTION SUMMARY
SITE 10 REMEDIAL INVESTIGATION REPORT
NCBC GULFPORT, MISSISSIPPI
PAGE 1 OF 2

Analytical Parameter	REGULATORY CRITERIA Tier 1 TRG Restricted	REGULATORY CRITERIA Tier 1 TRG Unrestricted	NCBC10D07 0 - 0.5 12/18/03	NCBC10D08 0 - 0.5 12/18/03	NCBC10D09 0 - 0.5 12/18/03	NCBC10W10-D10 0 - 0.5 12/18/03	NCBC10W10-D10-D 0 - 0.5 12/18/03	NCBC10W11-D11 0 - 0.5 12/18/03
Inorganics (mg/kg)								
ALUMINUM	2,040,000	78,200	1750	8320	8880	8820	8320	8000
ARSENIC	3.82	0.426	0.35	2.1	1.8	1.7	2.4	1.4
BARIUM	14,300	5,480	5.9	24.5	37.7	28.3	30.2	22.9
CALCIUM			132 J	429 J	5530 J	212 J	474 J	776 J
CHROMIUM			1.7	8.9	9.3	8.5	9.5	8.8
COBALT	12,300	4,690	0.29 U	0.95 J	1.2	0.96 J	0.95 J	0.92
COPPER	8,170	3,130	1.8	4.3	4.4	3.9	4.1	3.4
IRON	613,000	23,500	466	14400	9780	11600	14600	10800
LEAD	1,700	400	2.8	7.6	8.4	7.7	8	7.4
MAGNESIUM			86	325	487	345	366	375
MANGANESE	4,080	1,560	3.4	8.1	14.4	6	6.8 J	8.8
NICKEL	4,080	1,560	1.20 U	1.3 J	2.6	2.2 J	1.8 J	1.44 U
POTASSIUM			47.32 U	184	213	202	180	233
SELENIUM	1,020	391	0.25	0.4	0.35	0.38	0.38	0.51
SODIUM			16.6	22.4 J	31.2	22.1	23.1 J	23.5
VANADIUM	1,430	548	3.1	18.8	14.5	17.5	20.9	19.2
ZINC	61,300	23,500	8.8	5.4	12.5	4.6	6	6
Semivolatile Organics (µg/kg)								
BENZO(A)PYRENE	784	87.5	170 J	460 U	440 U	430 U	420 U	440 U
DI-N-BUTYL PHTHALATE	2,280,000	2,280,000	420 U	300 J	440 U	280 J	270 J	310 J
DIETHYL PHTHALATE	1,970,000	1,970,000	420 UJ	460 UJ	44 J	430 UJ	420 UJ	440 UJ
FLUORANTHENE	81,700,000	3,130,000	170 J	460 U	440 U	430 U	420 U	440 U
PHENANTHRENE	61,300,000	2,350,000	380 J	460 U	440 U	430 U	420 U	440 U
Volatile Organics (µg/kg)								
ACETONE	104,000,000	7,820,000	34 U	120 J	33 U	44 J	31 U	34 U
METHYLENE CHLORIDE	21,900	14,300	14 U	15 J	13 U	12 U	12 U	14 U
TRICHLOROFLUOROMETHANE	143,000,000	23,500,000	6 J	29 J	8	12	18	13
Pesticides/PCBs (µg/kg)								
AROCLOR-1260	10,000	1,000	65	81 J	22 U	22 U	22 U	22 U
DELTA-BHC			2.2 U	2.4 U	2.2 U	2.2 UJ	2.4 J	2.2 U

TABLE 4-8

PHASE III SEDIMENT DETECTION SUMMARY
SITE 10 REMEDIAL INVESTIGATION REPORT
NCBC GULFPORT, MISSISSIPPI
PAGE 2 OF 2

Analytical Parameter	REGULATORY CRITERIA		SUMMARY OF DETECTIONS		
	Tier 1 TRG		Frequency of	Range of	Range of
	Restricted	Unrestricted	Detection	Detection	Nondetects
Inorganics (mg/kg)					
ALUMINUM	2,040,000	78,200	5/5	1,750 - 8,880	
ARSENIC	3.82	0.426	5/5	0.35 - 2.4	
BARIUM	14,300	5,480	5/5	5.9 - 37.7	
CALCIUM			5/5	132 - 5,530	
CHROMIUM			5/5	1.7 - 9.5	
COBALT	12,300	4,690	4/5	0.92 - 1.2	0.29
COPPER	8,170	3,130	5/5	1.8 - 4.4	
IRON	613,000	23,500	5/5	466 - 14,600	
LEAD	1,700	400	5/5	2.8 - 8.4	
MAGNESIUM			5/5	86 - 487	
MANGANESE	4,080	1,560	5/5	3.4 - 14.4	
NICKEL	4,080	1,560	3/5	1.3 - 2.6	1.2 - 1.44
POTASSIUM			4/5	180 - 233	47.32
SELENIUM	1,020	391	5/5	0.25 - 0.51	
SODIUM			5/5	16.6 - 31.2	
VANADIUM	1,430	548	5/5	3.1 - 20.9	
ZINC	61,300	23,500	5/5	4.6 - 12.5	
Semivolatile Organics (µg/kg)					
BENZO(A)PYRENE	784	87.5	1/5	170	420 - 460
DI-N-BUTYL PHTHALATE	2,280,000	2,280,000	3/5	270 - 310	420 - 440
DIETHYL PHTHALATE	1,970,000	1,970,000	1/5	44	420 - 460
FLUORANTHENE	81,700,000	3,130,000	1/5	170	420 - 460
PHENANTHRENE	61,300,000	2,350,000	1/5	380	420 - 460
Volatile Organics (µg/kg)					
ACETONE	104,000,000	7,820,000	2/5	44 - 120	31 - 34
METHYLENE CHLORIDE	21,900	14,300	1/5	15	12 - 14
TRICHLOROFLUOROMETHANE	143,000,000	23,500,000	5/5	6 - 29	
Pesticides/PCBs (µg/kg)					
AROCLOR-1260	10,000	1,000	2/5	65 - 81	22
DELTA-BHC			1/5	2.4	2.2 - 2.4

NOTES
TRG = Tier 1 Target Remedial Goal.
U = Below detection limit.
J = Estimated concentration.

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SOIL TRG EXCEEDANCES - INORGANICS

SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT

NCBC GULFPORT

GULFPORT, MISSISSIPPI

AS NOTED

FIGURE # - 1

DRAFT
JUNE 2005

SOIL TRG EXCEEDANCES - INORGANICS

SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT

NCBC GULFPORT

GULFPORT, MISSISSIPPI

CONTRACT NUMBER 1831

DRAWN BY

REVIEWED BY

DATE

APPROVED BY

DATE

DRAWING NO. FIGURE 4 - 2

REV 0

SCALE AS NOTED

DRAFT JUNE 2006

GROUNDWATER TBS EXCEEDANCES

SITE 19 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT

NCBC GULFPORT

GULFPORT, MISSISSIPPI

AS NOTED

FIGURE 4 - 3

DRAFT
JUNE 2005

DRAWN BY	DATE	SURFACE WATER CRITERIA EXCEEDANCES	CONTRACT NUMBER 1831
A. JAQUAN		SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT	PREPARED BY: DATE
CHECKED BY	DATE	NCBC GULFPORT	APPROVED BY: DATE
N. HOSKIN		GULFPORT, MISSISSIPPI	DRAWING NO: FIGURE 4 - 4 / REV. 0
CODE/SCHEDULE-AREA			
SCALE: AS NOTED			

DRAFT
JUNE 2005

DRAWN BY	DATE
A. JACKSON	
CHECKED BY	DATE
R. FLOOR	
CONVERSION SCALE	
SCALE AS NOTED	

SEDIMENT TRG EXCEEDANCES

SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT

NCBC GULFPORT

GULFPORT, MISSISSIPPI

CONTRACT NUMBER	1831
APPROVED BY	DATE
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5.0 CONTAMINANT FATE AND TRANSPORT

The behavior of contaminants released into the environment, particularly the potential for a contaminant to migrate from the release area and persist in an environmental medium, can influence whether the release will result in an adverse human health or ecological effect. The fate and transport discussion for this RI/FS report is limited to the groups of chemicals that were detected during the Phase I, Phase II, and Phase III sampling events at concentrations greater than Tier 1 TRGs established by the State of Mississippi.

5.1 POTENTIAL ROUTES OF MIGRATION

The movement of contaminants in the environment will be controlled by certain properties of the contaminants and the availability of suitable pathways for contaminant movement.

5.1.1 Physical and Chemical Factors Affecting Contaminant Mobility

The following properties can be used to evaluate the potential environmental mobility and fate of site contaminants:

- Specific gravity
- Vapor pressure
- Water solubility
- Octanol/water partition coefficient (K_{ow})
- Organic carbon partition coefficient (K_{oc})
- Henry's Law constant
- Bioconcentration factor (BCF)
- Mobility index (MI)

Table 5-1 presents the physical and chemical properties of the organic compounds detected at Site 10. The relative mobilities of metals as a function of environmental conditions are provided in Table 5-2.

Specific Gravity

Specific gravity is the ratio of the weight of a given volume of pure chemical at a specified temperature to the weight of the same volume of water at a given temperature. Specific gravity is used to determine whether a chemical will have a tendency to float or sink in water if present as a pure chemical or at very high concentrations. Non-aqueous-phase chemicals with a specific gravity greater than 1 will tend to

sink, and chemicals with a specific gravity less than 1 will tend to float. Of the groups of chemicals detected at Site 10, polynuclear aromatic hydrocarbons (PAHs), PCBs, and pesticides generally have a specific gravity greater than 1.

Vapor Pressure

Vapor pressure provides an indication of the rate at which a chemical volatilizes from both soil and water. Chemicals with higher vapor pressures are expected to enter the atmosphere much more readily than chemicals with lower vapor pressures. Volatilization is a significant loss process for VOCs in surface water or surface soil and is of primary importance at environmental interfaces such as surface soil/air and surface water/air. Volatilization is not as important when evaluating contaminated groundwater and subsurface soils that are not exposed to the atmosphere. Vapor pressures for pesticides and PCBs are very low, and volatilization is not significant for inorganics.

Water Solubility

The rate at which a chemical may be leached from a solid matrix (e.g., soil, waste deposit) by infiltrating precipitation is proportional to its water solubility. More soluble chemicals are more readily leached than less soluble chemicals.

The solubility of inorganics is strongly influenced by their valence state(s) and forms (hydroxides, oxides, carbonates, etc.). The solubility is also dependent on pH, Eh (redox potential), temperature, and other ionic species in solution (the Debye-Huckel theory). The solubility products reported in the literature vary with the type of complex formed, but generally it can be noted that, for example, cadmium and copper complexes are more soluble than lead and nickel complexes.

Octanol/Water Partition Coefficient

K_{ow} is a measure of the equilibrium partitioning of chemicals between octanol and water. A linear relationship between K_{ow} and the uptake of chemicals by fatty tissues of animal and human receptors (the BCF) has been established. It is also useful in characterizing the sorption of compounds by organic soils where experimental values are not available. PAHs, pesticides, and PCBs are several orders of magnitude more likely to partition to fatty tissues than the more soluble VOCs. K_{ow} is also used to estimate BCFs in aquatic organisms.

Organic Carbon Partition Coefficient

K_{oc} indicates the tendency of a chemical to adhere to soil particles containing organic carbon. Chemicals with high K_{oc} values generally have low water solubilities and vice versa. This parameter may be used to

infer the relative rates at which the more mobile chemicals (ketones, monocyclic aromatics, and halogenated aliphatics) partition to groundwater. Most pesticides, PAHs, and PCBs are relatively immobile in the soil and are preferentially bound to the soil. These compounds are not as likely to be transported in the dissolved phase by groundwater to the same extent as compounds with higher water solubilities. However, these preferentially bound chemicals are easily transported by erosional processes when they are present in surface soils and the soil particles to which they have adsorbed are mobilized.

Henry's Law Constant

Both vapor pressure and water solubility are of use in determining volatilization rates from surface water bodies and from groundwater. The ratio of these two parameters, the Henry's Law constant, is used to calculate the equilibrium chemical concentrations in the vapor (air) phase versus the liquid (water) phase for the dilute solutions commonly encountered in environmental settings. In general, chemicals having a Henry's Law constant of less than 1×10^{-5} atm-m^3/mole, such as pesticides and PCBs, should volatilize very little and be present only in minute amounts in the atmosphere or soil gas. For chemicals with a Henry's Law constant greater than 5×10^{-3} atm-m^3/mole, such as many of the halogenated aliphatics, volatilization and diffusion in soil gas could be significant.

Bioconcentration Factor

The BCF represents the ratio of aquatic-animal-tissue concentration to water concentration. The ratio is both contaminant and species specific. When site-specific values are not measured, literature values are used or the BCF is derived from the K_{ow}. Many of the pesticides, PCBs, and PAHs will bioconcentrate at levels three to five orders of magnitude greater than those concentrations found in water.

Distribution Coefficient

The distribution coefficient (K_d) is a measure of the equilibrium distribution of a chemical or ion in soil/water systems. The distribution of organic chemicals is a function of both K_{oc} and the amount of organic carbon in the soil. For ions (e.g., metals), K_d is the ratio of the concentration adsorbed on soil surfaces to the concentration in water. Distribution coefficients for metals vary over several orders of magnitude because K_d is dependent on the size and charge of the ion and the soil properties governing exchange sites on soil surfaces. Coulomb's Law predicts that the ion with the smallest hydrated radius and the largest charge will be preferentially accumulated over ions with larger radii and smaller charges.

Mobility Index

MI is a quantitative assessment of chemical mobility in the environment based on the water solubility (S), vapor pressure (VP), and K_{oc} of a given material (Laskowski, 1983):

$$MI = \log ((S*VP)/K_{oc})$$

The MI for a given chemical is evaluated using the following scale (Ford and Gurba, 1984):

Relative MI	Mobility Description
> 5	extremely mobile
0 to 5	very mobile
-5 to 0	slightly mobile
-10 to -5	immobile
< -10	very immobile

Lighter molecular weight PAHs, such as naphthalene, have MIs ranging from -5 to 0 and are considered slightly mobile, and the heavier molecular weight PAHs [e.g., benzo(a)pyrene] are classified as very immobile, having MIs less than -10 (Table 5-1). The MIs of pesticides detected at Site 10 range from -3.55 (endosulfan sulfate) to -15.8 (DDT); most of the pesticides have MIs less than -10 and are generally considered to be very immobile in soil. The MIs of PCBs are less than -10, and these chemicals are classified as very immobile.

5.1.2 Potential Pathways for Contaminant Migration

Based on the evaluation of existing conditions at Site 10, the following potential contaminant transport pathways may exist at the site:

- Leaching of soil contaminants to groundwater
- Migration of groundwater contaminants
- Migration of contaminants in surface water and sediment
- Volatilization from soil or groundwater

Leaching of Soil Contaminants to Groundwater

Contaminants that adhere to soil particles or have accumulated in soil pore spaces can be remobilized and transported to groundwater as a result of infiltration or precipitation. The rate and extent of this leaching are influenced by the following:

- Depth of the water table
- Amount of precipitation
- Rate of infiltration

- Physical and chemical properties of the soil
- Physical and chemical properties of the contaminant

The mobility of chemicals at Site 10 will influenced by the shallow water table, potentially high rates of precipitation, and the sandy soil in the area that may allow a higher rate of infiltration.

Migration of Groundwater Contaminants

Contaminants can migrate in either a dissolved phase or as an immiscible liquid. A contaminant that is present in water at a level greater than its solubility concentration will form an immiscible liquid. Based on the specific gravity of the contaminant, it will either float or sink in the water. In the case of chlorinated solvents (e.g., chloroform), the contaminant will sink in water because it has a higher specific gravity than water. Subsurface transport of immiscible contaminants is governed by a set of factors different than those of dissolved contaminants.

The groundwater data at Site 10 do not provide evidence of immiscible contaminants at concentrations exceeding water solubility levels. Solvents were detected at concentrations less than their water solubilities. Therefore, the migration of groundwater contaminants, for the most part, is likely governed by factors that govern the movement of dissolved contaminants. Three general processes govern the migration of dissolved constituents in groundwater: advection, dispersion, and retardation. Advection is a process by which solutes are carried by groundwater movement. Dispersion is a mixing of contaminated and uncontaminated water during advection. Retardation is a slowing of contaminant migration caused by the reaction of the solute with the aquifer soil.

Contaminant concentrations may be affected by one or more mechanisms during transport. Volatilization or precipitation may physically transform contaminants. Contaminants may be chemically transformed through photolysis, hydrolysis, or oxidation/reduction. Contaminants may also be biologically transformed by biodegradation.

Migration of Contaminants in Surface Water and Sediment

The dissolved contaminants in groundwater may migrate downgradient with the natural flow of groundwater. Contaminants can migrate as dissolved constituents in surface water or bound to sediment particles that are moved in direction of surface water flow. Three general processes govern the migration of dissolved contaminants caused by the flow of surface water: movement caused by the flow of surface water, movement caused by the irregular mixing of water, and chemical mechanisms occurring during the movement of surface water. Sediment particles can disassociate from the sediment into surface water and migrate by one of the aforementioned methods. At Site 10, contaminants in the drainage ditches

may be transported northwest to Canal No. 1. Storm events are of particular concern at Site 10 because the greater flow velocities can mobilize bedload sediments that are usually not disturbed under normal flow conditions.

Volatilization from Soil or Groundwater

Chemicals in soil can migrate into ambient air either as vapors or by adhering to particulate matter (dusts). Chemicals that have a significant volatility are likely to enter ambient air as vapors. These chemicals are generally considered to be compounds with Henry's Law Constants greater than 1.0×10^{-5} and molecular weights less than 200. Chemicals with lower Henry's Law Constants and higher molecular weights are more likely to enter ambient air on particulate matter carried by winds. This pathway may not be significant for Site 10 because the contamination is mainly in subsurface media, thereby limiting emissions from soil.

Once in groundwater, volatile chemicals may migrate or they may volatilize through the capillary zone and overlying soil layers into ambient air or inside buildings. Chemicals in the vapor phase may migrate horizontally or vertically and can enter buildings through cracks in the foundation or through foundation walls. Once inside buildings, the air concentrations in buildings are subject to various factors such as building dimensions and ventilation rates. Upon entering ambient air, the vapors are not expected to persist for long periods of time, having half-lives in the atmosphere typically measured in hours or a few days. The air concentrations of vapors in ambient air are likely to be quickly diluted by the action of winds. Vapors may also be released directly to ambient air from soil or groundwater during excavation activities.

5.2 CONTAMINANT PERSISTENCE

The life span of contaminants after they are released to the environment is controlled by the susceptibility of the contaminants to certain chemical and biological processes that may degrade the contaminants and reduce their remaining mass.

5.2.1 SVOCs

SVOCs as a class of compounds, and PAHs in particular, are considered to be persistent in the environment. SVOCs in soil are much more likely to bind to soil and be transported via mass transport mechanisms than to go into solution. PAHs are subject to degradation via aerobic bacteria but may be relatively persistent in the absence of microbial populations or macronutrients such as phosphorus and nitrogen. Landspreading applications have indicated that PAHs are highly amenable to microbial degradation in soil. The rate of degradation is influenced by temperature, pH, oxygen concentrations,

initial chemical concentrations, and moisture. Photolysis, hydrolysis, and oxidation are not important fate processes for the degradation of PAHs in soil.

The most important degradation processes for PAHs in aqueous matrices are photo-oxidation, chemical oxidation, and biodegradation. PAHs do not contain functional groups that are susceptible to hydrolytic action, and hydrolysis is considered to be an insignificant degradation mechanism. The rate of photodegradation is influenced by water depth, turbidity, and temperature. Benzo(a)pyrene and chrysene are reported to be resistant to photodegradation. PAHs may also be oxidized by chlorination and ozonation and may be metabolized by microbes under oxygenated conditions. Bioconcentration of PAHs in aquatic organisms is greater for the higher-molecular-weight compounds than the lower-molecular-weight compounds. PAHs can be bioaccumulated from water, sediments, or lower organisms in the food chain.

5.2.2 Pesticides

Pesticides as a class of compounds are considered to be persistent in the environment. Hydrolysis, oxidation, and photolysis are not generally important degradation mechanisms for pesticides in soil or water. Hydrolysis half-lives for several pesticides are reported in periods of months to years. Bioconcentration of pesticides in the food chain is an important fate.

DDT and its metabolites are considered to be persistent chemicals. Biodegradation may occur under both aerobic and anaerobic conditions in the presence of certain soil microorganisms. Under aerobic conditions, DDT may be transformed to DDE and, under anaerobic conditions, DDD may result. These compounds are, however, somewhat volatile, with a reported half-life of 100 days for DDT. These compounds are highly lipophilic and therefore readily bioaccumulate.

Aldrin is readily converted to dieldrin, which is a particularly persistent pesticide. In soil, dieldrin will persist for long periods of time (more than 7 years) and may slowly evaporate. It does not readily leach to groundwater. Once in surface waters (via runoff), dieldrin adsorbs strongly to sediments and bioconcentrates and slowly photodegrades. Biodegradation and hydrolysis are not significant degradation mechanisms.

5.2.3 PCBs

PCBs are considered to be very persistent organic chemicals. Biodegradation is the only process known to transform PCBs under environmental conditions, and only the lighter compounds are measurably biodegraded. Although some microorganisms (e.g., *Phanaerochaete chrysosporium*) may biodegrade PCBs, such fungi may not exist in local soil. There is experimental evidence to suggest that heavier

PCBs (five or more chlorines per molecule) can undergo photolytic degradation, but there are no data to suggest that this process operates under environmental conditions. Base-, acid-, and neutral-promoted hydrolysis are considered to be inconsequential degradation mechanisms for PCBs.

5.2.4 Metals

Metals are highly persistent environmental contaminants. They do not biodegrade, photolyze, or hydrolyze. Metals released to the environment generally adsorb to the soil matrix (as opposed to being part of the soil structure) and bioaccumulate. Because metals are frequently incorporated into the soil matrix and remain bound to particulate matter, they also migrate from source areas via bulk movement processes (erosion).

5.3 CONTAMINANT MIGRATION

The mobility of contaminants after they are released to the environment is controlled by the physical properties of the contaminants that determine whether a contaminant partitions to more mobile media (air or groundwater) or less mobile media (soil or sediment particles).

5.3.1 SVOCs

SVOCs are generally considered to be fairly immobile chemicals in the environment because they are large molecules with high K_{oc} values and low solubilities when compared to the volatile organics. However, some of the lighter molecular weight PAHs such as naphthalene are more water soluble and environmentally mobile. SVOC compounds in soil generally do not migrate vertically to a great extent and are more likely to adhere to soil particles and be removed from the site via surface runoff and erosional processes. Detections of SVOCs in groundwater and surface water samples collected at Site 10 may be the result of higher turbidity readings (particulate matter) in the samples.

PAHs generally have very low solubilities, vapor pressures, and Henry's Law constants and high K_{oc}s and K_{ow}s. The low molecular weight PAHs (e.g., acenaphthene, anthracene, fluorene, phenanthrene) may volatilize from surface waters, and the high-molecular-weight PAHs [e.g., benzo(a)pyrene, benz(a)anthracene, chrysene, etc.] are less likely to volatilize. PAHs in soil are much more likely to bind to soil and be transported via mass transport mechanisms than to go into solution.

5.3.2 Pesticides

Pesticides were detected in soil, groundwater, surface water, and sediment samples at Site 10. Pesticides can enter the environment by spraying, dusting, or direct application to the soil. Many of the compounds detected at Site 10 are no longer licensed for general sale and use in the United States.

Pesticides as a class of compounds are not considered to be very mobile in the environment. These chemicals, upon application or disposal, tend to remain affixed to soil particles. Migration of pesticides generally occurs primarily by erosion via the action of wind or water. Surface soil runoff may carry pesticides to adjacent surface water bodies.

5.3.3 PCBs

PCBs were detected in soil, sediment, and surface water samples at Site 10. The presence of PCBs in soil and sediment samples and their absence in all but one of the aqueous samples reflects their low water solubility and their tendency to adhere to particulate matter. Their presence in the surface water sample may be the result of turbidity (particulate matter) in the sample.

5.3.4 Metals

The mobility of metals is influenced primarily by their physical and chemical properties, in combination with the physical and chemical characteristics of the soil matrix. Factors that assist in predicting the mobility of inorganic species are soil/pore water pH, soil/pore water Eh, and cation exchange capacity. The mobility of metals generally increases with decreasing soil pH and cation exchange capacity (Table 5-2).

Because inorganics are frequently incorporated into the soil matrix and remain bound to particulate matter, they also migrate from the source areas via bulk movement processes (erosion). The larger, non-colloidal soil particles (greater than 0.45 micron) are not generally considered to be mobile in groundwater. Metals are also more mobile under acidic conditions. In these cases, it is possible for metals to migrate vertically through the soil column and reach groundwater.

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TABLE 5-1

ENVIRONMENTAL FATE AND TRANSPORT PARAMETERS FOR ORGANIC CHEMICALS
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
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Chemical	Specific Gravity (@ 20/4°C)[1]	Vapor Pressure (mm Hg @ 20°C)[1]	Solubility (mg/L @ 20°C)[1]	Octanol/Water Partition Coefficient[1]	Organic Carbon Partition Coefficient[2]	Henry's Law Constant (atm-m^3/mole)[1]	Bioconcentration Factor (mg/L/mg/kg)[2]	Mobility Index log((solubility*VP) /Koc)
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHs)								
Acenaphthene	1.07	5.00E-03	4.24E+02	8.32E+03	7.08E+03	1.55E-04	1.10E+03	-3.52E+00
Acenaphthylene	1.02	2.30E-02	1.61E+01	1.17E+04	2.00E+03	1.14E-04	3.80E+02	-3.73E+00
Anthracene	1.283 (25/4°C)	1.95E-4 (25°C)	1.29E+0 (25°C)	2.82E+04	2.95E+4 [3]	8.6E-5 (25°C)	4.70E+03	-8.07E+00
Benzo(a)anthracene	1.274	5.00E-09	1E-2 (24°C)	4.07E+05	3.98E+05 [3]	6.60E-07	5.30E+04	-1.59E+01
Benzo(b)fluoranthene	NA	5.00E-07	1.2E-3 (25°C)	3.72E+06	1.23E+06 [3]	1.20E-05	1.40E+05	-1.53E+01
Benzo(k)fluoranthene	NA	9.59E-11	5.5E-4 (25°C)	6.92E+06	1.23E+06 [3]	1.04E-03	1.40E+05	-1.94E+01
Benzo(g,h,i)perylene	NA	1.00E-10	2.6E-4 (25°C)	1.70E+07	1.60E+06	1.4E-7 (25°C)	3.50E+05	-1.98E+01
Benzo(a)pyrene	1.351	5.00E-09	3.8E-3 (25°C)	9.55E+05	1.02E+06 [3]	4.9E-7 (25°C)	1.40E+05	-1.67E+01
Carbazole	1.1	1.37E-06	7.48E+00	3.89E+03	3.39E+03	1.53E-08	5.01E+02	-8.52E+00
Chrysene	1.274 (20°C)	6.3E-9 (25°C)	6E-3 (25°C)	4.07E+05	3.98E+05 [3]	1.05E-6 (25°C)	5.30E+04	-1.60E+01
Dibenzo(a,h)anthracene	1.282	1.00E-10	5E-4 (25°C)	9.33E+05	3.80E+06 [3]	7.3E-8 (25°C)	6.90E+05	-1.99E+01
Dibenzofuran	1.0886	4.40E-02	4.22E+00	1.32E+04	8.13E+03	NA	8.00E+02	-4.64E+00
Fluoranthene	1.252	5.0E-6 (25°C)	2.65E-1 (25°C)	2.14E+05	1.07E+05 [3]	6.5E-6 (25°C)	1.20E+04	-1.09E+01
Fluorene	1.202	1.00E+01	1.98E+00	1.62E+04	1.38E+04	6.36E-05	3.80E+03	-2.84E+00
Indeno(1,2,3-cd)pyrene	NA	1E-10 (25°C)	6.20E-02	4.57E+07	3.47E+06 [3]	6.95E-8 (25°C)	3.50E+05	-1.77E+01
1-Methylnaphthalene	1.0202	5.39E-02	2.58E+01	7.41E+03	7.30E+02	2.60E-04	1.3E+02-6.8E+02	-2.72E+00
2-Methylnaphthalene	1.0058	1E+1 (105°C)	2.6E+1 (25°C)	7.24E+03	7.27E+2 [4]	4.99E-4 (25°C)	5.1E+2 [5]	-4.47E-01
Naphthalene	1.162	8.2E-2 (25°C)	3E+1 (25°C)	2.34E+03	2.00E+03 [3]	4.83E-4 (25°C)	4.20E+02	-2.91E+00
Phenanthrene	0.980 (4°C)	1E+0 (118.2°C)	8.16E-1 (21°C)	2.88E+04	1.40E+04	3.93E-5 (25°C)	4.70E+03	-4.23E+00
Pyrene	1.271 (23/4°C)	2.5E+0 (200°C)	1.6E-1 (26°C)	1.51E+05	1.05E+05 [3]	5.1E-6 (25°C)	1.20E+04	-5.42E+00

TABLE 5-1

ENVIRONMENTAL FATE AND TRANSPORT PARAMETERS FOR ORGANIC CHEMICALS
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Chemical	Specific Gravity (@ 20/4°C)[1]	Vapor Pressure (mm Hg @ 20°C)[1]	Solubility (mg/L @ 20°C)[1]	Octanol/Water Partition Coefficient[1]	Organic Carbon Partition Coefficient[2]	Henry's Law Constant (atm-m^3/mole)[1]	Bioconcentration Factor (mg/L/mg/kg)[2]	Mobility Index log((solubility*VP) /Koc)
PESTICIDES								
Aldrin	1.18	2.31E-05	1.80E-01	3.16E+06	2.45E+06	6.97E-03	1.10E+02	-1.18E+01
Chlordane	1.61 (25°C)	1E-5 (25°C)	5.60E-02	6.03E+02	1.20E+05	4.79E-05 (25°C)	4.00E+04	-1.13E+01
4,4'-DDD	1.476	1.0E-06 (30°C)	1.6E-1 (24°C)	9.77E+05	1.00E+06 [3]	2.16E-05	1.80E+05	-1.28E+01
4,4'-DDE	NA	6.50E-06	4.00E-02	4.90E+05	4.47E+06 [3]	2.34E-05	8.90E+05	-1.32E+01
4,4'-DDT	1.5 (15/4°C)	1.50E-07	3.1E-3 (25°C)	1.55E+06	2.63E+06 [3]	3.89E-5 (25°C)	8.00E+06	-1.58E+01
Dieldrin	1.75	1.8E-7 (25°C)	1.86E-01	1.23E+04	2.14E+04 [3]	5.84E-5 (25°C)	7.10E+02	-1.18E+01
Endosulfan II	1.745 (20/20°C)	2.40E-5 (25°C)	5.1E-01 [6]	1.26E+04 [6]	2.04E+03 [6]	1.12E-05 [6]	2.9E+02 [7]	-8.22E+00
Endosulfan sulfate	NA	9.00E-03	1.17E-01	3.66E+00	3.76E+00	4.70E-07	3.56E+02	-3.55E+00
Endrin	1.65 (25°C)	2.0E-7 (25°C)	2.5E-01 [6]	1.15E+05 [6]	1.08E+04 [6]	7.52E-06 [6]	1.8E+03 [8]	-1.13E+01
Endrin aldehyde	1.65 (25°C)	2.0E-7 (25°C)	2.5E-01 [6]	1.15E+05 [6]	1.08E+04 [6]	7.52E-06 [6]	1.8E+03 [8]	-1.13E+01
Endrin ketone	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	NA	3.00E-04	3.5E-1(15°C)	5.00E+00	8.32E+04	3.90E-04	7.50E+03	-8.90E+00
Methoxychlor	1.41 (25°C)	NA	4.0E-02 (24°C)	4.91E+00	1.07E+05	1.60E-05	8.10E+03	NA
POLYCHLORINATED BIPHENYLS (PCBs)								
Aroclor-1242	1.392	2.50E-04	2.00E-02	1.29E+04	5.03E+05	5.60E-04	3.6E+03 - 4.3E+04	-1.10E+01
Aroclor-1260	1.58 (25°C) [2]	4.05E-5 [2]	2.7E-3 [2]	1.4E+7 [2]	6.70E+06	7.4E-1 [2]	1.30E+06	-1.38E+01

NA = Not available.

1 USEPA, 1992. Handbook of RCRA Groundwater Monitoring Constituents: Chemical and Physical Properties. September.

2 USEPA, 1982. Aquatic Fate Process Data for Organic Priority Pollutants. December.

3 USEPA, 1996. Soil Screening Guidance. July.

4 Lyman et al., 1990.; Equation 4-5. Handbook of Chemical Property Estimation Methods.

5 Lyman et al., 1990. Equation 5-2. Handbook of Chemical Property Estimation Methods.

6 Lyman et al., 1990. Equation 5-3. Handbook of Chemical Property Estimation Methods.

7 ATSDR, 2000. Toxicity Profile for Endosulfan. September.

8 ATSDR, 1996. Toxicity Profile for Endrin. August.

TABLE 5-2

RELATIVE MOBILITIES OF METALS AS A FUNCTION OF ENVIRONMENTAL CONDITIONS (Eh, pH)
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI

Relative Mobility	Environmental Conditions			
	Oxidizing	Acidic	Neutral/ Alkaline	Reducing
Very High	—	—	Selenium	—
High	Selenium Zinc	Copper Mercury Nickel Selenium Silver Zinc	—	—
Medium	Arsenic Cadmium Copper Mercury Nickel Silver	Arsenic Cadmium	Arsenic Cadmium	—
Low	Barium Beryllium Lead	Barium Beryllium Lead	Barium Beryllium Lead	—
Very Low	Chromium Iron	Chromium	Chromium Copper Mercury Nickel Silver Zinc	Barium Beryllium Chromium Copper Lead Mercury Nickel Selenium Silver Zinc

6.0 BASELINE RISK EVALUATION

The risk evaluation for this RI/FS is based on the assumption that despite remedial actions already conducted at Site 10, risk may still remain for human health and the environment. The objectives of the risk evaluation are to identify potential exposure pathways to receptor populations and to identify the contaminants at the site that exceed default human health risk-based criteria. In addition, site ecological screening conditions are evaluated to determine whether a more comprehensive ecological risk assessment is required.

6.1 EXPOSURE ASSESSMENT

The exposure assessment evaluates the physical characteristics of the site, exposed populations, sources of contamination, and contaminant mobility to identify potential exposure routes and receptors. The following factors are evaluated in the exposure assessment:

- Sources of contamination
- Transport mechanisms
- Exposure routes/pathways
- Actual or potential receptors

The data from the exposure assessment were incorporated into the baseline Site Conceptual Exposure Model (SCEM).

6.1.1 Sources of Contamination

The source of contamination at Site 10 appears to be limited to a past release or releases of PCB-containing waste from electrical transformers into or adjacent to the ditch near the footbridge (Figure 3-1).

6.1.2 Transport Mechanisms

Potential contaminant migration mechanisms at Site 10 include the release of contaminants from soil to groundwater by infiltration of precipitation and dissolution of soluble contaminants. The dissolved contaminants in groundwater may migrate downgradient with the natural flow of groundwater and discharge as seeps to drainage ditches. Contaminants in drainage ditches may then be transported northwest to Canal No. 1. Storm events are of particular concern because of greater flow velocities that mobilize bedload sediments that are usually not disturbed under normal flow conditions.

6.1.3 Exposure Routes/Pathways

Soil

Exposure to contaminated soil at the site under current land use is expected to be limited to surface soil. Under future land use, exposure to chemicals in subsurface soil could occur if the soil were to be uncovered (e.g., during excavation). A receptor may be exposed to soil by inadvertent ingestion of a small amount of soil, by dermal absorption of contaminants from the soil, or by inhalation of vapors or particulates emitted from soil.

Groundwater

Available information indicates that no domestic groundwater wells have been installed at or immediately downgradient of Site 10. Therefore, exposure to groundwater is not expected to occur under current land usage. Dermal contact with groundwater by construction workers may occur if workers contact groundwater during future excavation activities. Future on-site residents are assumed to use local groundwater as a source of domestic water and to be exposed to groundwater via ingestion and dermal contact.

Surface Water/Sediment

Exposure to contaminated surface water and sediment in the drainage ditch at Site 10 could occur under current or future land use. Potential receptors are assumed to come into direct contact with surface water and sediment while wading. Individuals may be exposed primarily via dermal contact and incidental ingestion, but the frequency of exposure is expected to be less than typical residential or industrial exposures to soil.

Air

This exposure pathway is based on the assumption that a receptor inhales air that contains suspended particulates and/or volatile organic vapors originating from soil. Exposure to fugitive dust and vapors would be an applicable exposure pathway mainly if soil or sediment at the site were to be uncovered in future construction or excavation activities. However, the contaminants exceeding Tier 1 TRGs in samples collected from other media do not have inhalation-based TRGs, indicating that the potential for migration to air is low.

6.1.4 Receptors

NCBC Gulfport is an active military facility and is anticipated to remain active for the foreseeable future. The paved area south of Site 10 is currently used as a parade field and is expected to be used for this purpose in the future. The area north of the ditch currently includes an office building and a parking lot. A footbridge crosses the contaminated portion of the ditch and allows pedestrians to walk from the parking lot to the parade field. Access to the site is not restricted, although access to the ditch is controlled by a fence. Table 6-1 summarizes the potential receptors that may be exposed to contaminated environmental media within the study area based on current and potential future land use.

6.1.5 Baseline SCEM

The baseline SCEM is used to identify the exposure pathways by which site contaminants can reach receptor populations. Because land use at Site 10 could potentially change in the future, the more conservative unrestricted potential receptor populations were considered applicable. The baseline SCEM worksheet is included in Appendix C.

Based on the baseline SCEM, the soil (including sediment) and surface water pathways are considered complete. The groundwater pathway is potentially complete under future land use, and the air pathway is considered incomplete.

Completed pathways indicate that if site contaminants are present at concentrations exceeding risk-based screening criteria, risk to receptors could occur. Risk to receptor populations can be controlled or eliminated by active cleanup, engineering controls, and/or institutional controls.

6.2 TIER 1 RISK EVALUATION

The Tier 1 risk evaluation is a comparison of site-specific analytical results to risk-based TRGs established to be protective of human health and the environment. The TRGs are based on the following:

- A 1×10^{-6} target cancer risk level for each carcinogenic chemical
- A non-carcinogenic hazard index not to exceed 1 for each systemic toxicant, or
- Constituent concentrations established through federal or state programs

Because of the lack of toxicity criteria, MDEQ Tier 1 TRGs are not available for calcium, magnesium, sodium, and potassium. These inorganics are essential nutrients and are commonly detected in environmental media.

Sediment sample analytical results are compared to soil TRGs. Surface water sample analytical results are compared to groundwater TRGs and criteria established by other applicable regulations. Analytes detected at concentrations exceeding Tier 1 TRGs are summarized by medium in the following sections.

6.2.1 Soil

Arsenic was detected at concentrations greater than the unrestricted Tier 1 TRG in five of the six soil samples analyzed for metals. The detected arsenic concentrations were less than the Tier 1 restricted TRG.

Aroclor-1260 was detected at concentrations greater than the unrestricted Tier 1 TRG but less than the restricted TRG in 3 of the 63 surface and subsurface soil samples collected during the RI ad in previous investigations. Aroclor-1260 concentrations in two additional samples were greater than the restricted Tier 1 TRG.

Dieldrin was detected at a concentration exceeding the unrestricted Tier 1 TRG in one of the 57 soil samples analyzed for pesticides. The detected dieldrin concentration was less than the Tier 1 restricted TRG.

6.2.2 Sediment

Arsenic was detected in four of the five sediment samples analyzed for metals at concentrations greater than the unrestricted Tier 1 TRG. The detected arsenic concentrations were less than the Tier 1 restricted TRG.

Benzo(a)pyrene was detected at a concentration exceeding the unrestricted Tier 1 TRG in one of the five sediment samples analyzed for SVOCs. The detected benzo(a)pyrene concentration was less than the Tier 1 restricted TRG.

6.2.3 Groundwater

Benzo(k)fluoranthene was detected at concentrations exceeding the groundwater Tier 1 TRG in two of the five groundwater samples analyzed for SVOCs.

Dieldrin was detected at a concentration exceeding the groundwater Tier 1 TRG in one of the 10 groundwater samples collected at Site 10.

6.2.4 Surface Water

Indeno(1,2,3-CD)pyrene was detected at a concentration exceeding the groundwater Tier 1 TRG in one of the two surface water samples analyzed for SVOCs.

Aroclor-1260 was detected at a concentration exceeding the groundwater Tier 1 TRG in one of the five surface water samples analyzed for PCBs.

Dieldrin was detected at a concentration exceeding the groundwater Tier 1 TRG and the human health criteria established in the Mississippi Water Quality Criteria for Intrastate, Interstate and Coastal Waters WPC-2 in one of the five surface water samples analyzed for pesticides.

6.3 TIER 2 RISK EVALUATION

Contaminants detected at concentrations exceeding Tier 1 TRGs are included in the Tier 2 risk evaluation. A Tier 2 risk evaluation is a more in-depth evaluation of site-specific conditions beyond the default values and assumptions of the Tier 1 evaluation. A Tier 2 risk evaluation is required by MDEQ at sites where PCB concentrations exceed the Tier 1 restricted TRG. The Tier 2 risk evaluation provides various methods to use site-specific data to evaluate risk.

6.3.1 Statistical Methods

The 95-percent upper confidence limit (UCL) of the mean detected concentrations can be used as the exposure concentration for comparison to the appropriate Tier 1 TRGs. The 95-percent UCL can be calculated from populations of 10 or more samples. The 95-percent UCL calculations for the selected parameters are included in Appendix D.

The 95-percent UCL calculated for dieldrin in surface soil (less than 6 feet in depth) and sediment is 3.83 µg/kg, which is less than the unrestricted Tier 1 TRG of 39.9 µg/kg.

The 95-percent UCL calculated for dieldrin in groundwater, 0.033 µg/L is less than the maximum detected dieldrin concentration but is still greater than the TRG of 0.00419 µg/L.

The 95-percent UCL calculated for arsenic in surface soil and sediment, 2.42 mg/kg, is greater than the maximum arsenic concentration detected, 2.10 mg/kg, and the Tier 1 TRG, 0.426 mg/kg.

The 95-percent UCL calculated for Aroclor-1260, 2,777 µg/kg, is greater than the Tier 1 TRG of 1,000 µg/kg.

6.3.2 Site Background

Several groups of organic chemicals detected at Site 10, particularly pesticides and PAHs, are typically found in developed areas like NCBC Gulfport. The presence of these chemicals is more likely attributable to urban runoff than a past release of PCB-containing waste. Moreover, as shown below, the frequency of detection of these chemicals and the number of observed exceedances of TRGs indicate that the presence of PAHs and pesticides are not widespread. Based on these data, PAHs and pesticides will not be retained as chemicals of concern (COCs) for Site 10.

Solid Samples

Medium	Chemical	Maximum Conc. (µg/kg)	Freq. of Detection	Unrestricted TRG (µg/kg)	Unrestricted TRG Exceedances	Restricted TRG (µg/kg)	Restricted TRG Exceendances
Soil	Dieldrin	46	4/57	39.9	1/57	358	0/57
Sediment	Benzo(a) pyrene	170 J	1/5	87.5	1/5	784	0/5

Aqueous Samples

Medium	Chemical	Frequency of Detection	Maximum Conc. (µg/L)	TRG (µg/kg)	TRG Exceedances
Groundwater	Benzo(k)fluoranthene	2/5	11	0.917	2/5
	Dieldrin	1/10	0.057	0.00419	1/10
Surface Water	Indeno(1,2,3-CD)pyrene	1/2	7 J	0.0917	1/2
	Dieldrin	1/5	0.005 J	0.00419	1/5

6.3.3 Regionally Prevalent Chemicals

The detected concentrations of arsenic in soil and sediment at Site 10 is likely attributed to naturally occurring conditions. Pettry and Switzer (2001) evaluated arsenic concentrations in soil in Mississippi and reported data from five sample locations in the coastal flatwoods in Jackson County and one from Hancock County. The reported concentrations of arsenic in the coastal flatwoods samples ranged from 0.38 to 14.78 mg/kg. Twelve of the 13 reported results were greater than the unrestricted TRG for arsenic, with five of these results greater than the restricted TRG. The detected concentrations of arsenic in soil and sediment at Site 10 ranged from 0.21 to 2.4 mg/kg, within the lower end of the range reported by Pettry and Switzer. As a result, arsenic will not be retained as a COC.

6.3.4 Site-Specific Variables

Certain default values used to calculate the Tier 1 TRGs, such as exposure duration, exposure frequency, and moisture content, can be replaced with site-specific variables to calculate a site-specific TRG. Aroclor-1260 was detected in at least one soil sample at a concentration greater than the restricted Tier 1 TRG; therefore, it is unlikely that a TRG calculated from the site-specific variables would be protective of human health.

6.3.5 Eliminate/Minimize Exposure Routes

Risk to receptor populations can be controlled or eliminated by active cleanup, engineering controls, and/or institutional controls that eliminate or minimize routes of exposure. Active remediation by excavation of soil and sediment from the ditch at Site 10 in August 1999 failed to reduce PCB concentrations to less than TRGs. An FS was conducted for Site 10 to provide a detailed evaluation of alternatives to achieve protection of human health and the environment.

6.4 ECOLOGICAL EVALUATION

To determine if a screening level ecological risk assessment (SLERA) is required for Site 10, the criteria for further assessment from the MDEQ Ecological Checklist were evaluated. The Ecological Checklist provides four criteria for evaluation. If the site meets all the criteria, no further ecological evaluation is required.

6.4.1 Area of Impact

The area of impacted soil at Site 10 is less than 10,000 square feet (0.23 acres), which is less than the 1-acre size requirement that would trigger further ecological risk evaluation.

6.4.2 Potential for Release

The ditch at Site 10 is an ephemeral stream with intermittent discharge related to storm events. Contamination is limited to the area adjacent to the footbridge and does not appear to have migrated downstream.

6.4.3 Ecological Receptors

Based on the criteria established in Mississippi Commission on Environmental Quality Regulation WPC-2, the ditch at Site 10 would be classified as an ephemeral stream that does not support a fisheries resource and is not useable for human consumption or aquatic life.

6.4.4 Evidence of Impact

There are no obvious impacts to ecological receptors or their habitats at Site 10.

6.5 SUMMARY AND CONCLUSIONS

The baseline SCEM identified completed pathways in soil, surface water, and sediment and potentially completed pathways to unrestricted receptor populations.

The following analytes were identified in the Tier 1 risk evaluation as having concentrations exceeding Tier 1 TRGs in one or more samples:

Subsurface soil	Aroclor-1260, arsenic, and dieldrin
Sediment	Arsenic and benzo(a)pyrene
Groundwater	Benzo(k)fluoranthene and dieldrin
Surface water	Aroclor-1260, dieldrin, and indeno(1,2,3-CD)pyrene

However, PAHs and pesticides will not be retained as COCs due to infrequent detections and because their presence is likely a result of urban runoff. Similarly, arsenic will not be retained because it was detected within the lower range of naturally occurring concentrations.

Only Aroclor-1260 will be retained as a COC for protection of human health. An FS was prepared to present alternatives to eliminate or minimize human exposure to Aroclor-1260 in subsurface soil and surface water by active cleanup, engineering controls, and/or institutional controls.

Based on an evaluation of site-specific data with respect to the criteria in the MDEQ Ecological Checklist, a SLERA is not required for Site 10.

TABLE 6-1

HUMAN HEALTH EXPOSURE SCENARIOS
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI

Receptor	Surface Soil Exposure	Subsurface Soil Exposure	Sediment Exposure	Surface Water Exposure	Groundwater Exposure
Construction/Excavation Worker	Ingestion Dermal Contact	Ingestion Dermal Contact	Ingestion Dermal Contact	Dermal Contact	Dermal Contact
Commercial/Industrial Worker	Ingestion Dermal Contact	Ingestion Dermal Contact	Ingestion Dermal Contact	Dermal Contact	--
On-Site Worker	Ingestion Dermal Contact	Ingestion Dermal Contact	Ingestion Dermal Contact	Dermal Contact	--
Recreational User/Trespasser	Ingestion Dermal Contact	Ingestion Dermal Contact	Ingestion Dermal Contact	Dermal Contact	--
Potential Future On-Site Resident	Ingestion Dermal Contact	Ingestion Dermal Contact	Ingestion Dermal Contact	Dermal Contact	Ingestion Dermal Contact Inhalation

TABLE 6-2

SUMMARY OF EXCEEDANCES OF HUMAN HEALTH SCREENING CRITERIA
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI

Analyte	Solid Media						Aqeous Media		
	Surface Soil		Subsurface Soil		Sediment		Groundwater	Surface Water	
	Restricted TRG	Unrestricted TRG	Restricted TRG	Unrestricted TRG	Restricted TRG	Unrestricted TRG	TRG	TRG	WPC-2
Inorganics									
Arsenic	0/5	4/5	0/1	1/1	0/5	4/5	--	--	--
Semivolatile Organics									
Benzo(a)pyrene	--	--	--	--	0/5	1/5	--	--	--
Benzo(k)fluoranthene	--	--	--	--	--	--	2/5	--	--
Indeno(1,2,3-CD)pyrene	--	--	--	--	--	--	--	1/2	NA
Pesticides/PCBs									
Aroclor-1260	1/26	3/26	1/37	0/37	--	--	--	1/5	NA
Dieldrin	0/24	1/24	0/37	0/37	--	--	1/10	1/5	1/5

NOTES:
TRG = Target Remediation Goal.
WPC-2 = Mississippi Commission on Environmental Quality Regulation WPC-2.

7.0 REMEDIAL INVESTIGATION SUMMARY AND CONCLUSIONS

The primary objective of the RI was to provide data to guide the selection of a remedy for contamination at Site 10 that is protective of human health and the environment. In order to achieve this primary objective, samples from various media were collected and analyzed to fill data gaps from previous investigations. Previous investigations and removal actions at the site focused on PCB and transformer oil-related contaminants; therefore, additional samples were collected and analyzed to evaluate the nature and extent of other contaminants that may have been released at the site. Samples from various media were used to confirm the extent of PCB-related contamination previously documented at the site and to evaluate the effect remedial actions have had on site conditions.

7.1 SITE CONDITIONS

NCBC Gulfport is located in the western part of the City of Gulfport, Mississippi, in southeastern Harrison County, about 2 miles north of the Gulf of Mexico. NCBC Gulfport occupies approximately 1,100 acres and has an elevation averaging approximately 30 feet above msl.

7.1.1 Land Use and Topography

Land uses on base include training activities, equipment and materials storage, maintenance areas, recreational facilities, and residential housing for military personnel. Land use in the off-base areas adjacent to NCBC Gulfport is primarily residential.

Site 10 includes a short section of primary drainage ditch located in the south-central section of NCBC Gulfport adjacent to the Parade Field. The drainage ditch at Site 10 is approximately 2.5 feet deep and 10 feet wide at the base and approximately 25 feet wide at the top of the banks. The site is bordered to the north by a parking area associated with Building 295 and to the south by the Parade Field. Large trees are present on the northern side of the ditch. Except for the drainage ditch itself, the site topography is relatively flat.

7.1.2 Surface Water

Surface water in the vicinity of NCBC Gulfport is abundant. Storm water runoff is collected in a series of ditches and canals and directed off base. Large precipitation events tend to produce small stream and ditch flooding due to relatively high stream flow velocities. Storm water runoff from the paved areas surrounding Site 10 flows into various tributary ditches that feed into the larger primary ditch. Surface water runoff in the primary ditch is conveyed to the west into Canal No. 1, which collects the runoff from

Drainage Area 5. Surface water in Canal No. 1 flows north and eventually leaves the NCBC Gulfport at Outfall 1, located at 28th Street.

7.1.3 Geology

Surface and shallow subsurface soils in this area are primarily gray and brown sand to sandy clay with varying amounts of gravel and minor clay horizons. The top of the local confining clay layer was encountered at a depth of approximately 23 feet at Site 10.

7.1.4 Hydrogeology

The depth to groundwater at NCBC Gulfport ranges from approximately 2 to 10 feet bgs and is controlled primarily by surface topography. Depth to groundwater at Site 10 ranged from 1.26 to 2.15 feet bgs. Groundwater elevations in shallow wells ranged from 26.00 to 26.49 feet above msl. Groundwater flow direction in shallow groundwater is to the northwest. The estimated average groundwater velocity for the shallow zone at the site was calculated at 0.055 feet per day

7.1.5 Ecology

The ditch at Site 10 is part of the network of interconnected ditches and canals that collect on base storm water runoff and convey it off base. The on-base ditches at NCBC Gulfport are generally straight and uniform in width, lacking the morphological properties of natural streams. Aquatic plants may grow in stable sand and gravel banks near and below water levels. The steep slopes on either side of the ditch limit over bank flooding. Wading birds, fish, and benthic organisms have been observed in the ditches and canals on the base.

Site 10 is located in a developed part of the base. Ground cover at the site is predominantly pavement and maintained lawn. Large trees are present on the northern side of the ditch, but native understory is absent. Vegetation along the sides of the ditch is periodically cut to control tree growth. No wetlands are located adjacent to the ditch in the vicinity of Site 10. Local wildlife may temporarily use Site 10 but, due to lack of suitable cover, wildlife use is assumed to be infrequent. No occurrences have been reported of State or federal listed or proposed endangered or threatened plants or animals on NCBC Gulfport.

7.2 NATURE AND EXTENT OF CONTAMINATION

The detections of OCBE, chlorobenzene, and Aroclor-1260 at Site 10 indicate the probable release of electrical transformer oil as the source of contamination. The distribution of contaminants in the drainage ditch adjacent to the footbridge suggests that the release occurred in this area.

7.2.1 Soil

Detected VOC, SVOC, herbicide, and cyanide concentrations in soil samples were less than Tier 1 unrestricted TRGs.

Aroclor-1260 was detected in three soil samples at concentrations greater than the unrestricted TRG and in two samples at concentrations greater than the restricted TRG. The dieldrin concentration in one soil sample was greater than the unrestricted TRG but less than the restricted TRG. Other pesticides and PCBs were detected at concentrations less than Tier 1 unrestricted TRGs.

Arsenic was detected in five of the six soil samples at concentrations greater than the Tier 1 unrestricted TRG but less than the restricted TRG. Other metals were detected at concentrations less than Tier 1 unrestricted TRGs.

7.2.2 Groundwater

Detected VOC, herbicide, metals, and cyanide concentrations in the groundwater samples were less than Tier 1 TRGs.

Pesticides were detected in one Phase III groundwater sample from one monitoring well. The dieldrin concentration detected in that groundwater sample was greater than the Tier 1 TRG, but other pesticides were detected at concentrations less than Tier 1 TRGs. PCB concentrations in groundwater samples were less than standard laboratory detection limits.

Detected benzo(k)fluoranthene concentrations in two groundwater samples were greater than the Tier 1 TRG. Concentrations of other SVOCs in groundwater samples were less than standard laboratory detection limits

7.2.3 Surface Water and Sediment

Detected VOC, herbicide, and cyanide concentrations in the surface water and sediment samples were less than Tier 1 TRGs.

Pesticides were detected in two Phase I surface water samples. The dieldrin concentration detected in one of these samples was greater than the human health surface water criteria, but less than the Tier 1 TRG and the aquatic life surface water criteria. Aroclor-1260 was detected in the other Phase I surface water sample at a concentration exceeding the Tier 1 TRG and the acute and chronic criteria for fresh water aquatic life. Both of the Phase I surface water samples were collected following the remedial action

at the site. Pesticides were not detected in the Phase III surface water samples collected approximately 1 year later. Pesticide and PCB concentrations in sediment samples were less than Tier 1 TRGs.

Indeno(1,2,3-CD)pyrene was detected in one Phase III surface water sample at a concentration greater than the Tier 1 TRG. Concentrations of other SVOCs in surface water samples were less than Tier 1 TRGs. Benzo(a)pyrene was detected in a Phase III sediment sample at a concentration greater than the unrestricted TRG of 0.426 mg/kg but less than the restricted TRG of 3.82 mg/kg. Concentrations of other SVOCs in sediment samples were less than Tier 1 TRGs.

Copper was detected in surface water samples at concentrations less than the Tier 1 TRG and the human health surface water criteria but greater than the acute and chronic aquatic life criteria. Concentrations of other metals in surface water samples were less than screening criteria. Arsenic concentrations in four of the sediment samples were greater than the Tier 1 unrestricted TRG but less than the restricted TRG. Concentrations of other metals detected in sediment samples were less than Tier 1 TRGs.

7.3 SUMMARY OF RISK EVALUATION/CHEMICAL OF CONCERN SELECTION

The baseline SCEM identified completed pathways in soil, surface water, and sediment and potentially completed pathway to unrestricted receptor populations.

The following analytes were identified in the Tier 1 risk evaluation as having concentrations exceeding Tier 1 TRGs in one or more samples:

Subsurface soil	Aroclor-1260, arsenic, and dieldrin
Sediment	Arsenic and benzo(a)pyrene
Groundwater	Benzo(k)fluoranthene and dieldrin
Surface water	Aroclor-1260, dieldrin, and indeno(1,2,3-CD)pyrene

However, PAHs and pesticides will not be retained as COCs due to infrequent detections and because they are likely a result of urban runoff. Similarly, arsenic will not be retained as a COC because it was detected within the lower range of naturally occurring concentrations. As a result, only Aroclor-1260 will be retained as a COC for protection of human health.

Based on an evaluation of site-specific data with respect to the criteria in the MDEQ Ecological Checklist, a SLERA is not required for Site 10.

7.4 CONCLUSIONS

An FS was prepared to present alternatives to eliminate or minimize human exposure to Aroclor-1260 in subsurface soil, sediment, and surface water by active cleanup, engineering controls, and/or institutional controls. The FS is included in the following sections.

FEASIBILITY STUDY

SECTIONS 8.0 – 11.0

8.0 REMEDIAL ACTION OBJECTIVES AND GENERAL RESPONSE ACTIONS

The objectives and goals for a remedial action at Site 10 provide the basis for selecting Remedial Action Objectives (RAOs) and identifying remedial technologies to address unacceptable exposure scenarios that may be encountered with Site 10 contaminated media.

This section presents the development of RAOs. As part of this development, regulatory requirements, or Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considered criteria (TBCs), are identified. Next, media of concern are identified based on the one COC (Aroclor-1260) selected for Site 10. Preliminary action levels, or Preliminary Remedial Goals (PRGs), for each medium of concern are then identified. Taking into consideration this information, RAOs are then defined.

This section also presents General Response Actions (GRAs) for Site 10 contaminated media. GRAs are categories of actions that could be implemented to satisfy or address a component of the RAOs for the site. Lastly, this section provides an estimate of the volumes of contaminated media to be addressed at Site 10.

8.1 REMEDIAL ACTION OBJECTIVES

8.1.1 ARARs and To Be Considered Criteria

ARARs for this FS are the federal and State environmental requirements used to define the appropriate extent of site cleanup, to identity sensitive land areas or land uses, to develop remedial alternatives, and to direct site remediation. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) require remedial actions to comply with State ARARs when they are more stringent than federal ARARs.

The NCP defines two ARAR components: (1) applicable requirements and (2) relevant and appropriate requirements. Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal or State environmental or facility siting laws specifically addressing a hazardous substance, pollutant, contaminant, remedial action, or other circumstance found at a CERCLA site. Applicable State standards are only those (1) identified by the State in a timely manner, (2) consistently enforced, and (3) more stringent than federal requirements.

Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive requirements under federal and State environmental and facility siting laws that, while not

"applicable" to a hazardous substance, pollutant, contaminant, or remedial action, address situations sufficiently similar to those encountered at the CERCLA site so their use is well suited to the particular site. Only those State standards (1) identified in a timely manner and (2) more stringent than federal requirements may be relevant and appropriate.

"Applicability" is a legal determination of jurisdiction of existing statutes and regulations, whereas "relevant and appropriate" is a site-specific determination of the appropriateness of existing statutes and regulations. Therefore, relevant and appropriate requirements allow flexibility not provided by applicable requirements in the final determination of cleanup levels. After a requirement is identified as an ARAR, the selected remedy must comply with or be waived from compliance with the ARAR, even if the ARAR is not required to assure protectiveness. Applicable requirements apply to both on- and off-site remedial actions.

TBC guidance criteria are federal and State non-promulgated advisories or guidance that are not legally binding and do not have the status of potential ARARs. However, if there are no specific ARARs for a chemical or site condition, or if ARARs are not deemed sufficiently protective, then guidance or advisory criteria should be identified and used to ensure the protection of human health and the environment.

Under the description of ARARs set forth in the NCP and the Superfund Amendments Reauthorization Act (SARA), State and federal ARARs are categorized as follows:

- Chemical-specific: Controlling the extent of site remediation with regard to specific contaminants and pollutants.

- Location-specific: Governing site features such as wetlands, floodplains, and sensitive ecosystems (including features of historical significance).

- Action-specific: Pertaining to the proposed site remedies and governing the implementation of the selected site remedy.

During the detailed analysis of remedial alternatives presented in Section 10.0, each alternative will be analyzed to determine its compliance with ARARs. Chemical-, location-, and action-specific ARARs for Site 10 are presented in Table 8-1.

8.1.2 Chemicals and Media of Concern

As determined in Section 6.0, one chemical, Aroclor-1260 (a PCB), is retained as a COC in this FS. As explained in the following paragraphs, Site 10 soil, sediment, and surface water are retained as media of concern. Remedial alternatives were developed to address Aroclor-1260 concentrations in these media.

Aroclor-1260 was detected throughout the soil of Site 10 with concentrations ranging from 11 to 83,000 µg/kg and detections at depths up to 8 feet bgs. As a result, soil is retained as a medium of concern. Similarly, Aroclor-1260 was detected in sediment at concentrations ranging from 65 to 710 µg/kg. Accordingly, sediment is retained as a medium of concern.

Surface water is also retained as a medium of concern. Aroclor-1260 was detected in one Site 10 surface water sample at a concentration of 1.1 µg/L. PCBs may be mobilized into the surface water of the site when erosion of sediment and/or shallow soil occurs. However, remedial alternatives were not developed to directly address impacts to surface water. Instead, it is assumed that remedial actions taken to address soil and sediment will indirectly address PCB impacts to surface water.

Groundwater is not retained as a medium of concern. The mobility of PCBs via the groundwater pathway is not considered significant at Site 10 because PCBs have a great affinity for particulates. Moreover, PCBs were not detected in Site 10 groundwater.

8.1.3 Preliminary Remedial Goals

Based on discussions between the Navy, MDEQ, and United States Environmental Protection Agency (USEPA), it was agreed that the State of Mississippi would be the regulatory lead agency at Site 10 (see Appendix E) and that PRGs for the project would be based on the State of Mississippi TRGs. As a result, TRGs will serve as the basis for remedial action.

Per Mississippi Code Section 49-35-21, TRGs are based on either (1) a $1x10^{-6}$ target incremental cancer risk level for each carcinogenic chemical, (2) a hazard index not to exceed 1.0 for each systemic toxicant, or (3) constituent TRG concentrations established through federal/State programs (e.g., the Safe Drinking Water Act). The State of Mississippi lists TRGs for both restricted (industrial) and unrestricted (residential) land use. Site 10 is located due south of the base mess hall and to the southwest of McDonald's. Because of Site 10's proximity to these public locations, unrestricted (residential) TRGs are deemed appropriate for remedial consideration. The State of Mississippi unrestricted TRG for Aroclor-1260 in soil is 1,000 µg/kg, and this value is selected as the PRG for soil and sediment at Site 10.

Although concentrations of Aroclor-1260 detected in sediment are less than the unrestricted TRG, sediment is retained as a medium of concern. It is believed that sediment concentrations of Aroclor-1260 are responsible for the surface water detection of Aroclor-1260 observed during the RI/FS. By addressing sediment, surface water concerns will also be addressed.

As part of the CERCLA process, PRGs are periodically revised because of new guidance requirements and promulgated or updated ARARs. Final remediation goals will not be formally established until the approval of the Record of Decision (ROD).

8.1.4 Statement of Remedial Action Objectives

RAOs are the medium-specific goals established to protect human health and the environment (USEPA, 1988). The RAOs identified in this section are based on the one COC (Aroclor-1260) retained for Site 10 and consist of the following.

RAO 1: Prevent direct exposure to soil with concentrations of Aroclor-1260 greater than 1,000 µg/kg.

RAO 2: Prevent the erosional transport of Aroclor-1260 through the drainage channel system.

RAO 3: Comply with federal and State ARARs and TBC guidance criteria in accordance with accepted USEPA and MDEQ guidelines.

8.2 GENERAL RESPONSE ACTIONS

GRAs describe categories of actions that could be implemented to satisfy or address a component of the RAOs for the site. Remedial alternatives will be developed using one or more GRAs to meet the RAOs. These remedial alternatives will be capable of achieving the RAOs for each contaminated medium at the site. The following GRAs will be considered for soil and sediment at Site 10:

- No Action
- Limited Action (e.g., Monitored Natural Attenuation, Institutional Controls, Monitoring)
- Containment
- Removal
- In-Situ Treatment
- Ex-Situ (On-Site) Treatment
- Disposal

8.3 ESTIMATED VOLUMES OF CONTAMINATED MEDIA

Due to the relatively small volume of media identified at Site 10, soil and sediment will be addressed as one combined medium. Moreover, soil is assumed to be similar to sediment because subsurface soil is saturated. Lastly, any actions conducted to address contaminated soil would require movement of sediment.

Based on an Aroclor-1260 PRG of 1,000 µg/kg, the approximate areal extent of contamination is presented in Figure 8-1. In all, an estimated 450 yd^3 of contaminated soil/sediment containing 33 pounds of Aroclor-1260 is present at Site 10. Assumptions and calculations used in deriving this estimate are provided in Appendix F.

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TABLE 8-1

ARARs AND TBC CRITERIA
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
PAGE 1 OF 2

Name and Regulatory Citation	Description	Consideration in the Remedial Action Process	Type
		Federal	
USEPA Region III RBC Table	Provides risk-based concentrations for screening of soil.	Relevant and appropriate. These guidelines aid in the screening of chemicals in soil.	Chemical-specific
CERCLA and the NCP Regulations (CFR, Section 300.430)	Discusses the types of post-removal site controls to be established at CERCLA sites.	Applicable. These requirements may be used as guidance in establishing appropriate post-removal site controls at Site 10.	Action-specific
OSHA (29 CFR Part 1910)	Requires establishment of programs to ensure worker health and safety at hazardous waste sites.	Applicable. These requirements apply to response activities conducted in accordance with the NCP. During the implementation of any remedial alternative for Site 10, these regulations must be followed.	Action-specific
Hazardous Materials Transportation Act Regulations (49 CFR 171-179)	Provides requirements for packaging, labeling, manifesting, and transporting hazardous materials.	Applicable. If soil or sediment is excavated and transported and is found to be hazardous, the material would need to be handled, manifested, and transported as a hazardous waste.	Action-specific
National Emissions Standards for Hazardous Air Pollutants (40 CFR Part 61)	Standards promulgated under the Clean Air Act for significant sources of hazardous air pollutants.	Relevant and appropriate. Remedial action (e.g., soil excavation) may result in release of hazardous air pollutants.	Action-specific
(RCRA Treatment, Storage, and Disposal of Hazardous Waste (40 CFR 262-266)	Regulates the treatment, storage, and disposal of hazardous waste.	Relevant and appropriate. Hazardous waste generated by site remediation must meet RCRA generator and treatment, storage, or disposal requirements.	Action-specific
Land Disposal Restrictions (40 CFR Part 61)	Restricts certain listed or characteristic hazardous waste from placement or disposal on land without treatment.	Relevant and appropriate. Excavated soil and sediment or treatment residuals (e.g., spent granular activated carbon) may require disposal in a landfill.	Action-specific
PCBs Waste Removal / 15 USC 2605	Applicable to the storage and disposal of PCB-contaminated materials.	Potentially applicable. Applicable to alternatives that, if present, involve removal of solid wastes/materials containing PCBs greater than 50 ppm.	Action-specific
USEPA PCB Spill Cleanup Policy / 40 CFR §761, Subparts D, N, and O	Provides regulations governing disposal of PCB-contaminated waste (40 CFR §761.60) and cleanup and disposal options for PCB remediation wastes (40 CFR §761.61), which include PCB-contaminated environmental media. Subpart D applies to soils contaminated with PCB at concentrations greater	PCB concentrations in soil are greater than 50 mg/kg; therefore, Subpart D is applicable. Depending on the remedial action alternative, Subparts N and O would be relevant and appropriate.	

TABLE 8-1

ARARs AND TBC CRITERIA
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
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Name and Regulatory Citation	Description	Consideration in the Remedial Action Process	Type
USEPA PCB Spill Cleanup Policy / 40 CFR §761, Subparts D, N, and O (Continued)	than 50 mg/kg. Subparts N and O govern sampling and verification of cleanup levels. Cleanup policy applies to intentional and accidental spills of material containing at least 50 ppm PCB occurring after May 4, 1987. For spills prior to that date, cleanup levels are established on a case-by-case basis using project-specific PCB cleanup levels.	Applicable. The PCB spill is believed to have occurred before May 4, 1987. Discussions with regulators from USEPA and State of Mississippi took place in July 2002. The regulators agreed that state cleanup goals should drive the decision for remedial action (see Appendix F).	Action-specific
State			
MDEQ TRGs (Mississippi Code Section 49-35-21)	Default screening levels. Human Health risk-based cleanup goals for soil and groundwater.	Applicable. These regulations apply to all remedial actions in the State of Mississippi.	Chemical - specific
MDEQ Risk Evaluation Procedures for Voluntary Cleanup and Redevelopment	Risk-based procedures and rationale for site evaluation and remediation.	TBC. These regulations apply to all Voluntary Cleanup and Brownfield actions in the State of Mississippi.	Guidance
MDEQ Office of Pollution Control Hazardous Waste Management Regulations	Adopts by reference specific sections of the federal Hazardous Waste regulations.	Relevant and Appropriate. These regulations may apply if material is removed from the base.	Action-specific

CERLA Comprehensive Environmental Response, Compensation, and Liability Act.
CFR Code of Federal Regulations.
MDEQ Maryland Department of Environmental Quality.
NCP National Oil and Hazardous Substances Pollution Contingency Plan.
OSHA Occupational Safety and Health Act.
PCB Polychlorinated biphenyls.
RBC Risk-Based Concentration.
RCRA Resource Conservation and Recovery Act.
TBC To be considered.
TRG Target Remediation Goal.
USC United States Code.
USEPA United States Environmental Protection Agency.

AREAL EXTENT OF CONTAMINATION

SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT

NSWC GULFPORT

GULFPORT, MISSISSIPPI

FIGURE 3-1

DRAFT
JUNE 2005

9.0 SCREENING OF TECHNOLOGIES AND DEVELOPMENT OF ALTERNATIVES

This section identifies, screens, and evaluates the potential technologies and process options that may be applicable to assemble remedial alternatives for Site 10 at NCBC Gulfport. The primary objective of this phase of the FS is to develop an appropriate range of remedial technologies and process options that will be used for developing remedial alternatives. Technologies for soil and sediment remediation are discussed in Sections 9.1 through 9.3. Remedial alternatives are assembled in Section 9.4 using the technologies and process options that were retained following detailed evaluation.

The basis for remediation technology identification and screening began in Section 8.0 with a series of discussions that included the following:

- Identification of ARARs
- Development of RAOs
- Identification of volumes or areas of media of concern
- Identification of GRAs

Remediation technology screening is performed in this section with the completion of the following analytical steps:

- Identification and screening of remediation technologies and process options
- Evaluation and selection of representative process options

In this section, soil and sediment remediation technologies and process options are first identified for each of the GRAs listed in Section 8.0 and then screened. The selection of remediation technologies and process options for initial screening is based on the Guidance for Conducting Remedial Investigations/Feasibility Studies under CERCLA (USEPA, 1988). The screening is first conducted at a preliminary level to focus on relevant remediation technologies and process options, then the screening is conducted at a more detailed level based on certain evaluation criteria. Finally, process options are selected to represent the remediation technologies that have passed the detailed evaluation and screening.

The evaluation criteria for detailed screening of remediation technologies and process options that have been retained after the preliminary screening are effectiveness, implementability, and cost. The following are descriptions of these evaluation criteria:

- Effectiveness
  - Protection of human health and environment; reduction in toxicity, mobility, or volume; and permanence of solution.
  - Ability of the technology to address the estimated areas or volumes of contaminated media.
  - Ability of the technology to attain the PRGs required to meet the RAOs.
  - Technical reliability (innovative versus well proven) with respect to contaminants and site conditions.

- Implementability
  - Overall technical feasibility at the site.
  - Availability of vendors, mobile units, storage and disposal services, etc.
  - Administrative feasibility.
  - Special long-term considerations (e.g., maintenance and operation requirements).

- Cost (Qualitative)
  - Capital cost.
  - Operation and maintenance (O&M) costs.

Due to the relatively small volume of contaminated media identified at Site 10, soil and sediment will be addressed as one combined medium. Moreover, soil is assumed to be similar to sediment because soils at depth are saturated. Lastly, any actions conducted to address contaminated soil would require movement of sediment.

9.1 PRELIMINARY SCREENING OF SOIL AND SEDIMENT TECHNOLOGIES AND PROCESS OPTIONS

This section identifies and screens remediation technologies and process options for soil and sediment at a preliminary stage based on implementation with respect to site conditions and COCs. Table 9-1 summarizes the preliminary screening of technologies and process options. It presents the GRAs, identifies the technologies and process options, and provides a brief description of each process option followed by the screening comments. The following are the technologies and process options retained for detailed screening:

General Response Action	Remediation Technology	Process Option
No Action	None	Not Applicable
Limited Action	Institutional Controls	Active and Passive Controls
	Monitoring	Sampling and Analysis
Containment	Surface Protection	Concrete/Rip-Rap Cover/Asphalt

General Response Action	Remediation Technology	Process Option
Containment (Continued)	Surface Water Controls	Vertical Barriers
Removal	Excavation	Excavation
Ex-Situ Treatment	Physical/Chemical	Dewatering
		Chemical Fixation/Solidification
Disposal	Landfill	Off-Site Disposal

9.2 DETAILED SCREENING OF REMEDIATION TECHNOLOGIES AND PROCESS OPTIONS

9.2.1 No Action

No action consists of maintaining the status quo at the site. As required under CERCLA regulations, the No Action alternative is carried through the FS to provide a baseline for comparison of alternatives and their effectiveness in mitigating risks posed by site contaminants. Because no remedial actions are conducted under this alternative, there are no costs associated with “walking away from” the site and no reduction in risk through exposure control or treatment.

Effectiveness

No action would not be effective in meeting the RAOs for the site. No action would not be effective in evaluating either potential contaminant reduction through natural attenuation or potential contaminant migration off site because no monitoring would be performed.

Implementability

There would be no implementability concerns because no actions would be implemented.

Cost

There would be no costs associated with no action.

Conclusion

No action is retained for comparison to other options.

9.2.2 Limited Action

9.2.2.1 Institutional Controls

Institutional controls would consist of access restrictions and land use controls (LUCs). Access restrictions would consist of expanding and maintaining existing fencing at the site to prevent access by trespassers. LUCs would consist of preparing and implementing a Land-Use Control Implementation Plan (LUCIP), that would prohibit current site users from being exposed to contaminants and deed restrictions to prevent the site from being used in the future for residential purposes.

Effectiveness

Restricting site access and LUCs would prevent direct exposure of human receptors to contaminated soil and sediment but would not prevent erosional transport of PCBs through the drainage channel system.

Implementability

Institutional controls would be readily implementable. Legal requirements for property transfer would need to be met in the event of base closure. Additionally, existing fencing would need to be expanded and maintained to prevent human exposure to Aroclor-1260 concentrations greater than the PRG. Site controls would be easy to formulate and implement. Resources are readily available for the implementation of institutional controls.

Cost

Costs of institutional controls would be low compared to active remedial measures.

Conclusion

Institutional controls are retained in combination with other process options for the development of remedial alternatives.

9.2.2.2 Monitoring

Monitoring would consist of regularly collecting and analyzing samples of media (e.g., sediment) from the site to evaluate trends in concentrations and check for potential migration. Monitoring may be considered when contaminated media are left in place without treatment.

Effectiveness

Monitoring would not of itself remediate Aroclor-1260 concentrations in soil and sediment. However, monitoring would be an effective tool to evaluate potential trends in PCB concentrations and to detect potential future migration.

Implementability

A sampling and analysis program could be readily implemented. Sampling is a routine activity that can be performed by qualified and trained personnel. Environmental consulting firms that offer sampling and laboratory services are readily available.

Cost

Capital and O&M costs of monitoring would be low compared to active remedial measures.

Conclusion

Monitoring is retained in combination with other process options for the development of remedial alternatives.

9.2.3 Containment

9.2.3.1 Surface Protection

Surface protection would consist of providing a barrier to prevent direct exposure to contaminated soil and sediment. Additionally, this technology would minimize potential off-site migration of contaminated soil and sediment via erosion. The impacted drainage channel could be lined with concrete and/or rip rap, and impacted soil could be covered with an asphalt pavement.

Effectiveness

Surface protection would be effective in preventing direct contact with contaminated surface soil and sediment. The surface protection would also be effective in minimizing erosion. The installed surface protection would need to be inspected and maintained/repaired to ensure its effectiveness over time.

Implementability

Surface protection would be easy to implement, and the resources, materials, and services required to implement this technology are readily available.

Cost

Capital and O&M costs for surface protection would be moderate.

Conclusion

Surface protection is retained in combination with other process options for the development of remedial alternatives.

9.2.3.2 Surface Water Controls

Surface water controls would consist of using vertical barriers to contain or divert surface or storm water in order to minimize the potential for infiltration and/or migration of contaminated soil and sediment.

Vertical barriers would consist of sheet piling and silt curtains. Sheet piling consists of an impervious barrier that would be installed around remediation work areas to divert surface water. Silt curtains are permeable barriers that would be installed immediately downstream/downgradient from areas of concern to prevent migration of contaminated soil or sediment from these areas.

Effectiveness

Surface water controls would not reduce PCB concentrations, but they would generally be effective in diverting surface water from areas being remediated and in minimizing migration of contaminated soil or sediment particles entrained in surface water.

Sheet piling in conjunction with pumping would be effective in diverting water around specific sections of the Site 10 drainage channel. Silt curtains would be effective for capturing suspended soil or sediment particles resulting either from natural surface water erosion or on-going remedial activities such as excavation or dredging.

Implementability

Surface water controls would be easy to implement. The resources, equipment, and materials required for the installation and maintenance of sheet piling and silt curtains are readily available.

Cost

The cost of installing, operating, and maintaining sheet piling and pumping systems and silt curtains would be low.

Conclusion

Surface water controls, including sheet piling and silt curtains, are retained in conjunction with other remedial technologies for the formulation of remedial alternatives for Site 10.

9.2.4 Removal

The only technology considered under this GRA is excavation. Excavation can be performed by a variety of equipment such as tractor shovels (front-end loaders), backhoes, grade-alls, etc. The type of equipment selected must take into consideration several factors such as the type of material to be removed, the load-bearing capacity of the ground surrounding the removal area, the depth and areal extent of removal, the required rate of removal, and the elevation of the groundwater table. Excavation is the technology of choice for the removal of well-consolidated material such as soil to depths of up to 30 feet and from well-defined areas of ground with significant load-bearing capacity (i.e., greater than 1,500 pounds per square foot).

The logistics of excavation must take into account the available space for operating the equipment, loading/unloading to transport the removed material, location of the site, etc. After excavation is completed, the location would be filled and graded with clean fill material or treated soils, and the area would be restored to pre-excavation conditions.

Effectiveness

Excavation is a well-proven and effective method of removing contaminated material from a site. Properly designed excavation activities would remove contaminated soil and sediment such that the site meets RAOs.

Sampling is typically required to verify the effectiveness of the removal action. Soil and sediment samples would be collected from the sidewalls and, as applicable, from the bottom of the excavation. These samples would be analyzed for PCBs to ensure that the remaining soil is not contaminated at unacceptable levels.

Implementability

Excavation of contaminated soil at Site 10 would be somewhat easy to implement; however, surface water controls would need to be implemented to divert surface water from excavation areas within the drainage channel. Dewatering may also be required if excavated soils or sediments are saturated.

Excavation equipment and or services are readily available from multiple vendors or contractors. This technology is well proven and established in the construction/remediation industry. During excavation, site-specific health and safety procedures and Occupational Safety and Health Act (OSHA) regulations would have to be complied with to ensure that the exposure of the workers to contaminated media is minimized. This would include the wearing of appropriate personal protective equipment (PPE).

Other than the pedestrian bridge that spans the drainage channel, there are no major structures that would hinder excavation activities. Because of the proximity to public places, dust and debris produced as a result of excavation must be strictly controlled.

Cost

The cost of excavating contaminated soil and sediment would be low to moderate.

Conclusion

Excavation is retained in combination with other process options for the development of remedial alternatives.

9.2.5 Ex-Situ Treatment

The following technologies were retained under this GRA: dewatering and chemical fixation/solidification.

9.2.5.1 Dewatering

Dewatering is a process for reducing the free water content of solid wastes. Dewatering would likely be required to reduce free water present in contaminated sediment removed from certain sections of the Site 10 drainage ditch and deeper soils to improve handling and reduce volumes/weights prior to additional treatment and disposal.

Dewatering can be achieved either through passive (gravity-aided) decantation, such as drainage of free water from stockpiled material, or by mechanical expression. Depending on the physical characteristics

of the material to be dewatered, specialized mechanical equipment such as belt filter presses, plate-and-frame filter presses, vacuum filters, and centrifuges may be used.

Stockpiling of wet sediment on a lined pad would cause most of the free water to decant from the sediment due to gravity and to some extent to mechanical compression of the lower layers of stockpiled sediment by the weight of the upper layers. The separated water could then be collected into a sump. If necessary, the removed free water would be treated on site using such technologies as granular activated carbon (GAC) adsorption prior to discharge to local surface water or sewage treatment system.

Mechanical dewatering techniques would utilize pressure, vacuum, or centrifugal forces to force the liquid phase through semipermeable membranes or to separate free water from sediment. As with stockpiling, the released water would be treated if required and discharged to local surface water or sewage treatment system.

Effectiveness

Both stockpiling and mechanical dewatering would be effective in removing sufficient water from saturated material. Dewatered material would be more easily handled during transportation, treatment, and disposal. Mechanical dewatering is usually more efficient than stockpiling because the rate and extent of dewatering are usually higher when forces greater than gravity alone are applied to separate solids from liquids. However, the presence of significant fractions of vegetative matter (i.e., matted leaves, twigs, and stems) would be expected to make mechanical expression of water difficult. By itself, dewatering would not reduce the Aroclor-1260 concentrations in soil and sediment.

Implementability

Stockpiling and mechanical dewatering would be relatively easy to implement. The resources, equipment, and materials required for the application of both technologies are readily available. Stockpiling would be simpler to implement than mechanical dewatering but would require significantly more space. Mechanical dewatering equipment would require electrical power for their operation, and mechanical equipment typically would require more maintenance and service than equipment associated with stockpiling.

Cost

The capital and O&M costs of stockpiling would be low. The capital and O&M costs of mechanical dewatering would be moderate.

Conclusion

Stockpiling is retained in conjunction with other remedial technologies for the formulation of remedial alternatives for soil and sediment. Mechanical dewatering is eliminated from further consideration because its greater effectiveness is not required, and it would be more difficult and more costly to implement than stockpiling.

9.2.5.2 Chemical Fixation/Solidification

Chemical fixation/solidification consists of mixing the contaminated material to be treated, typically a soil or sludge, with chemical reagents that bind the COCs within the matrix of the material being treated. The most common fixation/solidification reagents are pozzolanic-based materials such as Portland Cement, cement kiln dust, and fly ash. Chemicals such as quick lime or proprietary reagents (e.g., organophilic compounds) are also often added to the fixation/solidification reagents to increase their effectiveness of treatment, especially if organic contaminants are present that may not readily respond to pozzolanic-based binding.

The mixing of the material to be treated with the chemical reagents is normally accomplished in the presence of a controlled amount of water with specialized mechanical blending equipment such as a pug mill. After the material is mixed with the chemical reagents, it is allowed to cure for a specified time period. The duration of curing is dependent on the strength required before handling or disposal. The solidified material can be formed into monolithic blocks or can be made into a granular material that would have the consistency of a soil-cement.

Effectiveness

The effectiveness of chemical fixation/solidification is highly dependent on the type of material being treated and the kind of contaminant(s) being immobilized; therefore, the process must be designed to accommodate each specific application. A thorough physical and chemical characterization of the material to be treated and COCs to be immobilized is needed, and treatability testing must typically be performed to determine the most suitable fixation/solidification reagents, the mixing ratios, and any special pretreatment or material handling methods that may be required.

Pozzolanic fixation is likely to be effective for the immobilization of the moderate concentrations of Aroclor-1260, but it would not remove this contaminant completely and further treatment and or disposal would be required. Most chemical fixation/solidification processes, including in particular the use of pozzolanic reagents, result in an increase in the volume and mass of the treated material, which could

significantly affect off-site disposal. A better estimate of the projected increase in volume can be determined following treatability studies.

Implementability

Chemical fixation/solidification would be readily implementable. The necessary equipment and resources are available for this technology to be implemented either on site or at most permitted off-site treatment storage or disposal facilities (TSDFs). For the treatment of Site 10 soil and sediment, chemical fixation/solidification would most likely be performed off site, immediately prior to disposal. Off-site treatment at a fixed-base facility would be easier to implement, and it would also reduce the cost of off-site transportation and disposal of the treated product, which is typically greater in volume and mass than the untreated soil. Treatability tests would be required prior to implementation to determine the appropriate chemicals and mixing ratios.

Cost

Capital and O&M costs of off-site chemical fixation/solidification would be low compared to on-site treatment.

Conclusion

Chemical fixation/solidification is retained in combination with other technologies and process options for the development of remedial alternatives for off-site disposal.

9.2.6 Disposal

The only technology considered under this GRA is off-site disposal. Off-site disposal consists of transporting the excavated material for burial in a permitted off-site TSDF. Resource Conservation and Recovery Act (RCRA) non-hazardous waste may be disposed in a RCRA Subtitle D, or solid waste, landfill. RCRA hazardous waste must be disposed in a RCRA Subtitle C, or hazardous waste, landfill. It is anticipated that the portion of the excavated Site 10 soil that does not contain PCBs would be classified as RCRA non-hazardous while the portion that does would be classified as RCRA hazardous.

Effectiveness

Off-site disposal does not permanently or irreversibly reduce contaminant concentrations. However, although the CERCLA preference for treatment relegates direct landfilling to a less preferable option, this technology can be an effective disposal option for contaminated soil and sediment. Off-site landfills are only permitted to operate if they meet certain requirements of design and operation governing foundation,

liner, leak detection, leachate collection and treatment, daily cover, post-closure inspections and monitoring, etc., which ensure the effectiveness of these facilities. The requirements of a RCRA Subtitle C hazardous waste landfill are typically significantly more stringent than those of a RCRA Subtitle D solid waste landfill. RCRA Subtitle C TSDFs would be required to employ treatment to meet land disposal restrictions prior to landfilling if any of the soil and sediment from Site 10 exceeds Toxicity Characteristics Leaching Procedure (TCLP) criteria. TSCA-permitted landfills, which have additional stringent requirements, could be employed for the disposal of the PCB-contaminated soil from Site 10. Non-hazardous soil and inert debris can be disposed in a RCRA Subtitle D facility.

Implementability

Off-site disposal with or without treatment would be easily implementable. Permitted RCRA Subtitle C TSDFs and Subtitle D landfill facilities are available for this purpose.

Cost

Costs of off-site disposal would be low to moderate for disposal at a RCRA Subtitle D solid waste landfill and high for treatment/disposal at a RCRA Subtitle C hazardous waste landfill.

Conclusion

Off-site disposal is retained in combination with other process options for the development of remedial alternatives.

9.3 SELECTION OF SOIL REMEDIATION TECHNOLOGIES AND PROCESS OPTIONS

The following technologies and process options are retained to develop soil remedial alternatives:

- No Action
- Institutional Controls
- Monitoring
- Surface Protection
- Surface Water Controls
- Excavation
- Dewatering
- Chemical Fixation/Solidification
- Off-Site Disposal

9.4 DEVELOPMENT OF ALTERNATIVES

Alternatives have been developed based on an assembly of the technologies selected under each of the GRAs. The assembly of alternatives follows the assembly of GRAs discussed in Section 8.0. The following discusses the assembly of alternatives.

Alternative 1: No Action

This is used as the baseline to use for comparison with other alternatives.

Alternative 2: Institutional Controls and Monitoring

Institutional controls would consist of restricting access to soil with concentrations of Aroclor-1260 greater than 1,000 µg/kg and controlling future land use. Existing fencing at Site 10 would be expanded. Site controls would be developed and implemented to prevent residential development of Site 10. Signs would be posted to warn against unauthorized digging activities.

Monitoring would consist of annually collecting samples of sediment and surface water and analyzing these samples for PCBs. Two surface water and two sediment samples would be collected within the area of known contamination. Additionally, two surface water and two sediment samples would be collected immediately downgradient of the fenced area to detect potential migration of PCBs.

Every 5 years, the status of the site would be formally reviewed and evaluated to determine the continued effectiveness of this alternative.

Alternative 3: Surface Water Controls, Excavation, Surface Protection, Institutional Controls, and Monitoring

Within the drainage channel, surface water controls would be used to divert water from work areas. Marine-grade PVC sheet piling would be used to section off portions of the drainage channel, and pumps (e.g., bladder-type mud pumps) would be used to remove water from within the cordoned-off sections.

Excavation would be performed within the area designated for surface protection and would be limited to the top 9 inches of soil or sediment. This limited excavation would be conducted to allow the surface protection to be placed at grade with the existing ground surface. The area to be excavated would first be cleared and grubbed, and the pedestrian bridge would be removed. Next, approximately 45 yd^3 of vegetation, soil, and sediment would be removed and disposed at an approved off-site facility. Based on data collected during the RI/FS, it is assumed that the excavated material would be characterized as non-hazardous waste. It is also anticipated that excavated material would not need to be dewatered.

Surface protection would be installed at Site 10 to prevent direct contact with PCB-contaminated media and to prevent erosional transport of PCBs in the shallow sediment. As part of this component, approximately 85 linear feet of the drainage channel would be lined with a 9-inch -thick layer of concrete and/or rip rap and approximately 27 square yards (yd^2) of soil would be paved (consisting of a 6-inch stone base, a 2-inch binder course layer, and a 1-inch wearing course layer). Because direct contact with contaminated media would be prevented by installing surface protection, existing fencing present at Site 10 would not be needed and would be removed. Additionally, a new pedestrian bridge would be constructed across the drainage channel to replace the one removed to facilitate excavation activities.

Site controls would be developed and implemented to prevent residential development of Site 10. Signs would be posted to warn against unauthorized digging activities. Periodic inspections would be required to ensure that the integrity of the surface protection is not compromised and to determine whether maintenance to the surface protection is required.

Monitoring would consist of annually collecting samples of sediment and surface water and analyzing these samples for PCBs. Two surface water and two sediment samples would be collected immediately downgradient of the surface protection to detect potential migration of PCBs. Every 5 years, the status of the site would be formally reviewed and evaluated to determine the continued effectiveness of this alternative.

Alternative 4: Surface Water Controls, Excavation, Dewatering, Off-Site Treatment and Disposal

Within the drainage channel, surface water controls would be used to divert water from work areas. Marine-grade PVC sheet piling would be used to section off portions of the drainage channel, and pumps (e.g., bladder-type mud pumps) would be used to remove water from within the cordoned-off sections.

Approximately 450 yd^3 of soil with concentrations of PCBs greater than 1,000 µg/kg would be excavated. The area to be excavated would be cleared and grubbed and the pedestrian bridge would be removed. Excavation of the contaminated material would be accomplished with a Gradall-type excavator, backhoe, or similar type of equipment. The sidewalls of the excavation would be shored to minimize the amount of soil required to be excavated to reach soils at depth. Pre-excavation sampling would be conducted to verify the depth of excavation. After sampling activities have verified the removal of contaminated material, the excavated areas would be backfilled with imported clean soil. The excavated areas would also be graded to original grade and native vegetation would be planted. Additionally, a new pedestrian bridge would be constructed across the drainage channel.

Excavated material would be dewatered by stockpiling it in staging/dewatering cells constructed for this purpose. The cells would be constructed on the parade deck just south of the drainage channel. The free water draining from the cells would be collected in a sump and, if necessary, treated prior to surface water discharge. It is assumed that two sediment staging/dewatering cells would be constructed and operated at Site 10. After the material is sufficiently dewatered, it would be placed in a roll-off dumpster for transport.

Excavated soil would be transported and disposed at a permitted off-site TSDF. The type of TSDF and pre-treatment requirements prior to ultimate disposal by landfilling would be dictated by the anticipated characteristics of the excavated material.

As part of pre-excavation sampling, samples would be collected to further refine the extent of soil that contains PCBs at concentrations greater than 50,000 µg/kg. It is assumed that approximately 100 yd^3 of excavated material would contain PCB concentrations greater than 50,000 µg/kg and would require disposal at a TSCA-certified TSDF. It is also assumed that prior to ultimate disposal by landfilling, the TSDF would pre-treat that entire fraction of the excavated material by chemical fixation/solidification to meet disposal requirements. Lastly, it is assumed that the remaining 350 yd^3 would be classified as RCRA non-hazardous and would be disposed by landfilling at a permitted off-site RCRA Subtitle D TSDF.

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TABLE 9-1

PRELIMINARY SCREENING OF SOIL AND SEDIMENT REMEDIATION TECHNOLOGIES AND PROCESS OPTIONS
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
PAGE 1 OF 3

General Response Action	Remedial Technology	Process Option	Description	Screening Comment
No Action	None	Not applicable	No activities conducted at the site to address contamination.	Required by NCP. Retain for baseline comparison to other technologies.
Limited Action	Institutional Controls	Active Controls: Physical Barriers/ Security Guards	Fencing, markers, warning signs, and monitoring to restrict site access.	Retain to minimize risk of exposure to contaminated soil and sediment. Fencing already exists around parts of Site 10.
		Passive Controls: Deed or Land Use Restrictions	Administrative action using property deeds or other land use prohibitions to restrict future site activities.	Retain to prevent future residential development.
	Monitoring	Sampling and Analysis	Sampling and analysis of site media to evaluate migration of chemical constituents in the environment.	Retain to assess migration of chemical constituents from Site 10.
Containment	Surface Protection	Concrete/Rip-Rap Cover/Asphalt	Installation of a cover to prevent direct exposure with contaminated soil and sediment and to prevent migration of contaminants through erosion.	Retain. An appropriate cover would prevent direct exposure to PCBs and erosion of PCBs through the drainage channel system.
	Surface Water Controls	Vertical Barriers	Installation of a vertical barrier to prevent water from entering into the work area and to prevent erosion of contaminated materials from work areas.	Retain. Vertical barriers such as sheet piling and silt screens are common methods for surface water control.
Removal	Bulk Excavation	Excavation	Use of construction equipment such as backhoe, front-end loader, gradall, etc. to remove contaminated soil and sediment.	Retain. Excavation would effectively remove contaminated soil and sediment from the site.
In-Situ Treatment	Biological	Anaerobic/Aerobic Treatment	Innoculation of microorganisms and nutrients to enhance naturally occurring biodegradation of COCs.	Eliminate because PCBs are very persistent and can only be biodegraded under carefully controlled environments that are not practical to implement in situ.

TABLE 9-1

PRELIMINARY SCREENING OF SOIL AND SEDIMENT REMEDIATION TECHNOLOGIES AND PROCESS OPTIONS
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
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General Response Action	Remedial Technology	Process Option	Description	Screening Comment
In-Situ Treatment (continued)	Physical/ Chemical	Dynamic Underground Stripping	Injection of steam at the periphery of the contaminated area to volatilize COCs and removal of these COCs through a centrally located extraction well.	Eliminate because of the low volatility of PCBs.
		Soil Vapor Extraction	Use of vacuum and possibly air sparging to volatilize COCs.	Eliminate because PCBs are not volatile.
		Chemical Fixation/ Solidification	Mixing of pozzolanic agents in the vadose zone to chemically fix COCs and solidify the matrix. This technology is primarily used to reduce the mobility of contaminants, but it can also be used to prepare a surface barrier.	Eliminate because the use of this technology to prepare a surface barrier by in-situ application would be difficult to control due to the very heterogeneous nature of the contaminated soil and sediment.
	Thermal	Vitrification/ Radiofrequency Heating	Use of moderate to high temperature to either volatilize COCs or to fuse them into a glass matrix.	Eliminate because PCBs are not volatile and in-situ application of this technology would be difficult to control due to the very heterogeneous nature of the soil and sediment.
Ex-Situ Treatment	Physical/ Chemical	Dewatering	Removal of water from saturated material.	Retain as a method to facilitate the handling of excavated material.
		Chemical Fixation/ Solidification	Mixing of pozzolanic agents to chemically fix COCs and to solidify the matrix.	Retain for the potential treatment of excavated soil and sediment to meet off-site disposal requirements.
	Biological	On-Site Landfarming	Spreading and tilling of contaminated soil into layers of clean surface soil to aerate and biodegrade organic COCs.	Eliminate because it would not be effective for the removal for a biologically recalcitrant chemical such as Aroclor-1260. Also, no suitable area is available for this purpose on base.

TABLE 9-1

PRELIMINARY SCREENING OF SOIL AND SEDIMENT REMEDIATION TECHNOLOGIES AND PROCESS OPTIONS
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT, MISSISSIPPI
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General Response Action	Remedial Technology	Process Option	Description	Screening Comment
Ex-Situ Treatment (Continued)	Biological (Continued)	Bioslurry Reactor/Biopile	Treatment of soil in a bioslurry reactor or biopile under controlled conditions using natural or cultured microorganisms to biodegrade organic COCs.	Eliminate because it would not be effective for the removal for a biologically recalcitrant chemical such as Aroclor-1260.
	Thermal	Incineration	Use of high temperatures to destroy COCs.	Would effectively destroy PCBs, but is not necessary because waste material is solid and with a PCB concentration of less than 500 mg/kg.
		Low-Temperature Thermal Desorption (LTTD)	Use of low to moderate temperatures to evaporate COCs and remove them from soil.	Eliminate because it would be questionable in removing PCBs.
Disposal	Landfill	On-Site Landfilling	Disposal of excavated soil and treatment residues in an on-site landfill.	Eliminate because no suitable area is available on bse for this pupose.
		Off-Site Landfilling	Disposal of excavated soil and sediment and treatment residues in an off-base permitted TSDF. Disposal of recovered material such as metallic lead pieces.	Retain landfilling and recycling.

10.0 ASSEMBLY AND DETAILED ANALYSIS OF REMEDIAL ALTERNATIVES

In this section, the remedial technologies retained from the technology screening process conducted in Section 9.0 are assembled into multiple remedial alternatives. The following sections contain descriptions of these alternatives and provide a detailed analysis of these alternatives in accordance with the CERCLA evaluation criteria.

10.1 INTRODUCTION

This section presents an evaluation of each remedial alternative with respect to the criteria of the NCP of 40 Code of Federal Regulations (CFR) Part 300, as revised in 1990. The criteria as required by the NCP and the relative importance of these criteria are described in the following subsections.

10.1.1 Evaluation Criteria

In accordance with the NCP (40 CFR 300.430), the following nine criteria are used for the evaluation of remedial alternatives:

- Overall Protection of Human Health and the Environment
- Compliance with ARARs
- Long-Term Effectiveness and Permanence
- Reduction of Toxicity, Mobility, and Volume through Treatment
- Short-Term Effectiveness
- Implementability
- Cost
- State Acceptance
- Community Acceptance

10.1.1.1 Overall Protection of Human Health and the Environment

Alternatives must be assessed for adequate protection of human health and the environment, in both the short and long term, from unacceptable risks posed by hazardous substances or contaminants present at the site. For this purpose, alternatives should eliminate, reduce, or control exposure to levels of contaminants exceeding remediation goals. Overall protection draws on the assessments of other evaluation criteria, especially long-term effectiveness and permanence, short-term effectiveness, and compliance with ARARs.

10.1.1.2 Compliance with ARARs

Alternatives must be assessed to determine whether they attain ARARs under federal and State environmental or facility siting regulations. If one or more regulations that are applicable cannot be complied with, a waiver must be invoked by the appropriate regulatory body for the alternative to be considered acceptable. Grounds for invoking a waiver would depend on the following circumstances:

- The alternative is an interim measure and will become part of a total remedial action that will attain the ARAR.
- Compliance will result in greater risk to human health and the environment.
- Compliance is technically impracticable from an engineering perspective.
- The alternative will attain a standard of performance that is equivalent to that required under the otherwise applicable standard, requirement, or limit through use of another method or approach.
- A state requirement has not been consistently applied, or the state has not demonstrated the intention to consistently apply the promulgated requirement in similar circumstances at other remedial actions within the state.
- For CERCLA-financed response actions only, an alternative that attains the ARAR will not provide a balance between the need for protection of human health and the environment at the site and the availability of CERCLA monies to respond to other sites that may present a threat to human health and the environment.

10.1.1.3 Long-Term Effectiveness and Permanence

Alternatives must be assessed for the long-term effectiveness and permanence they offer, along with the degree of certainty that the alternative will prove successful. Factors that shall be considered as appropriate include the following:

- Magnitude of Residual Risk - Residual risk is posed by untreated waste or treatment residuals at the conclusion of remedial activities. The characteristics of residuals should be considered to the degree that they remain hazardous, taking into account their volume, toxicity, mobility, and propensity to bioaccumulate.

- Adequacy and Reliability of Controls - Controls such as containment systems and institutional controls that are necessary to manage treatment residuals and untreated waste must be shown to be reliable. In particular, the following should be addressed: the uncertainties associated with land disposal for providing long-term protection from residuals; the potential need to replace technical components of an alternative such as a cap, slurry wall, or treatment system; and the potential exposure pathways and risks posed should the remedial action need replacement.

10.1.1.4 Reduction of Toxicity, Mobility, or Volume through Treatment

The degree to which the alternative employs recycling or treatment that reduces the toxicity, mobility, or volume shall be assessed, including how treatment is used to address the principal threats posed by the site. Factors that shall be considered, as appropriate, include the following:

- The treatment or recycling processes the alternative employs and the materials that they will treat.

- The amount of hazardous substances, pollutants, or contaminants that will be destroyed, treated, or recycled.

- The degree of expected reduction in toxicity, mobility, or volume of waste due to treatment or recycling and the specification of which reductions are occurring.

- The degree to which the treatment is irreversible.

- The type and quantity of residuals that will remain following treatment considering the persistence, toxicity, mobility, and propensity to bioaccumulate of hazardous substances and their constituents.

- The degree to which treatment reduces the inherent hazards posed by principal threats at the site.

10.1.1.5 Short-Term Effectiveness

The short-term impacts of the alternative shall be assessed considering the following:

- Short-term risks that might be posed to the community during implementation.

- Potential impacts on workers during remedial action and the effectiveness and reliability of protective measures.

- Potential environmental impacts of the remedial action and the effectiveness and reliability of mitigative measures during implementation.

- Time until protection is achieved.

10.1.1.6 Implementability

The ease or difficulty of implementing the alternatives shall be assessed by considering the following types of factors, as appropriate:

- Technical feasibility, including technical difficulties and unknowns associated with the construction and operation of a technology, the reliability of the technology, ease of undertaking additional remedial actions, and the ability to monitor the effectiveness of the remedy.

- Administrative feasibility, including activities needed to coordinate with other offices and agencies, and the ability and time required to obtain any necessary approvals and permits from other agencies.

- Availability of services and materials, including the availability of adequate off-site treatment, storage capacity, and disposal capacity and services; the availability of necessary equipment and specialists and provisions to ensure necessary additional resources; the availability of services and materials; and the availability of prospective technologies.

10.1.1.7 Cost

Capital costs shall include both direct and indirect costs. Annual O&M costs shall be provided. A net present value of the capital and O&M costs shall also be provided. Typically, the cost estimate accuracy range is plus 50 percent to minus 30 percent.

10.1.1.8 State Acceptance

The state's concerns that must be assessed include the following:

- The state's position and key concerns related to the preferred alternative and other alternatives.
- State comments on ARARs or the proposed use of waivers.

These concerns cannot be evaluated at this time in the FS until the State has reviewed and commented on the FS. These concerns will be discussed, to the extent possible, in the Proposed Plan to be issued for public comment.

10.1.1.9 Community Acceptance

This assessment consists of responses of the community to the Proposed Plan. This assessment includes determining which components of the alternative interested persons in the community support, have reservations about, or oppose. This assessment can be done after comments on the Proposed Plan are received from the public.

10.1.2 Relative Importance of Criteria

Among the nine criteria, the threshold criteria are considered to be the following:

- Overall Protection of Human Health and the Environment
- Compliance with ARARs (excluding those that may be waived)

The threshold criteria must be satisfied for an alternative to be eligible for selection.

Among the remaining criteria, the following five criteria are considered to be the primary balancing criteria:

- Long-Term Effectiveness and Permanence
- Reduction of Contaminant Toxicity, Mobility, or Volume through Treatment
- Short-Term Effectiveness
- Implementability
- Cost

The balancing criteria are used to weigh the relative merits of alternatives.

The remaining two of the nine criteria, State Acceptance and Community Acceptance, are considered to be modifying criteria that must be considered during remedy selection. These last two criteria can be evaluated after the FS has been reviewed by MDEQ and the Proposed Plan has been discussed in a public meeting. Therefore, this document addresses only seven of the nine criteria.

10.1.3 Selection of Remedy

The selection of a remedy is a two-step process. The first step consists of identification of a preferred alternative and presentation of the alternative in a Proposed Plan to the community for review and comment. The preferred alternative must meet the following criteria:

- Protection of human health and the environment.
- Compliance with ARARs unless a waiver is justified.
- Cost effectiveness in protecting human health and the environment and in complying with ARARs.
- Utilization of permanent solutions and alternate treatment technologies or resource recovery technologies to the maximum extent practicable.

The second step consists of the review of the public comments and the determination, in consultation with MDEQ, as to whether or not the preferred alternative continues to be the most appropriate remedial action for the site.

10.2 ASSEMBLY OF REMEDIAL ALTERNATIVES

Based on the technology screening presented in Section 9.0, the following four remedial alternatives were developed.

- Alternative 1: No Action
- Alternative 2: Institutional Controls and Monitoring
- Alternative 3: Surface Water Controls, Excavation, Surface Protection, Institutional Controls, and Monitoring
- Alternative 4: Surface Water Controls, Excavation, Dewatering, Off-Site Treatment and Disposal

Alternative 1 was developed and analyzed to serve as a baseline for other alternatives, as required by CERCLA and the NCP. Alternative 2 was formulated and analyzed to evaluate the adequacy of minimal action. Alternatives 3 and 4 were formulated and analyzed to evaluate active remediation. Descriptions and detailed analyses of these alternatives are presented in the following sections.

10.3 DETAILED ANALYSIS OF REMEDIAL ALTERNATIVES

10.3.1 <u>Alternative 1: No Action</u>

10.3.1.1 Description

The no action alternative maintains the site as is. This alternative does not address site contamination and is only retained to provide a baseline for comparison to other alternatives. There would be no reduction in toxicity, mobility, or volume of PCBs other than what might result from natural dispersion,

dilution, and other attenuating factors. Existing monitoring programs and institutional controls would be discontinued, and the site would be available for unrestricted use.

10.3.1.2 Detailed Analysis

Overall Protection of Human Health and the Environment

Alternative 1 would not provide protection of human health and the environment. Under the current land-use scenario (industrial/military), the potential for human contact with PCB concentrations in soil would remain. The primary exposure route would be through construction activities because controls would not be in place to prevent unauthorized digging activities from occurring. If unauthorized digging occurred, construction workers could be exposed to contaminated material primarily through dermal contact and to a lesser extent through ingestion of soil. Additionally, this alternative would not be protective of potential future residents because soil could erode over time and humans could be exposed to elevated PCB concentrations found in deeper soil. Moreover, these exposed soils could migrate through the drainage channel system via erosion.

PCB concentrations in soil are not expected to migrate into the groundwater of Site 10 based on the low leaching potential of PCBs. As a result, this alternative would be protective of humans who would consume or come into contact with Site 10 groundwater in the future.

Compliance with ARARs and TBCs

Alternative 1 would not comply with chemical-specific ARARs or TBCs because no action would be taken to reduce contaminant concentrations. There are no location-specific ARARs identified for Site 10. Action-specific ARARs or TBCs are not applicable because no action would be taken.

Long-Term Effectiveness and Permanence

Alternative 1 would have no long-term effectiveness and permanence because soil with Aroclor-1260 concentrations greater than the Mississippi unrestricted TRG would remain on site. Since there would be no institutional controls to control land use, the potential would exist for human exposure to PCB concentrations (primarily construction workers). Because there would be no monitoring, potential PCB migration would not be detected. Although PCB concentrations might eventually decrease to acceptable levels through natural attenuation in the very long term, monitoring would not be in place to verify this condition.

Reduction of Toxicity, Mobility, or Volume through Treatment

Alternative 1 would not reduce toxicity, mobility, or volume of PCBs through treatment because no treatment would occur. Some reduction of PCB toxicity and volume might occur through natural dispersion, dilution, or other attenuation process in the very long term, but no monitoring would be performed to verify this condition.

Short-Term Effectiveness

Because no action would occur, implementation of Alternative 1 would not pose any risks to on-site workers or result in short-term adverse impact to the local community and the environment. Alternative 1 would never achieve the RAOs and, although the Aroclor-1260 PRG might eventually be achieved through natural attenuation in the very long term, monitoring would not be in place to verify this condition.

Implementability

Because no action would occur, Alternative 1 would be readily implementable. The technical feasibility criteria, including constructability, operability, and reliability, are not applicable. Implementability of administrative measures is not applicable because no such measures would be taken.

Cost

There would be no costs associated with the no action alternative.

10.3.2 Alternative 2: Institutional Controls and Monitoring

10.3.2.1 Description

Alternative 2 consists of institutional controls and monitoring.

Component 1: Institutional Controls

Institutional controls would consist of restricting access to soil with concentrations of Arocor-1260 greater than 1,000 µg/kg and controlling future land use. Fencing at Site 10 would be expanded as indicated on Figure 10-1. LUCs would be developed and implemented to prevent residential development of Site 10. Signs would be posted to warn against unauthorized digging activities.

Component 2: Monitoring

Monitoring would consist of regularly collecting samples of sediment and surface water and analyzing these samples for PCBs. Samples would be collected within the drainage channel system as shown on Figure 10-1. Two surface water and two sediment samples would be collected within the area of known contamination. Additionally, two surface water and two sediment samples would be collected immediately downgradient of the fenced area to detect potential migration of PCBs.

For costing purposes, monitoring would consist of annual sampling for a period of 30 years. Every 5 years, the status of the site would be formally reviewed and evaluated to determine the continued effectiveness of this alternative.

10.3.2.2 Detailed Analysis

Overall Protection of Human Health and the Environment

Alternative 2 would provide some protection of human health. Under the current land-use scenario, the potential for human contact with PCB concentrations in soil would be diminished because fencing would restrict human access to impacted areas. Other controls such as digging restrictions and prohibiting future residential development of the area would be protective of human health by preventing exposure to contaminated soil. However, activities under Alternative 2 would not prevent erosional transport of PCB-contaminated shallow soil and sediment from occurring. As a result, minor impacts to surface water (such as observed in the RI/FS surface water data) could occur.

PCBs in soil are not expected to migrate into the groundwater of Site 10 based on the low leaching potential of PCBs. As a result, this alternative is assumed to be protective of humans who would consume or come into contact with Site 10 groundwater in the future.

Monitoring not would be protective of the environment. Attenuation of PCB concentrations would likely occur through erosional processes rather than biodegradation based on the fate and transport properties of PCBs. If the results of monitoring conducted as part of this alternative indicate that contaminants are migrating and that migration could have a negative environmental impact, contingency remedies (e.g., implementation of a sediment recovery trap) would be implemented to prevent such an occurrence.

Compliance with ARARs and TBCs

Alternative 2 would comply with action-specific ARARs and TBCs. This alternative would not comply with chemical-specific ARARs due to the pervasiveness of PCBs in the environment. There are no location-specific ARARs identified for Site 10.

Long-Term Effectiveness and Permanence

Alternative 2 would provide long-term effectiveness and permanence. Although no removal or treatment of contaminated soil would occur, human exposure to contaminants would be controlled and monitored. Site access restrictions and controls would effectively prevent human exposure to contaminated soils until PRGs have been achieved. Long-term monitoring would be an effective means to assess the occurrence of natural attenuation and to detect the potential migration of contamination.

Reduction of Toxicity, Mobility, or Volume through Treatment

Although no active treatment is included in Alternative 2, PCB volume and toxicity might eventually be reduced in the very long term through natural degradation processes. Alternative 2 would also not provide an immediate reduction in PCB mobility because no containment, removal, or treatment of soil is proposed. Human health toxicity posed by exposure to Arocor-1260 in soil would remain until concentrations have been sufficiently reduced by natural processes. No treatment residuals would be produced if Alternative 2 was implemented.

Short-Term Effectiveness

Alternative 2 would have minimal short-term effectiveness concerns. Exposure of workers to contamination during monitoring activities would be minimized by compliance with site-specific health and safety procedures, including the wearing of appropriate PPE. Alternative 2 would also not adversely impact the surrounding community or the environment. The RAOs would be achieved immediately upon implementation of institutional controls and monitoring. It is expected that the RAOs could be achieved within a construction duration of 1 day.

Implementability

Alternative 2 would be readily implementable. Installation and maintenance of site access restrictions, development and implementation of site controls, sampling and analysis of surface water and sediment, and performance of 5-year site reviews could readily be accomplished. The resources, equipment, and materials required to implement these activities are readily available.

The administrative aspects of Alternative 2 would be relatively simple to implement. No construction permits would be required for this alternative. Deed restrictions would ensure continued implementation of LUCs in case of change of ownership of any of the contaminated areas. However, continued implementation of LUCs under private ownership could be more difficult.

Cost

The estimated costs for Alternative 2 are:

- Capital cost: $19,000
- 30-Year net present worth (NPW) of O&M costs: $81,000
- 30-Year NPW: $100,000

These estimates have been rounded to the nearest $1,000 to reflect their preliminary nature. A detailed breakdown of the cost estimate for this alternative is provided in Appendix G.

10.3.3 Alternative 3: Surface Water Controls, Excavation, Surface Protection, Institutional Controls, and Monitoring

10.3.3.1 Description

Alternative 3 consists of the following components: (1) surface water controls, (2) excavation, (3) surface protection, (4) institutional controls, and (5) monitoring.

Component 1: Surface Water Controls

Within the drainage channel, surface water controls would be used to divert water from work areas. Marine-grade PVC sheet piling would be used to section off portions of the drainage channel, and pumps (e.g., bladder-type mud pumps) would be used to remove water from within the cordoned-off sections.

Component 2: Excavation

Excavation would be performed within the area designated for surface protection as shown on Figure 10-2 and would be limited to the top 9 inches of soil or sediment. This limited excavation would be conducted to allow the surface protection to be placed at grade with the existing ground surface. The area to be excavated would be cleared and grubbed and the pedestrian bridge would be removed. Next, approximately 45 yd^3 of vegetation, soil, and sediment would be removed and disposed at an approved off-site facility. Based on data collected during the RI/FS, it is assumed that the excavated material would be characterized as non-hazardous waste. It is anticipated that excavated material would not need to be dewatered.

Component 3: Surface Protection

Surface protection would be installed at Site 10 to prevent direct contact with PCB-contaminated media and to prevent erosional transport of PCBs in shallow sediment. As part of this component, approximately 85 linear feet of the drainage channel would be lined with 9 inches of concrete and/or rip rap and approximately 27 yd^2 of soil would be paved (consisting of a 6-inch stone base, a 2-inch binder course layer, and a 1-inch wearing course layer) as illustrated in Figure 10-2. Because direct contact with contaminated media would be prevented by installing surface protection, existing fencing present at Site 10 would not be needed and would be removed. Additionally, a new pedestrian bridge would be constructed across the drainage channel.

Component 4: Institutional Controls

LUCs would be developed and implemented to prevent residential development of Site 10. Signs would be posted to warn against unauthorized digging activities. Periodic inspections would be required to ensure that the integrity of the surface protection is not compromised and to determine whether maintenance of the surface protection is required.

Component 5: Monitoring

Monitoring would consist of regularly collecting samples of sediment and surface water and analyzing these samples for PCBs. Two surface water and two sediment samples would be collected immediately downgradient of the surface protection to detect potential migration of PCBs.

For costing purposes, monitoring would consist of annual sampling for a period of 30 years. Every 5 years, the status of the site would be formally reviewed and evaluated to determine the continued effectiveness of this alternative.

10.3.3.2 Detailed Analysis

Overall Protection of Human Health and the Environment

Alternative 3 would be protective of human health and the environment.

Surface protection would be protective of human health and the environment because it would prevent direct contact with contaminated media. Moreover, this alternative would be protective because potential erosional transport of PCBs through the drainage channel system would be prevented by the surface protection, and potential impacts to surface water would be mitigated. PCBs in soil are not expected to migrate into the groundwater of Site 10 because of the low leaching potential of PCBs. As a result, this

alternative is expected to be protective of humans who would consume or come into contact with Site 10 groundwater in the future. Site controls such as digging restrictions and prohibiting future residential development of the area would be protective of human health by preventing exposure to contaminated soil.

Monitoring would also be protective of human health and the environment. Attenuation of PCB concentrations in shallow soil would likely occur through erosional processes rather than biodegradation, based on the fate and transport properties of PCBs. If the results of the monitoring conducted as part of this alternative indicate that contaminants are migrating and that migration could have a negative environmental impact, contingency remedies (e.g., implementation of a sediment recovery trap) would be implemented to prevent such an occurrence.

Compliance with ARARs and TBCs

Alternative 3 would comply with action-specific ARARs and TBCs. This alternative would not comply with chemical-specific ARARs due to the pervasiveness of PCBs in the environment. There are no location-specific ARARs identified for Site 10.

Long-Term Effectiveness and Permanence

Alternative 3 would provide long-term effectiveness and permanence. Although treatment would not be used to reduce PCB concentrations, contaminated soil would be effectively contained to prevent exposure through direct contact and to reduce the potential for migration. Inspection, maintenance, and repair of the surface protection would ensure its continued structural integrity and effectiveness. Monitoring would be an effective means to verify that PCB concentrations are not migrating through the drainage channel system.

Reduction of Toxicity, Mobility, or Volume through Treatment

Although no active treatment is included in Alternative 3, PCB volume and toxicity might eventually be reduced over the very long term through natural degradation processes. In the short term, no reduction in volume would be realized. Alternative 3 would provide an immediate reduction in PCB mobility because the surface protection would prevent erosional transport of PCB concentrations through the drainage channel system. Human health toxicity posed by exposure to Arocor-1260 in soil would be reduced because surface protection would be in place to prevent human exposure. No treatment residuals would be produced if Alternative 3 was implemented. However, there would be construction debris from site clearing that would have to be disposed.

Short-Term Effectiveness

Alternative 3 would be effective in the short term. Exposure of workers to contamination during remediation and monitoring activities would be minimized by implementing engineering controls, complying with the requirements of OSHA, and adhering to site-specific health and safety procedures, including the wearing of appropriate PPE. Alternative 3 would not result in a significant destruction of ecological habitat. Removal of the existing fencing at Site 10 would also aesthetically improve the setting of the area. The transportation of contaminated soil from Site 10 to the off-base TSDF would have minimal impact on the surrounding community. It would take approximately four truckloads (16 yd^3 each) to remove all contaminated material from the base.

The RAOs are expected to be achieved immediately upon completion of remedial activities and implementation of institutional controls and monitoring. Although the RAOs would be achieved, PCB soil contamination would remain at the site. It is expected that the RAOs could be achieved within a construction duration of three days.

Implementability

Alternative 3 would be readily implementable.

Use of surface water controls, implementation of excavation methods and surface protection, installation and maintenance of site controls, sampling and analysis of surface water and sediment, and performance of 5-year site reviews could readily be accomplished. The resources, equipment, and materials required to implement these activities are readily available.

The administrative aspects of Alternative 3 would be relatively simple to implement. Deed restrictions would ensure continued implementation of LUCs in case NCBC Gulfport changes from military to civilian ownership.

Cost

The estimated costs for Alternative 3 are:

- Capital cost: $39,000
- 30-Year NPW of O&M cost: $70,000
- 30-Year NPW: $109,000

A detailed breakdown of the cost estimate for this alternative is provided in Appendix G.

10.3.4 Alternative 4: Surface Water Controls, Excavation, Dewatering, Off-Site Treatment and Disposal

Alternative 4 consists the following components: (1) surface water controls, (2) excavation, (3) dewatering, and (4) off-site treatment and disposal.

Component 1: Surface Water Controls

Within the drainage channel, surface water controls would be used to divert water from work areas. Marine-grade PVC sheet piling would be used to section off portions of the drainage channel, and pumps (e.g., bladder-type mud pumps) would be used to remove water from within the cordoned-off sections.

Component 2: Excavation

Soil with concentrations of PCBs greater than 1,000 µg/kg would be excavated from the area shown on Figure 10-3. The area to be excavated would be cleared and grubbed, and the pedestrian bridge would be removed. Approximately 450 yd^3 of soil would be excavated. Excavation of the contaminated material would be accomplished with a Gradall-type excavator, backhoe, or similar type of equipment. The sidewalls of the excavation would be shored to minimize the amount of soil required to be excavated to reach soils at depth. Pre-excavation sampling would be conducted to refine the depth of excavation. After sampling activities have verified the removal of contaminated material, the excavated areas would be backfilled with imported clean soil. The excavated areas would also be graded to original grade and native vegetation would be planted. Additionally, a new pedestrian bridge would be constructed across the drainage channel.

Component 3: Dewatering

Excavated material would be dewatered by stockpiling it in staging/dewatering cells constructed for this purpose. The cells would be constructed on the parade deck just south of the drainage channel as shown on Figure 10-3. The free water draining from the cells would be collected in a sump and, if necessary, treated prior to surface water discharge. It is assumed that two sediment staging/dewatering cells would be constructed and operated at Site 10. The staging/dewatering cells would measure approximately 50 feet by 50 feet and would be designed to stage and dewater approximately 250 yd^3 of sediment over a 48-hour period. After the soil is sufficiently dewatered, the sediment would be placed in a roll-off dumpster for transport.

Component 4: Off-Site Treatment and Disposal

Excavated soil would be transported and disposed at a permitted off-site TSDF. The type of TSDF and pre-treatment requirements prior to ultimate disposal by landfilling would be dictated by the anticipated characteristics of the excavated material.

As part of pre-excavation sampling, samples would be collected to further refine the extent of soil that contains PCBs at concentrations greater than 50,000 µg/kg. For costing purposes, it is assumed that approximately 100 yd^3 of excavated material would contain PCB concentrations greater than 50,000 µg/kg and would require disposal at a TSCA-certified TSDF. It is assumed that prior to ultimate disposal by landfilling, the TSDF would pre-treat that entire fraction of the excavated material by chemical fixation/solidification to meet disposal requirements. It is also assumed that the remaining 350 yd^3 would be classified as RCRA non-hazardous waste and would be disposed by landfilling at a permitted off-site RCRA Subtitle D TSDF. This component would also include the manifesting of the waste materials to be transported.

10.3.4.2 Detailed Analysis

Overall Protection of Human Health and the Environment

Alternative 4 would be protective of human health and the environment.

Removal of contaminated soil from its present location and off-base treatment and disposal of this soil would eliminate risk from exposure of human receptors to PCBs. These remedial activities would also protect human health and the environment by removing the potential for future migration of PCBs. Some short-term risks could be incurred by workers from exposure to contamination during the implementation of this alternative. However, the potential for this exposure would be minimized by the wearing of appropriate PPE and compliance with site-specific health and safety procedures.

Compliance with ARARs and TBCs

Alternative 4 would comply with chemical- and action-specific ARARs and TBCs. There are no location-specific ARARs identified for Site 10.

Long-Term Effectiveness and Permanence

Alternative 4 would provide long-term effectiveness and permanence. Excavation of soil with off-site treatment and disposal (followed by backfilling with clean soil) are technologies that would offer effective and permanent solutions for the removal of contaminants to meet PRGs on site. Treatment/disposal of

excavated material would effectively minimize the adverse impact from contaminated soil on human health and the environment.

Reduction of Toxicity, Mobility, or Volume through Treatment

Under Alternative 4, contaminated soil containing approximately 33 pounds of PCBs would be permanently and irreversibly removed from the site. Human health toxicity posed to base personnel by exposure to Arocor-1260 in soil would be reduced because contaminated soil would be removed from the site. Alternative 4 would also both achieve a permanent and irreversible reduction in the mobility of the COCs through off-site treatment with chemical fixation/solidification to the extent necessary to meet disposal requirements. Although contaminated soil is removed from the site, its volume would not be reduced under this alternative.

Short-term Effectiveness

Alternative 4 would have some short-term effectiveness concerns. Exposure of workers to contamination during remediation activities would be minimized by implementing engineering controls (e.g., dust suppression) and complying with site-specific health and safety procedures, including the wearing of appropriate PPE. Alternative 4 would not result in a significant destruction of ecological habitat. The transportation of contaminated soil from Site 10 to the off-base TSDF could have some impact on the surrounding community. It would take approximately 28 truckloads (16 yd^3) to remove all contaminated material from the base. This impact would be minimized through the implementation of truck decontamination, spill prevention, and traffic control measures.

The RAOs and PRGs would be achieved immediately upon completion of remedial activities. It is expected that the RAOs could be achieved within a construction duration of 12 days.

Implementability

Alternative 4 would be readily implementable.

Implementation of surface water controls, excavation of contaminated soil, dewatering of excavated material, and off-base transportation, treatment, and disposal of excavated material could readily be accomplished. The resources, equipment, and materials required to implement these activities are readily available.

The excavation component of this alternative could be performed with normal construction equipment, resources, and materials that would be readily available for this purpose. Permitted TSDFs with

hazardous and non-hazardous treatment and landfilling capabilities are available for implementation of off-site treatment and disposal.

Administratively, implementation and enforcement of excavation notification and excavated soil testing requirements would be relatively simple to implement. A construction permit would be required for excavation, but this would be relatively easy to obtain. Off-site transportation of the excavated soil might require the preparation and implementation of a traffic control plan and would require the completion of waste manifests. Off-site disposal of the excavated soil would require prior securing of waste acceptance from the TSDF. These administrative procedures, while constituting a significant effort, could readily be accomplished.

Cost

The estimated costs for Alternative 4 are:

- Capital cost: $186,000
- NPW of O&M cost: $0
- NPW: $186,000

A detailed breakdown of the cost estimate for this alternative is provided in Appendix G.

ALTERNATIVE 1 - INSTITUTIONAL CONTROLS AND MONITORING

SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT

NCBC GULFPORT

GULFPORT, MISSISSIPPI

FIGURE 10 - 1

DRAFT
JUNE 2005

ALTERNATIVE 3 - SURFACE WATER CONTROLS, EXCAVATION, SURFACE PROTECTION, INSTITUTIONAL CONTROLS, AND MONITORING

SITE 16 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT

NCBC GULFPORT

GULFPORT, MISSISSIPPI

AS NOTED

FIGURE 10-2

DRAFT
JUNE 2008

ALTERNATIVE 8 - SURFACE WATER CONTROLS, EXCAVATION, DEWATERING, OFF-SITE TREATMENT AND DISPOSAL OF EXCAVATED SOIL
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NCBC GULFPORT
GULFPORT, MISSISSIPPI

SCALE: AS NOTED

FIGURE No. 3

DRAFT
JUNE 2005

11.0 COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES

This section compares the analyses that were presented for each of the remedial alternatives in Section 10.0. The criteria for comparison are identical to those used for the detailed analysis of individual alternatives.

11.1 COMPARISON OF REMEDIAL ALTERNATIVES BY CRITERIA

The following remedial alternatives for soil are being compared in this section:

- Alternative 1: No Action
- Alternative 2: Institutional Controls and Monitoring
- Alternative 3: Surface Water Controls, Excavation, Surface Protection, Institutional Controls, and Monitoring
- Alternative 4: Surface Water Controls, Excavation, Dewatering, Off-Site Treatment and Disposal

11.1.1 Overall Protection of Human Health and the Environment

Alternative 1 would not be protective of human health and the environment because Arocor-1260 would remain at concentrations in soil in excess of its PRG. As a result, exposure to these concentrations could result. Also, under this alternative, no monitoring would occur; therefore, no warning would be provided if Arocor-1260 concentrations were to migrate through the drainage channel system.

Although Alternative 2 would allow Arocor-1260 concentrations to remain in soil and to possibly continue to migrate from contaminated areas, it would provide some protection by restricting access to contaminated media through fencing and site restrictions and would provide warning of potential contaminant migration through monitoring.

Alternative 3 would be more protective than Alternative 2 because it would essentially eliminate the potential for exposure to PCBs. Surface protection in conjunction with site controls would eliminate direct contact with contaminated media. Moreover, the surface protection would prevent the potential migration of contaminants through the drainage channel system via erosion.

Alternative 4 would provide the highest level of protection because contaminated soil would be removed from its present location and would be transported to an approved TSDF.

11.1.2 Compliance with ARARs and TBCs

Alternative 1 would not comply with chemical-specific ARARs. Action-specific ARARs or TBCs would not apply.

Alternatives 2 and 3 would not comply with chemical-specific ARARs and TBCs due to the pervasiveness of PCBs through the environment. Alternatives 2 and 3 would comply with action-specific ARARs and TBCs.

Alternative 4 would comply with chemical- and action-specific ARARs and TBCs.

There are no location-specific ARARs identified for Site 10.

11.1.3 Long-Term Effectiveness and Permanence

Alternative 1 would have very limited long-term effectiveness and permanence because no contaminant removal or reduction would occur. Because there would be no site controls to restrict access to Site 10, the potential would also exist for direct exposure to PCB-contaminated media. Because there would be no monitoring, potential PCBs migration would remain undetected.

Alternative 2 would provide some long-term effectiveness and permanence because fencing and site controls would reduce exposure to contaminated soil, and monitoring would provide indication of PCBs migration.

Alternative 3 would be more effective and permanent than Alternative 2 in the long term. Surface protection would be more effective and permanent than fencing in preventing direct contact with contaminants and preventing the erosional transport of PCBs through the drainage channel system. Inspection, maintenance, and repair of the surface protection would need to be conducted to ensure its continued structural integrity and effectiveness.

Alternative 4 would be the most long-term effective and permanent remedy. Under this alternative, contaminated soil would be removed from its present location and treated, as required, for ultimate disposal at a TSDF.

11.1.4 Reduction of Toxicity, Mobility, or Volume through Treatment

Alternatives 1 and 2 would not achieve any reduction of toxicity, mobility, or volume of PCB-contaminated media through treatment. Both alternatives might eventually achieve reduction of contaminant toxicity

and volume through natural attenuation; however, under Alternative 1, this reduction would neither be verified or quantified. There would be no treatment residuals associated with Alternative 2.

Alternative 3 would not achieve any reduction of toxicity or volume of PCB-contaminated media through treatment. However, Alternative 3 would significantly reduce PCB mobility because Arocor-1260 concentrations would be contained under the surface protection. There would be construction debris associated with this alternative.

Similarly, Alternative 4 would not achieve any reduction of toxicity or volume of PCB-contaminated media through treatment. However, Alternative 4 would reduce PCB mobility through off-site chemical stabilization. A wastewater residual might be generated by the sediment dewatering step, but it is anticipated that this wastewater could be discharged to surface water without treatment. There would be construction debris associated with this alternative.

11.1.5 Short-Term Effectiveness

Implementation of Alternative 1 would not result in risks to site workers or adversely impact the surrounding community or environment because no remedial activities would be performed. Alternative 1 would never achieve the RAOs, and although the Arocor-1260 PRG might eventually be attained through natural attenuation processes in the very long term, this occurrence would not be verified.

Implementation of Alternative 2 would result in a slight possibility of exposing site workers to PCB contamination during long-term monitoring activities. However, the risk of exposure would be effectively controlled through compliance with proper site-specific health and safety procedures. Implementation of Alternative 2 would not adversely impact the surrounding community or environment. Alternative 2 would be expected to achieve the RAOs immediately upon implementation of institutional controls and monitoring.

Implementation of Alternatives 3 and 4 would result in the possibility of exposing construction workers to PCB contamination during remedial activities. However, the risk of exposure would be effectively controlled by the implementation of engineering controls (e.g., dust suppression) and compliance with applicable OSHA regulations and proper site-specific health and safety procedures. Implementation of Alternative 4 would potentially impact the surrounding community because approximately 28 truckloads of PCB-contaminated material would be transported over public roads. However, the potential for adverse impact would be effectively addressed through implementation of such appropriate measures as decontamination of transport vehicles, traffic control, and spill prevention and emergency response. Alternatives 3 and 4 would be expected to achieve the RAOs immediately upon removal of the contaminated soil. Alternative 4 would also achieve PRGs upon implementation.

It is anticipated that Alternatives 2, 3, and 4 can be implemented in 1 day, 3 days, and 12 days, respectively.

11.1.6 Implementability

Alternative 1 would be extremely simple to implement because no action would occur.

The technical implementability of Alternative 2 would also be very simple because it would only require implementation of site controls and monitoring.

The technical implementability of Alternative 3 would be somewhat more difficult than that of Alternative 2. In addition to site controls and long-term monitoring, this alternative would require the use of surface water controls, excavation, and surface protection. However, these activities would be technically implementable. Resources, equipment, and materials are readily available to perform the tasks associated with Alternative 3. Alternative 4 would be somewhat harder to implement, although resources, equipment, and materials are readily available to perform the excavation, dewatering, and transportation activities.

Administratively, Alternatives 2 and 3 would require the development and implementation of LUCs and the performance of long-term monitoring and 5-year site reviews. Under Alternatives 3 and 4, off-site transportation of the excavated soil may require the preparation and implementation of a traffic control plan and would require the completion of waste manifests. Off-site treatment and disposal of the excavated soil would require prior securing of waste acceptance from the TSDF. Alternatives 3 and 4 would require a base permit to conduct remedial activities, manifesting of the material to be transported off base, and formal acceptance of this material by the off-base disposal facility. These administrative requirements could readily be met. Alternative 4 would not require site controls, long-term monitoring, or 5-year reviews because all soil with concentrations greater than the Arocor-1260 PRG would be removed from Site 10.

11.1.7 Cost

The capital and O&M costs and NPW of the alternatives are summarized as follows:

Alternative	Capital ($)	NPW of O&M ($)		NPW ($)	
1	0	0		0	
2	19,000	81,000	(30 Year)	100,000	(30 Year)
3	39,000	70,000	(30 Year)	109,000	(30 Year)
4	186,000	0	(1 Year)	186,000	(1 Year)

Detailed cost estimates are provided in Appendix G.

11.2 SUMMARY OF COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES

Table 11-1 summarizes the comparative analysis of the four remedial alternatives.

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TABLE 11-1

COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
NCBC GULFPORT, MISSISSIPPI
PAGE 1 OF 2

Evaluation Criteria	Alternative 1 – No Action	Alternative 2 – Institutional Controls and Monitoring
Threshold Criteria		
Overall Protection of Human Health and the Environment	No reduction in potential risks.	Institutional controls would reduce risks to human health and the environment. Direct exposure to PCBs would be minimized through fencing and deed restrictions. Migration of contaminants through the drainage channel system would continue to occur.
Compliance with ARARs		
Chemical-specific	Would not comply.	Would not comply although measures would be in place to prevent direct exposure.
Action-specific	Not applicable.	Would comply.
Location-specific	Not applicable. There are no location-specific ARARs.	Not applicable. There are no location-specific ARARs.
Primary Balancing Criteria		
Long-Term Effectiveness and Permanence	Not effective and permanent. Would allow risk to remain uncontrolled.	Institutional controls would provide some long-term effectiveness and permanence because fencing and site controls would reduce exposure to contaminated soil and sediment, and monitoring would provide indications of PCB migration.
Reduction of Toxicity, Mobility, or Volume through Treatment	No treatment is utilized.	No treatment is utilized.
Short-Term Effectiveness	Not applicable. No short-term impacts or concerns.	No impacts to community or environment. Exposure of workers to contaminated soil and sediment can be adequately controlled. One day to implement.
Implementability	No action is conducted; therefore, there are no activities to implement.	Alternative consists of site controls and monitoring that are readily available and implementable.
Costs		
Capital	$0	$18,771
O&M (Years 1 – 30)	$0	$3,900
O&M (Every 5 Years)	$0	$18,900
Present Worth	$0	$99,506
Modifying Criteria		
State Acceptance	To be determined.	To be determined.
Community Acceptance	To be determined.	To be determined.

TABLE 11-1

COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES
SITE 10 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
NCBC GULFPORT, MISSISSIPPI
PAGE 2 OF 2

Evaluation Criteria	Alternative 3 – Surface Water Controls, Excavation, Surface Protection, Institutional Controls, and Monitoring	Alternative 4 – Surface Water Controls, Excavation, Dewatering, Off-Site Treatment and Disposal
Threshold Criteria		
Overall Protection of Human Health and the Environment	More protective than Alternative 2. Surface protection and institutional controls would reduce risks to human health and the environment. Direct exposure to contaminants would be eliminated through surface protection and deed restrictions. Erosion of contaminants through the drainage channel system would also be mitigated by these measures.	More protective than Alternative 3. Excavation would also reduce risks to human health and the environment. All PCB concentrations greater than the PRGs would be removed from the site and treated and disposed and an approved TSDF.
Compliance with ARARs		
Chemical-specific	Would not comply although measures would be in place to prevent exposure to contaminants and prevent migration of contaminants.	Would comply.
Action-specific	Would comply	Would comply.
Location-specific	Not applicable. There are no location-specific ARARs	Not applicable. There are no location-specific ARARs
Primary Balancing Criteria		
Long-Term Effectiveness and Permanence	Surface protection would be effective and permanent in preventing direct contact with contaminants and preventing the erosional transport of PCBs through the drainage channel system.	Excavation would be the most long-term effective and permanent remedy. Contaminated soil and sediment would be removed from the site, treated, as required, for ultimate disposal at a TSDF.
Reduction of Toxicity, Mobility, or Volume through Treatment	No treatment is utilized.	No treatment to reduce toxicity or volume. Mobility would be reduced through off-site chemical fixation/solidification.
Short-Term Effectiveness	No impacts to community. Exposure of workers to contaminated soil and sediment can be adequately controlled. Three days to implement.	Potential impacts to community from transport of contaminated soil and sediment over public roads. However, impacts would be addressed through decontamination measures, traffic control, spill prevention and emergency response. Exposure of workers to contaminated soil and sediment can be adequately controlled. Twelve days to implement.
Implementability	Alternative consists of common remediation practices that are readily available and implementable.	Alternative consists of common remediation practices that are readily available and implementable.
Costs		
Capital	$38,530	$186,016
O&M (Years 1 – 30)	$3,100	$0
O&M (Every 5 Years)	$18,100	$0
Present Worth	$109,337	$186,016
Modifying Criteria		
State Acceptance	To be determined.	To be determined.
Community Acceptance	To be determined.	To be determined.

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APPENDIX A

FIELD DATA FORMS

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: NCBC Gulfport Site 10
Project No.: 1831

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: SD1006D01
Sample Location:
Sampled By:
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-19-03	6"		
Time: 1300			
Method: Grab			
Monitor Reading (ppm): Ø			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
VOA			
SVOA			
Pest/PCB			
Herb			
Metals			
CN⁻			
Atterberg Limits			
Grain Size			

OBSERVATIONS / NOTES:

MAP:

Circle If Applicable:

MS/MSD

Duplicate ID No.
SD1006D01MS/MD

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

Page 1 of ___

PROJECT NAME: NCBC
PROJECT NUMBER:
DRILLING COMPANY: Fugro
DRILLING RIG: 5700 Geoprobe

BORING No.: SB-1
DATE: 8/1/2002
GEOLOGIST: J Bourton
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
0			50			black	Sandy Clay						
						dk gray	silty f.g. sand						
						ltgray	f.g sand						
5			90									92	
						tan	Sand						
						dk brown	finegrained sand						
							-w/ coarse grained +						
10							throughout						
			90			gray brown	silty fine grained sand						
						dk gray							
15							gravelly coarse sand						
			80			lt gray	fine grained sand						
						dk gray	Gravelly finegrained sand						
20							silty sand						
			100			gray green	clayey sand						
							fine grained silty sand						
25							clay						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): X

Remarks:

Converted to Well: Yes ___ No X Well I.D. #:

Tetra Tech NUS, Inc.

BORING LOG

Page 1 of ___

PROJECT NAME: NCBC
PROJECT NUMBER:
DRILLING COMPANY: Furgo
DRILLING RIG: 5200 Geoprobe

BORING No.: SB-2
DATE: 01/12/02
GEOLOGIST: J. Barton
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0		80%			black	Sandy-clay			0.9	0.3	154	1.0
						dk	silty-f.g. sand			0.5			
						gray	↓		mottled	0.5			
						lt. gray	f.g. sand			0.9			
							↓			2.1			
	5		80%			↓	↓			1.4	0	237	1.0
						tan	Sand			0.2			
						dk brown	gravelly sand			2.8			
						↓	Sand to fine-grained			0			
							Sand-w/sporatic		gravel	0			
	10		90%			tan	Silty-fine-grained sand			0	0	554	0
						dk gray				1.2	~~0~~	~~348~~	~~0~~
										0.5			
							↓			0.8			
						↓	gravelly-coarse sand			2.2			
	15		80%			lt gray	fine-grained sand			0	0	348	0
										1.2			
							↓			0.6			
						lt gray	Gravelly-f.g. sand			0			
						lt gray	Silty-sand			0			
	20		100			gray green	clayey-sand			0	0	1.3	0
							fine-grained silty sand			0			
							↓			0			
										0			
						↓	clay			0			
	25												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ___ No X Well I.D. #: ___

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC
PROJECT NUMBER:
DRILLING COMPANY: Furgo
DRILLING RIG: 5200-Geoprobe

BORING No.: SB-3
DATE: 01/11/02
GEOLOGIST: J. Barton
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0		0				No Recovery			–	0	/	0
			?	*		orange gray	sandy-clay		mottled	0	0	/	0
	5					lt. gray	fine grained sand			0.4			
						reddish brown	gravelly-san			1.0			
										0.9			
			90%							0.9			
			90%			lt. brown	fine-grained sand w/ gravel			1.5	0	/	0
	10									1.3			
										2.8			
										1.8			
										2.4			
			95%			lt. brown	fine-grained san			2.3	0	/	0
	15					lt. gray				3.8			
										4.6			
										3.6			
						dk. gray	sandy-clay			0			
	20												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: Rig - 2ft above ground surface
-bore hole under water
* Did not have intact sleeve, had to hammer sample out of rod

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC
PROJECT NUMBER:
DRILLING COMPANY: Furgo
DRILLING RIG: 5200-C-Geoprobe

BORING No.: SB-4
DATE: 01/11/02
GEOLOGIST: J. Barton
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
0			0				No Recovery		-Rod-full of water-	-	-	-	0
			90%			orange w/gray	sandy clay			35	0.2	-	0
5						dk gray	clayey - Sand			98.8			
						reddish brown	Sand to fine grained sand w/ sporadic gravel			4.7			0
										1.9			
										1.4			
			80			lt brown	fine grained sand w/ gravel			1.6	0.3	-	0
10										3.7			
										4.3			
										1.6			
										0.7			
			90			tan	fine grained sand			0.6	0	-	0.1
15						lt gray				0.4			
										0			
						gray brown	silty - sand			1.0			
						dk gray	clayey - sand			0.0			
			100			gray green	clayey - f.g. - sand			1.4	0	-	0
20							silt fine-grained sand			5.4			
										4.3			
							Sandy clay			2.4			
							clay			1.3			
25													

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: -Rig - starting 2 ft above ground surface
-Not able to get a borehole FID reading - borehole under water

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC
PROJECT NUMBER:
DRILLING COMPANY: Fugro
DRILLING RIG: 5200- Geoprobe

BORING No.: SB-5
DATE: 01/11/02
GEOLOGIST: J. Barton
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0		100%			brown or	silty - clay		mottled	3.6	0	/	0
						ok gray brown	clayey - sand			1157			
						green brown dk brown	4 inches - sand 4 inches - sand			1816 529 1169			
	5		0%				NO Recovery		~~sorted~~	/	0	/	0
			80%			reddish brown	silty - fine - grained sand			7.1 2.3	0	/	0
	10					brown	sand			1.4			
						lt. brown	fine grained sand			4.8 5.7			
			100			lt. brown gray	fine grained sand			1.2	0	/	0
	15					lt. gray				4.2 21 2.8			
						dk gray	sandy - clay			0.8			
			100			Green gray	Sandy - clay		fine grained	0.1	0	/	0
	20						fine-grained sand			0 0			
							clay			0			
	25												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: Rig 2ft above ground surface
Borehole under water

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC
PROJECT NUMBER:
DRILLING COMPANY: Furgo
DRILLING RIG: 5200-Geoprobe

BORING No.: SB-1
DATE: 01/11/02
GEOLOGIST: J. Barton
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
			30%			orange gray	silty - clay		mottled	7.4	0	/	0
										78			
			10%			dk brown gray green	fine grained sand			105.6	0	/	0
							No Recovery						
	5												
			80			dk gray brown	fine grained sand			202	0	/	0
						reddish brown	gravelly fine-grained sand			11.4			
										1.9			
	10									7.6			
										15.9			
			90			brown	fine grained sand			0.8	0	/	0
						lt brown tan				1.7			
										1.7			
	15									1.9			
						lt gray dk gray	grades from fine to coarse sand		progressively darker	0.7			
			100			gray green	clay sand			2.1	0	/	0
							fine-grained sand			8.5			
										8.4			
	20						sandy clay			2.1			
										0.0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: - Borehole under water
- Rig ~2 ft above ground surface

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC
PROJECT NUMBER:
DRILLING COMPANY: Fargo
DRILLING RIG: 5200 - Geoprobe

BORING No.: SB-07
DATE: 01/10/02
GEOLOGIST: J. Barton
DRILLER:

Depth (Ft.)	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
0				90%			black	clayey sand w/organics			0	0.0		0.0
							gray brown	clayey - sand		mottled w/ orange	0			
								progressive		becoming predominately	0			
								sandy - clay		orange as get deeper	0			
5							gray-brown	silty - sand			0			
				80%						mostly root	0	0.0	1.3	0.0
							dk brown	- sand			0			
							reddish brown	- sand			0			
											0			
10											0.7			
				85%				gravelly - sand			0	0.0	0.0	0.0
							Lt. brown	fine grained sand			0			
											0			
											0			
15							Lt gray	fine-grained sand			0			
				100%							0	0	0.7	0
											0			
							DK Gray	fine-grained sand -			0			
								sporatic gravel			0			
											0			
20				90%			Gray Green	very fine silty-sand			0	0	2.8	0.0
											0			
								sandy - clay			0			
											0			
25								clay			0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.

Remarks:

Converted to Well: Yes ____ No X Well I.D. #:

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC
PROJECT NUMBER:
DRILLING COMPANY: Fungo
DRILLING RIG: 5200 Geoprobe

BORING No.: SB-08
DATE: 01/10/02
GEOLOGIST: J. Barton
DRILLER:

Depth (Ft.)	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
0				80%			black	clayey - sand w/ organics			0.2	0.3	5.2	0.7
							dk. grey	- sand			0.2			
							↓				0.2			
							grey	clay - sand		- mottled w/ orange	0.1			
							lt. grey	fine grained - sand			0.2			
5				60%			↓	↓				0.3	4.8	0.7
							brown gray	silty - sand						
							reddish brown	sand w/ gravel		- dk brown mottle				
							↓			↓				
10				0				No Recovery			/	/	23	0.5
15				90%			gray brown	silty - sand - fine grained			0.9	0.7	11.7	2.1
								silty - sand w/ sporatic gravel			0.2			
							↓	↓			0.2			
							dk. gray brown			last inch sandy clay	0.2			
20				80%			gray grey	clayey - fine - grained sand			0.1	0.3	14	0.3
								sandy clay			0.1			
								silty - fine grained sand			0.2			
								clayey sand			0.1			
25							↓	clay			0.4			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.4

Remarks: D.O. when rig is not running

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC
PROJECT NUMBER:
DRILLING COMPANY: Furgo
DRILLING RIG: 5200-Geoprobe

BORING No.: SB-09
DATE: 01/10/02
GEOLOGIST: J. Burton
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
0			80%			black	clayey-sand w/			0.9	1.1	2.4	1.4
						↓	organics			0.7			
						dark brown-gray	silty-sand			0.8			
						↓				0.8			
						lt. gray	fine-grained sand		3inch band of white sand @ 4.5 ft. - coarser	0.8			
5			80%			↓				0.9	1.1	7.8	1.7
						gray-brown	fine-grained sand			1.0			
						dk. brown	- sand w/ gravel			2.1			
						reddish brown	- sand w/ gravel			0.9			
						↓				0.9			
10			75%			brown	- sand - sporadic			0.7	0.9	1.4	0.7
						↓	gravel			0.9			
						tan	- fine-grained sand			0.8			
						gray	↓			0.7			
15						↓	↓			0.7			
			60%							1.2	0.7	3.0	1.8
							w/silt			1.2			
										1.3			
						↓	↓ ↓			1.4			
						dk. gray	clayey-sand			1.1			
20			60%			gray green	sandy-clay			1.0	0.9	4.0	1.1
							clay			1.0			
							clayey-fine-grained			1.2			
							sand			1.2			
						↓	sandy-clay			0.9			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.4

Remarks: -0.0- when rig not running

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC
PROJECT NUMBER:
DRILLING COMPANY: Furgo
DRILLING RIG: 5200 - Geoprobe

BORING No.: SB-09
DATE: 01/10/02
GEOLOGIST: J. Burton
DRILLER:

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
25				100			gray green	clay			0.3	0.3	4.6	0.4
								↓			0.4			
								sandy clay			0.4			
								↓			0.5			
30							↓	clay			0.5			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.4

Remarks:

Converted to Well: Yes ____ No X Well I.D. #:

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC
PROJECT NUMBER:
DRILLING COMPANY: Furgo
DRILLING RIG: 5200 - Geoprobe

BORING No.: SB10
DATE: 01/09/02
GEOLOGIST: J. Barton
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
			80%			orange	- clay - 6 inches						
						black	- silty - clay w/ organics						
						dk. Gray	Clayey - sand						
						lt. Gray	Sand						
			80%										
						lt. brown	Sand						
						brown (tan)	sand w/ gravel						
			0				No Recovery						
			90%			lt. Gray	fine-grained Sand						
						gray-brown (tan)	fine-grained sand w/ gravel						
						gray-green	sandy-clay						
			100%										
							silty - f.g. sand						
							Sandy - clay - gradual to clay						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm):

Remarks: FID not working

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC
PROJECT NUMBER:
DRILLING COMPANY: Fugro
DRILLING RIG: 5200 - Geoprobe

BORING No.: SB-10
DATE: 01/09/02
GEOLOGIST: J. Barton
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
25													
			100%			Gray Green	clay						
							↓						
							sandy clay						
							clay						
30							↓						
			70%				f.g. sandy-silt						
							↓						
							silty-sand						
							fine grained-sandy-clay						
35													
			100										
40													

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: FID not working

Drilling Area Background (ppm):

Converted to Well: Yes ____ No X Well I.D. #:

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC
PROJECT NUMBER:
DRILLING COMPANY: Furgo
DRILLING RIG: 5200-Geoprobe

BORING No.: SB-11
DATE: 01/09/02
GEOLOGIST: J. Barton
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0		75%		black		black - sandy - silt. w/organic					0	0
					dk-gray-brown		clayey sand						
					gray-brow		~~½ sand~~ - to fine grained						
	5		40%		No Rec.		NO Recovery						
					dk-brown black		Silty - sand						
					reddish brown		- Sand						
	10		90%				- Sand						
							- sand w/some gravel						
					Lt grey-brown change		- Sand - fine-grained sand						
	15		100%										
					Lt. Grey		fine grained - sand - w/ sporatic gravel pieces						
	20		100%		gray-green		sandy - clay						
							clayey fine-grained sand						
							sandy - clay						
	25						clay						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: ~~Dette~~ Did not smell anything - neither did drillers - FID not working

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC
PROJECT NUMBER:
DRILLING COMPANY: Furgo
DRILLING RIG: 5200 - Geoprobe

BORING No.: SB-12
DATE: 01/09/02
GEOLOGIST: S Barton
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
0			80%		black		sandy - silt - w/organics			0.5	0.9	0.2	1.7
					dk. Gray		- (charcol) - silty - sand			0.6			
							mottled w/ rust ~~w/ rust mott~~			0.6			
										0.7			
					Lt. brown		- fine grained sand			2.1			
5			80%							1.7		0.7	1.0
					Dk Grey		fine grained silty - sand			1.0			
					Dk. brown reddish brown		- gravelly - sand (1 ft) gravelly - sand			1.2			
										1.0			
										1.5			
10			90%		reddish brown		gravelly - sand			.9	1.1	1.03	1.1
							(gravel is finer			.8			
							then previous			.9			
							interval)			1.0			
15					grey (~~brown~~)		fine grained sand			1.0			
			80%							1.2		2.4	1.3
					grey ~~brown~~		fine grained silty			1.1			
							clayey sand			1.1			
					Lt. grey		fine grained - sand			1.1			
					Dk. grey ~~green~~		clayey - sand			1.4			
20			100%		grey green		clayey - fine grained sand		FID - NOT working	*			
							sandy - clay						
25													

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: FID - Quit working

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC
PROJECT NUMBER:
DRILLING COMPANY: Furgo
DRILLING RIG: 5200-Geoprobe

BORING No.: SB-13
DATE: 1/9/02
GEOLOGIST: J. Barton
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
0			85%		dk. brown		clay-silt-sand w/ organics			0	0	0	0.2
										0			
							-no-organics			0		*	
					Lt. grey-brown w/ white layers		fine-grained-sand			0			
										0			
5			90%		Dr. Grey					0.1	0	1.5	0
					Reddish brown		-some silt			0	0		
										0	0		
										0.2	0		
										0.3	0		
10			100%							0.2	0.1	26.1	0.9
					reddish brown		gravely-fine grained sand			0.2			
										0.2			
										0.3			
15					Lt-brown		silty-sand			0.2			
			100%				silty-sand-to			0.5		11.7	0.4
										0.6			
							silty-fine-grained sand			0.6			
										0.7			
20					grey-green		clayey-fine-grained sand			0.9			
			70%				clayey-fine-grained fine-grained sand			0.9	0	10.4	0.5
										1.0	0		
										0.9	0		
										0.9	0		
25							sandy-clayey			0.8	0		

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ____ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC
PROJECT NUMBER:
DRILLING COMPANY: Furgo
DRILLING RIG: 5200 Geoprobe

BORING No.: SB-13
DATE: 2/9/02
GEOLOGIST: J. Barton
DRILLER:

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
25				100		Gray-Green		clay			1.0	1.2	9.2	1.4
											1.0			
											1.0			
											1.1			
30											1.2			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #:

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC
PROJECT NUMBER:
DRILLING COMPANY: Furgo
DRILLING RIG: 5200 - Geoprobe

BORING No.: SB-14
DATE: 7/9/02
GEOLOGIST: S. Burton
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
0			85%			dk. Brown	clayey-silt-sand			0	0	0	0
							w/ organics						
						grey brown	silty-sand						
5						dk. gray	sand-fine grained						
			50%							0	0	0	0
						black	1/2-foot-sand						
							reddish-brown						
							sand						
10										0.3			
			90%							1.6	0	0.7	0.4
						Lt brown tan	fine-grained sand			1.2			
										1.2			
										1.2			
15										0.4			
			85			Lt gray brown	fine-grained sand			0.1	0	0	0
										0	0	0	0
										0	0	0	0
										0	0	0	0
20										.05	0	0	0
			100			Lt. gray green	clayey-sand			0.0	0	0.1	0.4
										0			
							silty-clay (sand)			0			
										0			
25										0.6			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #:

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC
PROJECT NUMBER:
DRILLING COMPANY: Furgo
DRILLING RIG: 5200 - Geoprobe

BORING No.: SB-15
DATE: 01/08/02
GEOLOGIST: S. Barton
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
			75%		~~red~~	reddish brown	silty-clay w/ organics			0	0	0.6	0
					~~Stiff~~	black	sandy-silt			0	0		
						lt. gray-brown	sand			0	0		
										0	0		
			80%			dk. brown	silty-sand			0	0	0	0
						reddish brown	sandy silt w/ intermittant gravel			0	0		
										0	0		
										0	0		
			90%							0		2.8	1.6
										0			
										0			
						lt. brown	silty-sand			0			
			100%			lt. gray	Sand			0	0	56.1	0.4
										0			
										0			
						gray-green	clay			0			
			100%							0	0	0	0
										0			
							silty-clay			0			
							clay			0			
										0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #:

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC
PROJECT NUMBER:
DRILLING COMPANY: Furgo
DRILLING RIG: 5200-Geoprobe

BORING No.: SB16
DATE: 01/08/02
GEOLOGIST: J. Barton
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
0			85%			dk gray	clayey-Sand w/ organics		Mottled w/ rust	0	0	0	0
5			100%			lt. grey brown	fine-grained sand			0	0	0	0
							½ foot black sand						
						reddish brown	sand to silty sand-w/ gravel						
10			100%				sand-fig sand -gravel scattered			0	0	0	0
15			95%				Sand			0	0	68	0
						lt. brown	silty-sand						
20			95%			black lt. gray	2" sand-clay w/organics; -silty-sand w/ gravel						
						gray	clay			0	0	0	0
25						lt. gray	silty-clay						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC
PROJECT NUMBER:
DRILLING COMPANY: Furgo
DRILLING RIG: 5200 - Geoprobe

BORING No.: SB-16
DATE: 01/08/02
GEOLOGIST: J. Barton
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
25			100%			Gray green	clay			0	0	0	0
						Gray green	silty-clay						
30													

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC
PROJECT NUMBER:
DRILLING COMPANY: Furgo
DRILLING RIG: 5200 Geoprobe

BORING No.: SB-17
DATE: 01/12/02
GEOLOGIST: J. Barton
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0		80	sample average		orange gray	sandy-clay		mottled	304	0	/	0
						taupe (light brown)	silty-sand		contact between first + second lith. highest PID reading				
						lt. gray	gravelly-fine grained sand		grades in color	32			
			40			dk gray				107	0	/	0
	5					reddish brown				3.7			
							gravelly-sand			2.1			
										3.8			
										1.7			
			100							4.9	0	/	0
	10									4.9			
							fine grained sand			4.1			
										7.4			
										6.1			
			100			dk tan				5.1	0	/	0
						tan				1.9			
	15									2.4			
										3.1			
						gray	gravelly-sand			2.5			
			80			gray green	silty-sand			0	0	/	0
										4.2			
	20						sandy-clay			4.2			
										2.9			
							clay			1.3			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: Borehole under water
Rig 2 ft above ground surface

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC
PROJECT NUMBER:
DRILLING COMPANY: Furgo
DRILLING RIG: 5200 Geoprobe

BORING No.: SB-18
DATE: 01/12/02
GEOLOGIST: J. Barton
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
0			90%			orange gray	clay		mottled	0.1	0	/	0
						dk. gray	silty-sand			0			
						lt. gray	fine-grained sand			0.1			
						tan				0.2			
						lt. gray				1.1			
5			90%				fine-grained sand			1.7	0	0.1	0
						dk. brown	silty-fine-grained sand			4.5			
						reddish brown	gravelly fine-grained		-gravel is sporadic	4.7			
							sand			4.9			
										4.4			
10			85				fine-grained sand			1.3	0	1.6	0
									-sporadic gravel	2.0			
										4.5			
						lt. brown				3.0			
							Sand			3.4			
15			90							0.5	0	0.1	0
						lt. gray	gravelly-sand			0.5			
										0.7			
										0.2			
										0.9			
20			100%			gray green	clayey sand			0.4	0	30	0
							silty-fine grained sand			0			
										0.5			
										0			
25							sandy-clay			0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #:

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC Gulfport
PROJECT NUMBER: 4046
DRILLING COMPANY: Fusco
DRILLING RIG: Hollow Stem Auger

BORING No.: SR-19
DATE: 3/12/02
GEOLOGIST: S. Bourgeois
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0					dk gray	clayey sand w/ organics			0	0	0	0
	5		80%			brown	fine-grained sand			0	0	0	0
						reddish brown	1/2 foot black sand w/ gravel						
	10		100%				-gravel scattered			0	0	0	0
	15		100%							0	0	0	0
						lt. brown	sand silty-sand						
	20		95%				sand clay w/ organics						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC Gulfport
PROJECT NUMBER: 4046
DRILLING COMPANY: Fugro
DRILLING RIG: Hollow Stem Auge

BORING No.: SB 20
DATE: 2/12/02
GEOLOGIST: J. Bourgeois
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0					dk gray	clayey-sand w/ organics			0	0	0	0
	5		100%			H gray brown	fine-grained sand						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC Gulfport
PROJECT NUMBER: 4046
DRILLING COMPANY: Fugro
DRILLING RIG: Hollow Stem Auger

BORING No.: SB 21
DATE: 2/12/01
GEOLOGIST: J. Bourgeois
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0					dk gray	clayey-sand w/ organics			0	0	0	0
	5		100%			lt gray brown	fine-grained sand						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC Gulfport
PROJECT NUMBER: 4046
DRILLING COMPANY: Fugro
DRILLING RIG: Hollow Stem Auger

BORING No.: SB 22
DATE: 3/13/02
GEOLOGIST: J. Bourgeois
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0					dk gray	clayey-sand w/ organics			0	0	0	0
	5		100%			lt gray brown	fine-grained sand						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC Gulfport
PROJECT NUMBER: 4046
DRILLING COMPANY: Fugro
DRILLING RIG: Hollow Stem Auger

BORING No.: SB23
DATE: 2/13/02
GEOLOGIST: J. Bourgeois
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0					dk gray	clayey-sand w/ organics			0	0	0	0
	5		100%			dk gray, brown	fine-grained sand						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC Gulfport
PROJECT NUMBER:
DRILLING COMPANY: Fugro
DRILLING RIG: Hollow Stem

BORING No.: MW-1
DATE: 8/14/02
GEOLOGIST: D. Bourgeois
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0					dk gray	clayey-sand w/ organics			0	0	0	0
	5		100%			brown	fine-grained sand			0	0	0	0
	10		100%			reddish brown	silty-sand w/ gravel			0	0	0	0
	15		100%			lt brown	sand silty sand			0	0	0	0
	20		100%			lt gray	sand w/ gravel clay			0	0	0	0
	25		100%			lt gray	silty clay						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes X No ____ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC Gulfport
PROJECT NUMBER: 4046
DRILLING COMPANY: Fugro
DRILLING RIG: Hollow Stem
BORING No.: MW-2
DATE: 2/14/02
GEOLOGIST: J. Bourgeois
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0					black	sandy-clay			0	0	0	0
						lt gray	fine-grained sand						
	5									0	0	0	0
						tan	sand						
							gravelly-sand						
						dk brown	fine-grained w/ gravel						
	10									0	0	0	0
						lt gray	coarse sand						
	15									0	0	0	0
						dk gray	silty-sand						
	20					gray	clayey-sand			0	0	0	0
						green	fine-grained sand						
	25						clay						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes X No ____ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC Gulfport
PROJECT NUMBER: 4046
DRILLING COMPANY: Fugro
DRILLING RIG: Hollow Stem
BORING No.: MW-3
DATE: 2/11/02
GEOLOGIST: J. Bourgeois
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0					blk	sandy-silt w/ organic			0	0	0	0
	5		100%			gray brown	fine-grained sand			0	0	0	0
	10		100%			reddish brown	silty-sand clay - sand			0	0	0	0
	15		100%			lt gray brown	- sand, fine-grained sand			0	0	0	0
	20		100%			lt gray	fine-grained sand w/ gravel						
						gray green	- sandy, clay			0	0	0	0
	25		100%				fine grained sand - clayey sand						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes X No ____ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC Gulfport
PROJECT NUMBER: 4046
DRILLING COMPANY: Fugro
DRILLING RIG: Hollow Stem Auger

BORING No.: MW-4
DATE: 3/11/02
GEOLOGIST: T. Bourgeois
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0					orange gray	sandy-clay			0	0	0	0
							silty-clay						
						lt gray	gravelly-fine grained sand						
	5		80%										
							gravelly sand			0	0	0	0
	10		100%										
						brown	fine grained sand			0	0	0	0
	15		100%										
										0	0	0	0
						gray	gravelly-sand						
							silty-sand						
	20		100%										
							sandy-clay			0	0	0	0
							clay						
	25		80%										

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes X No ____ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NCBC Gulfport
PROJECT NUMBER: 4046
DRILLING COMPANY: Fugro
DRILLING RIG: Hollow Stem
BORING No.: MW-5
DATE: 2/14/02
GEOLOGIST: J. Bourgeois
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0					dk gray	clayey sand w/ organics						
	5					brown	f.g. sand						
						reddish brown	silty-sand w/ gravel						
	10												
	15					lt brown	sand, silty-sand						
	20					lt gray	sand w/ gravel						
	25					lt gray	silty clay						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes X No ____ Well I.D. #: ____

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Site 10/Gulfport
Project No.: CTO 193/N4046

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: NCBC10G01
Sample Location: MW-1
Sampled By: JB/SS
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Date: 2/14/02 Time: 1350 Method: peristaltic	Cloudy	4.66	.093	19.6	188	8.30	0.00	

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 2/14/02								
Method: peristaltic	Initial	5.05	.104	16.3	985	9.42	0.00	
Monitor Reading (ppm): 0	1st	5.02	.093	19.0	560	7.98	0.00	
Well Casing Diameter & Material	2nd	5.06	.092	18.7	306	8.13	0.00	
Type: 2" PVC	3rd	4.95	.094	19.6	213	8.35	0.00	
Total Well Depth (TD): 19.05	4th	4.87	.091	19.5	189	8.46	0.00	
Static Water Level (WL): 2.15	5th	4.66	.093	19.6	188	8.30	0.00	
One Casing Volume(gal/L): 2.7								
Start Purge (hrs): 1255								
End Purge (hrs): 1346								
Total Purge Time (min): 111								
Total Vol. Purged (gal/L): 13.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
8260B	HCl	40 mL	2
504.1	$Na_2S_2O_3$	40 mL	2
8081A / 8082		1L	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Site 10/Gulfport
Project No.: CTO 193 / N4046

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: NCBC10G02
Sample Location: MW-2
Sampled By: JB/SS
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Date: 2/14/02 Time: 1210 Method: low flow peristaltic	cloudy	5.09	.289	18.1	660	8.37	0	

PURGE DATA:

Date: 2/14/02	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: low flow peristaltic	Initial	8.98	.509	19.1	999	8.70	0	
Monitor Reading (ppm): Ø	1st	7.63	.302	18.1	999	8.78	0	
Well Casing Diameter & Material	2nd	6.40	.281	18.4	852	8.82	0	
Type: 2" PVC	3rd	5.44	.281	17.8	820	8.36	0	
Total Well Depth (TD): 22.97	4th	5.33	.291	18.0	954	8.61	0	
Static Water Level (WL): 1.85	5th	5.09	.289	18.1	660	8.37	0	
One Casing Volume(gal/L): 3.4								
Start Purge (hrs): 1030								
End Purge (hrs): 1210								
Total Purge Time (min): 100								
Total Vol. Purged (gal/L): 17.0								

22.97
-1.85
21.12
x .16
12672
2112
3.3792

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
8260B	HCl	2 x 40mL	✓
504.1	$Na_2S_2O_3$	2 x 40mL	✓
8081A / 8082		2 x 1L	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Site 10 / Gulfport
Project No.: CTO 193 / N4046

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: NCBC10G03
Sample Location: MW-3
Sampled By: JB/SS
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 2/13/02	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time: 1613								
Method: low flow peristaltic	clear	5.09	.087	19.1	110	9.61	0.00	

PURGE DATA:

Date: 2/13/02	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: low flow peristaltic	Initial	4.75	.092	18.8	999	10.20	0.00	
Monitor Reading (ppm): 0	1st	4.56	.092	18.9	708	10.19	0.00	
Well Casing Diameter & Material	2nd	4.48	.096	18.8	170	10.00	0.00	
Type: 2" PVC	3rd	4.89	.091	19.2	137	9.72	0.00	
Total Well Depth (TD): 23.15	4th	4.87	.089	19.0	114	9.45	0.00	
Static Water Level (WL): 1.65	5th	5.09	.087	19.1	110	9.61	0.00	
One Casing Volume(gal/L): 3.4								
Start Purge (hrs): 1510								
End Purge (hrs): 1610								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): 17.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
8081A / 8082	—	2 x 1L	✓
8260B	HCl	2 x 40mL	✓
504.1	$Na_2S_2O_3$	2 x 40mL	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): S Smith

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Site 10
Project No.: CTO 193 / N4046

[] Domestic Well Data
[✓] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: NCBC10G04
Sample Location: MW-4
Sampled By: JS/SS
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 2/13/02	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1352	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	
Method: low flow peristaltic	cloudy	5.25	.104	20.7	323	12.62	0	

PURGE DATA:

Date: 2/13/02	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: low flow peristaltic	Initial	5.16	.127	19.9	999	10.25	0	
Monitor Reading (ppm): 0	1st	5.35	.124	20.9	999	10.51	0	
Well Casing Diameter & Material	2nd	5.45	.109	20.8	761	11.80	0	
Type: 2" PVC	3rd	5.26	.114	20.8	451	12.53	0	
Total Well Depth (TD): 22.94	4th	5.25	.104	20.7	323	12.62	0	
Static Water Level (WL): 1.46								
One Casing Volume(gal/L): 3.4								
Start Purge (hrs): 12:15								
End Purge (hrs): 1350								
Total Purge Time (min): 95								
Total Vol. Purged (gal/L): 13.6								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
8081A/8082	—	2 x 1L	✓
504.1	Sodium thiosulfate	2 x 40mL	✓
8260B	HCl	2 x 40mL	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD

Duplicate ID No.: NCBC10G04D

Signature(s): S Smith

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Site 10/ Gulfport
Project No.: C70193 / N4046

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: NCRC10G05
Sample Location: Site 10 MW-5
Sampled By: DB/SS
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (^{0}C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Date: 2/14/02 Time: 1400 Method: peristaltic	clear	5.09	.126	18.7	115	8.58	0.00	

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 2/14/02								
Method: peristaltic	Initial	4.99	.119	18.5	364	8.44	0.00	
Monitor Reading (ppm): Ø	1st	5.02	.119	18.8	163	8.34	0.00	
Well Casing Diameter & Material	2nd	5.15	.120	18.2	113	8.73	0.00	
Type: 2" PVC	3rd	4.88	.128	19.4	146	8.53	0.00	
Total Well Depth (TD): 23.20	4th	4.75	.129	19.3	139	8.42	0.00	
Static Water Level (WL): 2.05	5th	5.09	.126	18.7	115	8.58	0.00	
One Casing Volume(gal/L): 3.4								
Start Purge (hrs): 1245								
End Purge (hrs): 1400								
Total Purge Time (min): 75								
Total Vol. Purged (gal/L): 17.0g								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
8260B	HCl	40mL	2
504.1	$Na_2S_2O_3$	40mL	2
8081A / 8082	—	1L	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: NCBC Gulfport Site 10
Project No.: 1831

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MW1001G02
Sample Location:
Sampled By:
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Date: 12-19-03								
Time: 1215								
Method: low flow	clear	5.43	.075	23.29	3.2	0.00	—	-171

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other ORP
Date: 12-19-03								
Method: low flow	Initial	5.71	.102	23.84	19	2.24	—	-99
Monitor Reading (ppm): Ø								
Well Casing Diameter & Material	1st	5.59	.087	23.30	9.1	0.00	—	-144
Type: 2" PVC								
Total Well Depth (TD): 19.02	2nd	5.46	.075	23.37	6.8	0.00	—	-166
Static Water Level (WL): 2.18								
One Casing Volume (gal/L): 2.15	3rd	5.43	.074	23.26	4.1	0.00	—	-171
Start Purge (hrs): 1135								
End Purge (hrs): 1215	4th	5.43	.075	23.29	3.2	0.00	—	-171
Total Purge Time (min): 40								
8.60 Total Vol. Purged (gal/L): ~~6.45~~								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA			
SVOA			
Herb			
Pest/PCB			
TAL Metals			
CN-			

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: NCBC Gulfport Site 10
Project No.: 1831

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MW1002G02
Sample Location:
Sampled By:
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 12-19-03	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time: low flow								
Method: 2200	clear	5.54	.111	20.92	10	0.00	—	-187

PURGE DATA:

Date: 12-19-03	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other ORP
Method: low flow	Initial	5.58	.116	21.12	130	0.57	—	-144
Monitor Reading (ppm): Ø								
Well Casing Diameter & Material	1st	5.53	.110	20.93	25	0.03	—	-174
Type: 2" PVC								
Total Well Depth (TD): 22.75	2nd	5.52	.112	20.93	17	0.00	—	-182
Static Water Level (WL): 1.94								
One Casing Volume(gal/L): 3.33	3rd	5.54	.111	20.92	10	0.00	—	-187
Start Purge (hrs): 2100								
End Purge (hrs): 2200								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): 10.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA			
SVOA			
Herb			
Pest/PCB			
TAL Metals			
CN-			

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD

Duplicate ID No.: MW1002G02D

Signature(s):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: NCBC Gulfport Site 10
Project No.: 1831

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MW1003G02
Sample Location:
Sampled By:
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 12-19-03	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time: 2400								
Method: low flow	clear	5.34	.083	21.84	4.11	0.00	—	-166

PURGE DATA:

Date: 12-19-03	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other ORP
Method: low flow	Initial	6.32	.087	21.34	71.1	3.85	—	-65
Monitor Reading (ppm): Ø								
Well Casing Diameter & Material	1st	5.31	.087	21.88	18.9	0.00	—	-138
Type: 2" PVC								
Total Well Depth (TD): 22.80	2nd	6.33	.083	21.89	9.71	0.00	—	-156
Static Water Level (WL): 1.79								
One Casing Volume (gal/L): 3.36	3rd	5.34	.083	21.84	4.11	0.00	—	-166
Start Purge (hrs): 2220								
End Purge (hrs): 2400								
Total Purge Time (min): 100								
Total Vol. Purged (gal/L): 10.1								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA			
SVOA			
Herb			
Pest/PCB			
TAL Metals			
CN-			

OBSERVATIONS / NOTES:

Circle if Applicable: MS/MSD

MS/MSD Duplicate ID No.: MW1003G02MS/MD

Signature(s):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NCBC Gulfport Site 10
Project No.: 1831

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MW1004G02
Sample Location:
Sampled By:
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Date: 12-19-03								
Time: 1115								
Method: low flow	clear	5.17	.068	23.72	Ø	0.10	Ø	-181

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other ORP
Date: 12-19-03								
Method: low flow	Initial	4.78	.104	22.12	81.9	2.29	Ø	-29
Monitor Reading (ppm): Ø	1st	5.20	.073	23.47	15	0.33	Ø	-153
Well Casing Diameter & Material	2nd	5.22	.070	23.67	7.0	0.11	Ø	-179
Type: 2" PVC	3rd	5.17	.068	23.72	Ø	0.10	Ø	-181
Total Well Depth (TD): 22.76								
Static Water Level (WL): 1.43								
One Casing Volume (gal/L): 3 4/5								
Start Purge (hrs): 1045								
End Purge (hrs): 1115								
Total Purge Time (min): 30								
Total Vol. Purged (gal/L): 10.2								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA			
SVOA			
Herb			
Pest/PCB			
TAL Metals			
CN-			

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: NCBC Gulfport Site 10
Project No.: 1831

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MW1005G02
Sample Location:
Sampled By:
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 12-19-03	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time: 2030								
Method: low flow	clear	5.56	.069	21.99	3.0	0.13	—	-178

PURGE DATA:

Date: 12-19-03	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	~~Other~~ ORP
Method: low flow	Initial	5.55	.073	23.52	40	2.98	—	-126
Monitor Reading (ppm): Ø								
Well Casing Diameter & Material	1st	5.45	.070	22.56	21	0.57	—	-154
Type: 2" PVC								
Total Well Depth (TD): 23.13	2nd	5.57	.071	21.80	19	1.02	—	-144
Static Water Level (WL): 2.02	Pump Battery Dead, Stop Purge							
One Casing Volume(gal/L): 3.38								
Start Purge (hrs): 1500	3rd	5.57	.069	~~4.4~~ 22.03	4.4	0.36	—	-172
End Purge (hrs): 2050								
Total Purge Time (min): 70	4th	5.56	.069	21.99	3.0	0.13	—	-178
Total Vol. Purged (gal/L): 13.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA			
SVOA			
Herb			
Pest/PCB			
TAL Metals			
CN-			

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NCBC Gulfport Site 10
Project No.: N1831
Location: Gulfport, MS
Personnel: J. Bauguers, B. Fisher
Weather Conditions: Cool, Clear
Measuring Device: WLI
Tidally Influenced: Yes ___ No X
Remarks:

Well or Piezometer Number*	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
1	12/16/03	1315		19.02	1.91			
2		1318		22.75	1.68			
3		1320		22.80	1.49			
4		1323		22.76	1.26			
5	X	1325		23.13	1.80			

* All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Page ___ of ___

Well: MW-1
Site: 10
Date Installed: 2/13/02
Date Developed: 2/14/02
Dev. Method: pump/surge
Pump Type: whale (sub)

Depth to Bottom (ft.): 19.05
Static Water Level Before (ft.): 2.14
Static Water Level After (ft.): 2.15
Screen Length (ft.): 15'
Specific Capacity:
Casing ID (in.): 2"

Responsible Personnel: J. Bourgeois / S. Smith
Drilling Co.: Fugro
Project Name: NCBC Gulfport
Project Number: N4046

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.) D.O.
1100	0	0	2.14	19.9	5.65	.140	999	7.78
1103	0	2.7	2.14	19.9	5.55	.132	999	7.81
1110	0	10	2.14	19.8	5.11	.113	999	8.06
1115	0	15	2.14	19.9	5.12	.100	999	7.62
1120	0	20	2.15	21.1	5.10	.099	999	7.48

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MW-2
Site: 10
Date Installed: 2/13/02
Date Developed: 2/14/02
Dev. Method: pump/surge
Pump Type: whale (sub)

Depth to Bottom (ft.): 22.97
Static Water Level Before (ft.): 1.80
Static Water Level After (ft.): 1.85
Screen Length (ft.): 15'
Specific Capacity:
Casing ID (in.): 2"

Responsible Personnel: J. Bourgeois / S. Smith
Drilling Co.: Fugro
Project Name: NCBC Gulfport
Project Number: 4046

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.) D.O.
0950	0	0	1.80	16.3	9.55	2.31	145	7.38
0955	0	3.4	1.80	17.6	9.64	1.73	999	7.46
1000	0	10	1.81	17.7	9.30	.677	999	7.72
1005	0	15	1.81	17.7	8.62	.379	999	7.85
1010	0	20	1.82	17.6	8.10	.339	999	7.91
1015	0	25	1.83	18.3	7.70	.320	999	8.15
1020	0	30	1.83	18.7	7.40	.302	999	8.29
1025	0	35	1.85	18.3	7.02	.309	999	8.90

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Page ___ of ___

Well: MW-3
Site: 10
Date Installed: 2/11/02
Date Developed: 2/13/02
Dev. Method: surge/bail
Pump Type:

Depth to Bottom (ft.): 23.15
Static Water Level Before (ft.): 1.67
Static Water Level After (ft.): 1.65
Screen Length (ft.): 15
Specific Capacity:
Casing ID (in.): 2"

Responsible Personnel: J. Bourgeois / S. Smith
Drilling Co.: Fugro
Project Name: NCBC Gulfport
Project Number: 4046

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
0850	0	0	1.67	16.7	4.97	.145	875	7.82
0858	0	3.4	1.67	14.7	5.20	.135	999	7.57
0910	0	10	1.66	17.5	5.31	.119	999	7.82
0915	0	15	1.65	17.9	5.22	.120	999	8.31
0920	0	20	1.65	18.8	5.34	.108	999	8.79
0925	0	25	1.66	18.8	5.02	.097	999	8.64
0930	0	30	1.65	18.5	5.10	.105	999	8.70

21.48
× .16
12888
2148
3.4368

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MW-4
Site: 10
Date Installed: 2/11/02
Date Developed: 2/13/02
Dev. Method: Surge / bail
Pump Type: —

Depth to Bottom (ft.): 22.94
Static Water Level Before (ft.): 1.40
Static Water Level After (ft.): 1.46
Screen Length (ft.): 15
Specific Capacity:
Casing ID (in.): 2"

Responsible Personnel: J. Bourgeois / S. Smith
Drilling Co.: Fugro
Project Name: NCBC Gulfport
Project Number: 4046

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.) D.O.
0930 ~~0850~~	0	0	1.40	18.1	5.44	.178	999	10.90
0935	0	3.5	1.42	18.6	5.48	.145	999	8.84
0945	0	10	1.43	18.9	5.40	.145	999	8.54
1000	0	15	1.42	19.4	5.40	.138	999	8.42

21.54
x .16
12924
2154
3.4464

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MW-5
Site: 10
Date Installed: 2/13/02
Date Developed: 2/14/02
Dev. Method: pump/surge
Pump Type: whale (sub)

Depth to Bottom (ft.): 23.20
Static Water Level Before (ft.): 2.01
Static Water Level After (ft.): 2.05
Screen Length (ft.): 15'
Specific Capacity:
Casing ID (in.): 2"

Responsible Personnel: J. Bourgeois / S. Smith
Drilling Co.: Fugro
Project Name: NCBC Gulfport
Project Number: 4046

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.) D.O.
1030	0	0	2.01	19.1	7.32	.217	999	8.17
1035	0	3.4	2.02	19.1	7.24	.201	999	8.14
1040	0	10	2.02	19.1	6.82	.150	676	8.19
1045	0	15	2.03	18.1	6.54	.184	651	8.51
1050	0	20	2.04	18.4	6.31	1.62	631	8.24
1055	0	25	2.05	14.0	6.30	.161	608	8.76

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

PROJECT NAME : NCBC Gulfport

SITE NAME: Site 10

PROJECT No.: 1831

INSTRUMENT NAME/MODEL: 2020 Turbidimeter

MANUFACTURER: LaMotte

SERIAL NUMBER: 03357

Date of Calibration	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot No.)	Remarks and Comments
			Pre-calibration	Post-calibration	Pre-calibration	Post-calibration		
			1.0		10.0			
12-19-03		J. Bourgeois	1.0	1.0	10.0	10.0		

Tetra Tech NUS, Inc.

HORIBA U-22 CALIBRATION LOG

Project Name: NCBC Gulfport
Site Name: Site 10
Project No.: 1T31

Instrument Name/Model: U-22
Manufacturer: Horiba
Serial Number: ~~035540~~ 710920

Date of Calibration	Instrument I.D. Number	Person Performing Calibration	Pre-Calibration Readings				Post-Calibration Readings				Calibration Standard (Lot No.)	Remarks and Comments
			pH	Spec. Cond.	Turbidity (NTU)	~~Other~~ DO	pH	Spec. Cond.	Turbidity (NTU)	~~Other~~ DO		
12-19-03		J. Bourgeois	3.81	3.99	4.5	11.48	4.00	4.55	0.2	10.80	3502	

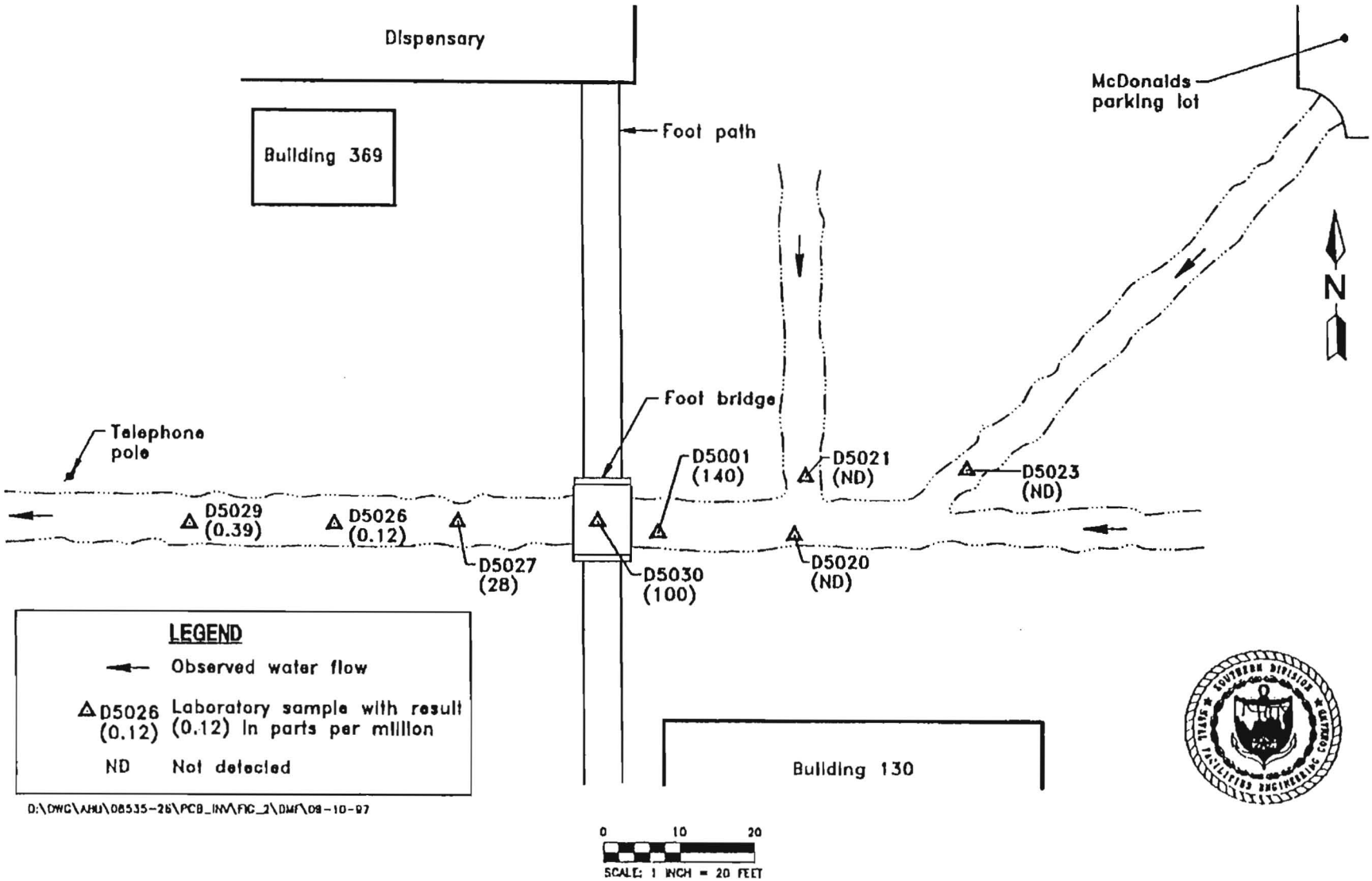

Figure 1-1
Laboratory PCB Results
PCB Investigation Adjacent to Parade Field
Naval Construction Battalion Center, Gulfport, Mississippi

APPENDIX B

REMEDIAL INVESTIGATION ANALYTICAL DATA

CTO 288
soils
full appendix results

order	001	002	003	004	005	006	007	008
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S01	NCBC10S01	NCBC10S01	NCBC10S02	NCBC10S02	NCBC10S02	NCBC10S03	NCBC10S03
nsample	NCBC10S0105	NCBC10S0110	NCBC10S0123	NCBC10S0205	NCBC10S0210	NCBC10S0223	NCBC10S0301	NCBC10S0313
sample	NCBC10S0105	NCBC10S0110	NCBC10S0123	NCBC10S0205	NCBC10S0210	NCBC10S0223	NCBC10S0301	NCBC10S0313
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	5 - 5	10 - 10	23 - 23	5 - 5	10 - 10	23 - 23	1 - 1	13 - 13
gis_date	20020112	20020112	20020112	20020112	20020112	20020112	20020111	20020111
sample_dat	01/12/02	01/12/02	01/12/02	01/12/02	01/12/02	01/12/02	01/11/02	01/11/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_001**	**c_002**	**c_003**	**c_004**	**c_005**	**c_006**	**c_007**	**c_008**
Volatile Organics (ug/kg)								
1,1,1-TRICHLOROETHANE							5.1 U	5.5 U
1,1,2,2-TETRACHLOROETHANE							5.1 U	5.5 U
1,1,2-TRICHLOROETHANE							5.1 U	5.5 U
1,1,2-TRICHLOROTRIFLUOROETHANE								
1,1-DICHLOROETHANE							5.1 U	5.5 U
1,1-DICHLOROETHENE							5.1 U	5.5 U
1,2,3-TRICHLOROBENZENE								
1,2,4-TRICHLOROBENZENE								
1,2-DIBROMO-3-CHLOROPROPANE							10 U	11 U
1,2-DIBROMOETHANE							5.1 U	5.5 U
1,2-DICHLOROBENZENE							5.1 U	5.5 U
1,2-DICHLOROETHANE							5.1 U	5.5 U
1,2-DICHLOROPROPANE							5.1 U	5.5 U
1,3-DICHLOROBENZENE							5.1 U	5.5 U
1,4-DICHLOROBENZENE							5.1 U	5.5 U
2-BUTANONE							21 UJ	22 UJ
2-HEXANONE							21 U	22 U
4-METHYL-2-PENTANONE							21 U	22 U
ACETONE							21 UJ	22 UJ
BENZENE							5.1 U	5.5 U
BROMOCHLOROMETHANE								
BROMODICHLOROMETHANE							5.1 U	5.5 U
BROMOFORM							5.1 U	5.5 U
BROMOMETHANE							10 UJ	11 UJ
CARBON DISULFIDE							5.1 U	5.5 U
CARBON TETRACHLORIDE							5.1 UJ	5.5 UJ
CHLOROBENZENE							5.1 U	5.5 U
CHLORODIBROMOMETHANE							5.1 U	5.5 U
CHLOROETHANE							10 U	11 U
CHLOROFORM							5.1 U	5.5 U
CHLOROMETHANE							10 UJ	11 UJ
CIS-1,2-DICHLOROETHENE							5.1 U	5.5 U
CIS-1,3-DICHLOROPROPENE							5.1 U	5.5 U
CYCLOHEXANE								
DICHLORODIFLUOROMETHANE								
ETHYLBENZENE							5.1 U	5.5 U
ISOPROPYLBENZENE								
M+P-XYLENES								
METHYL ACETATE								
METHYL CYCLOHEXANE								
METHYL TERT-BUTYL ETHER								
METHYLENE CHLORIDE							5.1 U	5.5 U

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	001	002	003	004	005	006	007	008
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S01	NCBC10S01	NCBC10S01	NCBC10S02	NCBC10S02	NCBC10S02	NCBC10S03	NCBC10S03
nsample	NCBC10S0105	NCBC10S0110	NCBC10S0123	NCBC10S0205	NCBC10S0210	NCBC10S0223	NCBC10S0301	NCBC10S0313
sample	NCBC10S0105	NCBC10S0110	NCBC10S0123	NCBC10S0205	NCBC10S0210	NCBC10S0223	NCBC10S0301	NCBC10S0313
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	5 - 5	10 - 10	23 - 23	5 - 5	10 - 10	23 - 23	1 - 1	13 - 13
gis_date	20020112	20020112	20020112	20020112	20020112	20020112	20020111	20020111
sample_dat	01/12/02	01/12/02	01/12/02	01/12/02	01/12/02	01/12/02	01/11/02	01/11/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_001**	**c_002**	**c_003**	**c_004**	**c_005**	**c_006**	**c_007**	**c_008**
O-XYLENE								
STYRENE							5.1 U	5.5 U
TETRACHLOROETHENE							5.1 U	5.5 U
TOLUENE							5.1 U	5.5 U
TOTAL 1,2-DICHLOROETHENE							5.1 U	5.5 U
TOTAL XYLENES							15 U	17 U
TRANS-1,2-DICHLOROETHENE							5.1 U	5.5 U
TRANS-1,3-DICHLOROPROPENE							5.1 U	5.5 U
TRICHLOROETHENE							5.1 U	5.5 U
TRICHLOROFLUOROMETHANE							10 UJ	11 UJ
VINYL CHLORIDE							10 U	11 U
Semivolatile Organics (ug/kg)								
1,1-BIPHENYL								
2,2'-OXYBIS(1-CHLOROPROPANE)								
2,4,5-TRICHLOROPHENOL								
2,4,6-TRICHLOROPHENOL								
2,4-DICHLOROPHENOL								
2,4-DIMETHYLPHENOL								
2,4-DINITROPHENOL								
2,4-DINITROTOLUENE								
2,6-DINITROTOLUENE								
2-CHLORONAPHTHALENE								
2-CHLOROPHENOL								
2-METHYLNAPHTHALENE								
2-METHYLPHENOL								
2-NITROANILINE								
2-NITROPHENOL								
3,3'-DICHLOROBENZIDINE								
3-NITROANILINE								
4,6-DINITRO-2-METHYLPHENOL								
4-BROMOPHENYL PHENYL ETHER								
4-CHLORO-3-METHYLPHENOL								
4-CHLOROANILINE								
4-CHLOROPHENYL PHENYL ETHER								
4-METHYLPHENOL								
4-NITROANILINE								
4-NITROPHENOL								
ACENAPHTHENE								
ACENAPHTHYLENE								
ACETOPHENONE								
ANTHRACENE								
ATRAZINE								
BENZALDEHYDE								

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from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

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order	001	002	003	004	005	006	007	008
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S01	NCBC10S01	NCBC10S01	NCBC10S02	NCBC10S02	NCBC10S02	NCBC10S03	NCBC10S03
nsample	NCBC10S0105	NCBC10S0110	NCBC10S0123	NCBC10S0205	NCBC10S0210	NCBC10S0223	NCBC10S0301	NCBC10S0313
sample	NCBC10S0105	NCBC10S0110	NCBC10S0123	NCBC10S0205	NCBC10S0210	NCBC10S0223	NCBC10S0301	NCBC10S0313
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	5 - 5	10 - 10	23 - 23	5 - 5	10 - 10	23 - 23	1 - 1	13 - 13
gis_date	20020112	20020112	20020112	20020112	20020112	20020112	20020111	20020111
sample_dat	01/12/02	01/12/02	01/12/02	01/12/02	01/12/02	01/12/02	01/11/02	01/11/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_001**	**c_002**	**c_003**	**c_004**	**c_005**	**c_006**	**c_007**	**c_008**
BENZO(A)ANTHRACENE								
BENZO(A)PYRENE								
BENZO(B)FLUORANTHENE								
BENZO(G,H,I)PERYLENE								
BENZO(K)FLUORANTHENE								
BIS(2-CHLOROETHOXY)METHANE								
BIS(2-CHLOROETHYL)ETHER								
BIS(2-ETHYLHEXYL)PHTHALATE								
BUTYL BENZYL PHTHALATE								
CAPROLACTAM								
CARBAZOLE								
CHRYSENE								
DI-N-BUTYL PHTHALATE								
DI-N-OCTYL PHTHALATE								
DIBENZO(A,H)ANTHRACENE								
DIBENZOFURAN								
DIETHYL PHTHALATE								
DIMETHYL PHTHALATE								
FLUORANTHENE								
FLUORENE								
HEXACHLOROBENZENE								
HEXACHLOROBUTADIENE								
HEXACHLOROCYCLOPENTADIENE								
HEXACHLOROETHANE								
INDENO(1,2,3-CD)PYRENE								
ISOPHORONE								
N-NITROSO-DI-N-PROPYLAMINE								
N-NITROSODIPHENYLAMINE								
NAPHTHALENE								
NITROBENZENE								
PENTACHLOROPHENOL								
PHENANTHRENE								
PHENOL								
PYRENE								
Pesticides/PCBs (ug/kg)								
4,4'-DDD	0.12 R	2.1 U	2.2 U	2.0 U	0.33 J	0.14 R	8.4 U	2.0 U
4,4'-DDE	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	8.4 U	2.0 U
4,4'-DDT	2.0 U	2.1 U	2.2 U	2.0 U	2	0.39 J	8.4 U	2.0 UJ
ALDRIN	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	8.4 U	2.0 U
ALPHA-BHC	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	8.4 U	0.083 J
ALPHA-CHLORDANE	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	8.4 U	2.0 U
AROCLOR-1016	38 U	41 U	42 U	39 U	40 U	41 U	41 U	39 U
AROCLOR-1221	38 U	41 U	42 U	39 U	40 U	41 U	41 U	39 U

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

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order	001	002	003	004	005	006	007	008
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S01	NCBC10S01	NCBC10S01	NCBC10S02	NCBC10S02	NCBC10S02	NCBC10S03	NCBC10S03
nsample	NCBC10S0105	NCBC10S0110	NCBC10S0123	NCBC10S0205	NCBC10S0210	NCBC10S0223	NCBC10S0301	NCBC10S0313
sample	NCBC10S0105	NCBC10S0110	NCBC10S0123	NCBC10S0205	NCBC10S0210	NCBC10S0223	NCBC10S0301	NCBC10S0313
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	5 - 5	10 - 10	23 - 23	5 - 5	10 - 10	23 - 23	1 - 1	13 - 13
gis_date	20020112	20020112	20020112	20020112	20020112	20020112	20020111	20020111
sample_dat	01/12/02	01/12/02	01/12/02	01/12/02	01/12/02	01/12/02	01/11/02	01/11/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_001**	**c_002**	**c_003**	**c_004**	**c_005**	**c_006**	**c_007**	**c_008**
AROCLOR-1232	38 U	41 U	42 U	39 U	40 U	41 U	41 U	39 U
AROCLOR-1242	38 U	41 U	42 U	39 U	40 U	41 U	41 U	39 U
AROCLOR-1248	38 U	41 U	42 U	39 U	40 U	41 U	41 U	39 U
AROCLOR-1254	38 U	41 U	42 U	39 U	40 U	41 U	41 U	39 U
AROCLOR-1260	38 U	41 U	42 U	39 U	40 U	41 U	740	39 U
BETA-BHC	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	8.4 U	2.0 U
DELTA-BHC	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	8.4 U	2.0 U
DIELDRIN	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	2.1 R	2.0 U
ENDOSULFAN I	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	8.4 U	2.0 U
ENDOSULFAN II	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	17	2.0 U
ENDOSULFAN SULFATE	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	8.4 U	2.0 U
ENDRIN	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	5.7 R	2.0 U
ENDRIN ALDEHYDE	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	1.9 R	2.0 U
ENDRIN KETONE	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	8.4 U	2.0 U
GAMMA-BHC (LINDANE)	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	8.4 U	2.0 U
GAMMA-CHLORDANE	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	8.4 U	2.0 U
HEPTACHLOR	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	8.4 U	2.0 U
HEPTACHLOR EPOXIDE	2.0 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	8.4 U	2.0 U
METHOXYCHLOR	3.8 U	4.1 U	4.2 U	3.9 U	4.0 U	4.1 U	16 U	3.9 U
TOXAPHENE	78 U	83 U	86 U	79 U	81 U	84 U	330 U	79 U
Herbicides (ug/kg)								
2,4,5-T								
2,4,5-TP (SILVEX)								
2,4-D								
DINOSEB								
Inorganics (mg/kg)								
ALUMINUM								
ANTIMONY								
ARSENIC								
BARIUM								
BERYLLIUM								
CADMIUM								
CALCIUM								
CHROMIUM								
COBALT								
COPPER								
IRON								
LEAD								
MAGNESIUM								
MANGANESE								
MERCURY								
NICKEL								
POTASSIUM								

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

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order	**001**	**002**	**003**	**004**	**005**	**006**	**007**	**008**
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S01	NCBC10S01	NCBC10S01	NCBC10S02	NCBC10S02	NCBC10S02	NCBC10S03	NCBC10S03
nsample	NCBC10S0105	NCBC10S0110	NCBC10S0123	NCBC10S0205	NCBC10S0210	NCBC10S0223	NCBC10S0301	NCBC10S0313
sample	NCBC10S0105	NCBC10S0110	NCBC10S0123	NCBC10S0205	NCBC10S0210	NCBC10S0223	NCBC10S0301	NCBC10S0313
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	5 - 5	10 - 10	23 - 23	5 - 5	10 - 10	23 - 23	1 - 1	13 - 13
gis_date	20020112	20020112	20020112	20020112	20020112	20020112	20020111	20020111
sample_dat	01/12/02	01/12/02	01/12/02	01/12/02	01/12/02	01/12/02	01/11/02	01/11/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_001**	**c_002**	**c_003**	**c_004**	**c_005**	**c_006**	**c_007**	**c_008**
SELENIUM								
SILVER								
SODIUM								
THALLIUM								
VANADIUM								
ZINC								
Miscellaneous Parameters (mg/kg)								
CYANIDE								
TOTAL SOLIDS (%)								

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	009	010	011	012	013	014	015	016
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S03	NCBC10S03	NCBC10S04	NCBC10S04	NCBC10S04	NCBC10S05	NCBC10S05	NCBC10S05
nsample	NCBC10S0313-D	NCBC10S0318	NCBC10S0401	NCBC10S0411	NCBC10S0420	NCBC10S0502	NCBC10S0511	NCBC10S0520
sample	NCBC10S0313D	NCBC10S0318	NCBC10S0401	NCBC10S0411	NCBC10S0420	NCBC10S0502	NCBC10S0511	NCBC10S0520
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	13 - 13	18 - 18	1 - 1	11 - 11	20 - 20	2 - 2	11 - 11	20 - 20
gis_date	20020111	20020111	20020111	20020111	20020111	20020111	20020111	20020111
sample_dat	01/11/02	01/11/02	01/11/02	01/11/02	01/11/02	01/11/02	01/11/02	01/11/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_009**	**c_010**	**c_011**	**c_012**	**c_013**	**c_014**	**c_015**	**c_016**
Volatile Organics (ug/kg)								
1,1,1-TRICHLOROETHANE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
1,1,2,2-TETRACHLOROETHANE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
1,1,2-TRICHLOROETHANE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
1,1,2-TRICHLOROTRIFLUOROETHANE								
1,1-DICHLOROETHANE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
1,1-DICHLOROETHENE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
1,2,3-TRICHLOROBENZENE								
1,2,4-TRICHLOROBENZENE								
1,2-DIBROMO-3-CHLOROPROPANE	11 U	12 U	11 U	10 U	12 U	11 U	13 U	12 U
1,2-DIBROMOETHANE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
1,2-DICHLOROBENZENE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
1,2-DICHLOROETHANE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
1,2-DICHLOROPROPANE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
1,3-DICHLOROBENZENE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	12	6.5 U	6.2 U
1,4-DICHLOROBENZENE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	34	6.5 U	6.2 U
2-BUTANONE	22 UJ	25 UJ	21 UJ	21 UJ	23 UJ	21 UJ	26 UJ	25 UJ
2-HEXANONE	22 U	25 U	21 U	21 U	23 U	21 U	26 U	25 U
4-METHYL-2-PENTANONE	22 U	25 U	21 U	21 U	23 U	21 U	26 U	25 U
ACETONE	22 UJ	25 UJ	8.7 J	21 UJ	23 UJ	6 J	26 UJ	25 UJ
BENZENE	5.6 U	6.2 U	110	5.2 U	5.8 U	120	6.5 U	6.2 U
BROMOCHLOROMETHANE								
BROMODICHLOROMETHANE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
BROMOFORM	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
BROMOMETHANE	11 UJ	12 UJ	11 U	10 U	12 U	11 UJ	13 UJ	12 UJ
CARBON DISULFIDE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
CARBON TETRACHLORIDE	5.6 UJ	6.2 UJ	5.4 UJ	5.2 UJ	5.8 UJ	5.3 UJ	6.5 UJ	6.2 UJ
CHLOROBENZENE	5.6 U	6.2 U	35	5.2 U	5.8 U	130	6.5 U	6.2 U
CHLORODIBROMOMETHANE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
CHLOROETHANE	11 U	12 U	11 U	10 U	12 U	11 U	13 U	12 U
CHLOROFORM	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
CHLOROMETHANE	11 UJ	12 UJ	11 U	10 U	12 U	11 UJ	13 UJ	12 UJ
CIS-1,2-DICHLOROETHENE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
CIS-1,3-DICHLOROPROPENE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
CYCLOHEXANE								
DICHLORODIFLUOROMETHANE								
ETHYLBENZENE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
ISOPROPYLBENZENE								
M+P-XYLENES								
METHYL ACETATE								
METHYL CYCLOHEXANE								
METHYL TERT-BUTYL ETHER								
METHYLENE CHLORIDE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	009	010	011	012	013	014	015	016
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S03	NCBC10S03	NCBC10S04	NCBC10S04	NCBC10S04	NCBC10S05	NCBC10S05	NCBC10S05
nsample	NCBC10S0313-D	NCBC10S0318	NCBC10S0401	NCBC10S0411	NCBC10S0420	NCBC10S0502	NCBC10S0511	NCBC10S0520
sample	NCBC10S0313D	NCBC10S0318	NCBC10S0401	NCBC10S0411	NCBC10S0420	NCBC10S0502	NCBC10S0511	NCBC10S0520
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	13 - 13	18 - 18	1 - 1	11 - 11	20 - 20	2 - 2	11 - 11	20 - 20
gis_date	20020111	20020111	20020111	20020111	20020111	20020111	20020111	20020111
sample_dat	01/11/02	01/11/02	01/11/02	01/11/02	01/11/02	01/11/02	01/11/02	01/11/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_009**	**c_010**	**c_011**	**c_012**	**c_013**	**c_014**	**c_015**	**c_016**
O-XYLENE								
STYRENE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
TETRACHLOROETHENE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
TOLUENE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
TOTAL 1,2-DICHLOROETHENE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
TOTAL XYLENES	17 U	19 U	16 U	16 U	18 U	16 U	19 U	19 U
TRANS-1,2-DICHLOROETHENE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
TRANS-1,3-DICHLOROPROPENE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
TRICHLOROETHENE	5.6 U	6.2 U	5.4 U	5.2 U	5.8 U	5.3 U	6.5 U	6.2 U
TRICHLOROFLUOROMETHANE	11 UJ	12 UJ	11 UJ	10 UJ	12 UJ	11 UJ	13 UJ	12 UJ
VINYL CHLORIDE	11 U	12 U	11 U	10 U	12 U	11 U	13 U	12 U
Semivolatile Organics (ug/kg)								
1,1-BIPHENYL								
2,2'-OXYBIS(1-CHLOROPROPANE)								
2,4,5-TRICHLOROPHENOL								
2,4,6-TRICHLOROPHENOL								
2,4-DICHLOROPHENOL								
2,4-DIMETHYLPHENOL								
2,4-DINITROPHENOL								
2,4-DINITROTOLUENE								
2,6-DINITROTOLUENE								
2-CHLORONAPHTHALENE								
2-CHLOROPHENOL								
2-METHYLNAPHTHALENE								
2-METHYLPHENOL								
2-NITROANILINE								
2-NITROPHENOL								
3,3'-DICHLOROBENZIDINE								
3-NITROANILINE								
4,6-DINITRO-2-METHYLPHENOL								
4-BROMOPHENYL PHENYL ETHER								
4-CHLORO-3-METHYLPHENOL								
4-CHLOROANILINE								
4-CHLOROPHENYL PHENYL ETHER								
4-METHYLPHENOL								
4-NITROANILINE								
4-NITROPHENOL								
ACENAPHTHENE								
ACENAPHTHYLENE								
ACETOPHENONE								
ANTHRACENE								
ATRAZINE								
BENZALDEHYDE								

from _10sosam.dbf
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order	009	010	011	012	013	014	015	016
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S03	NCBC10S03	NCBC10S04	NCBC10S04	NCBC10S04	NCBC10S05	NCBC10S05	NCBC10S05
nsample	NCBC10S0313-D	NCBC10S0318	NCBC10S0401	NCBC10S0411	NCBC10S0420	NCBC10S0502	NCBC10S0511	NCBC10S0520
sample	NCBC10S0313D	NCBC10S0318	NCBC10S0401	NCBC10S0411	NCBC10S0420	NCBC10S0502	NCBC10S0511	NCBC10S0520
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	13 - 13	18 - 18	1 - 1	11 - 11	20 - 20	2 - 2	11 - 11	20 - 20
gis_date	20020111	20020111	20020111	20020111	20020111	20020111	20020111	20020111
sample_dat	01/11/02	01/11/02	01/11/02	01/11/02	01/11/02	01/11/02	01/11/02	01/11/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_009**	**c_010**	**c_011**	**c_012**	**c_013**	**c_014**	**c_015**	**c_016**
BENZO(A)ANTHRACENE								
BENZO(A)PYRENE								
BENZO(B)FLUORANTHENE								
BENZO(G,H,I)PERYLENE								
BENZO(K)FLUORANTHENE								
BIS(2-CHLOROETHOXY)METHANE								
BIS(2-CHLOROETHYL)ETHER								
BIS(2-ETHYLHEXYL)PHTHALATE								
BUTYL BENZYL PHTHALATE								
CAPROLACTAM								
CARBAZOLE								
CHRYSENE								
DI-N-BUTYL PHTHALATE								
DI-N-OCTYL PHTHALATE								
DIBENZO(A,H)ANTHRACENE								
DIBENZOFURAN								
DIETHYL PHTHALATE								
DIMETHYL PHTHALATE								
FLUORANTHENE								
FLUORENE								
HEXACHLOROBENZENE								
HEXACHLOROBUTADIENE								
HEXACHLOROCYCLOPENTADIENE								
HEXACHLOROETHANE								
INDENO(1,2,3-CD)PYRENE								
ISOPHORONE								
N-NITROSO-DI-N-PROPYLAMINE								
N-NITROSODIPHENYLAMINE								
NAPHTHALENE								
NITROBENZENE								
PENTACHLOROPHENOL								
PHENANTHRENE								
PHENOL								
PYRENE								
Pesticides/PCBs (ug/kg)								
4,4'-DDD	2.0 U	2.0 U	10 U	2.0 U	2.2 UJ	10 U	2.1 U	0.24 J
4,4'-DDE	2.0 U	2.0 U	10 U	2.0 U	2.2 U	10 U	2.1 U	2.1 U
4,4'-DDT	2.0 UJ	2.0 UJ	30 R	2.0 UJ	2.2 UJ	24 R	2.1 UJ	2.1 UJ
ALDRIN	2.0 U	2.0 U	10 U	2.0 U	2.2 U	10 U	2.1 U	2.1 U
ALPHA-BHC	2.0 U	2.0 U	10 U	2.0 U	2.2 U	10 U	2.1 U	2.1 U
ALPHA-CHLORDANE	2.0 U	2.0 U	9.5 R	2.0 U	2.2 U	5.2 R	2.1 U	2.1 U
AROCLOR-1016	39 U	39 U	390 U	39 U	43 U	400 U	40 U	41 U
AROCLOR-1221	39 U	39 U	390 U	39 U	43 U	400 U	40 U	41 U

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	009	010	011	012	013	014	015	016
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S03	NCBC10S03	NCBC10S04	NCBC10S04	NCBC10S04	NCBC10S05	NCBC10S05	NCBC10S05
nsample	NCBC10S0313-D	NCBC10S0318	NCBC10S0401	NCBC10S0411	NCBC10S0420	NCBC10S0502	NCBC10S0511	NCBC10S0520
sample	NCBC10S0313D	NCBC10S0318	NCBC10S0401	NCBC10S0411	NCBC10S0420	NCBC10S0502	NCBC10S0511	NCBC10S0520
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	13 - 13	18 - 18	1 - 1	11 - 11	20 - 20	2 - 2	11 - 11	20 - 20
gis_date	20020111	20020111	20020111	20020111	20020111	20020111	20020111	20020111
sample_dat	01/11/02	01/11/02	01/11/02	01/11/02	01/11/02	01/11/02	01/11/02	01/11/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_009**	**c_010**	**c_011**	**c_012**	**c_013**	**c_014**	**c_015**	**c_016**
AROCLOR-1232	39 U	39 U	390 U	39 U	43 U	400 U	40 U	41 U
AROCLOR-1242	39 U	39 U	390 U	39 U	43 U	400 U	40 U	41 U
AROCLOR-1248	39 U	39 U	390 U	39 U	43 U	400 U	40 U	41 U
AROCLOR-1254	39 U	39 U	390 U	39 U	43 U	400 U	40 U	41 U
AROCLOR-1260	39 U	39 U	6000	39 U	43 U	5200	40 U	41 U
BETA-BHC	2.0 U	2.0 U	10 U	2.0 U	2.2 U	10 U	2.1 U	2.1 U
DELTA-BHC	2.0 U	2.0 U	10 U	2.0 UJ	0.11 J	10 U	2.1 U	2.1 U
DIELDRIN	2.0 U	2.0 U	26 J	2.0 U	2.2 U	18 J	2.1 U	2.1 U
ENDOSULFAN I	2.0 U	2.0 U	10 U	2.0 U	2.2 U	10 U	2.1 U	2.1 U
ENDOSULFAN II	2.0 U	2.0 U	120 J	2.0 U	2.2 U	110	2.1 U	2.1 U
ENDOSULFAN SULFATE	2.0 U	2.0 U	10 U	2.0 UJ	2.2 U	10 U	2.1 U	2.1 U
ENDRIN	2.0 U	2.0 U	65 R	2.0 U	2.2 U	44 R	2.1 U	2.1 U
ENDRIN ALDEHYDE	2.0 U	2.0 U	15 R	0.38 J	2.2 U	13 R	2.1 U	2.1 U
ENDRIN KETONE	2.0 U	2.0 U	10 U	2.0 UJ	2.2 U	10 U	2.1 U	2.1 U
GAMMA-BHC (LINDANE)	2.0 U	2.0 U	10 U	2.0 U	2.2 U	10 U	2.1 U	2.1 U
GAMMA-CHLORDANE	2.0 U	2.0 U	10 U	2.0 U	2.2 U	10 U	2.1 U	2.1 U
HEPTACHLOR	2.0 U	2.0 U	10 U	2.0 U	2.2 U	10 U	2.1 U	2.1 U
HEPTACHLOR EPOXIDE	2.0 U	2.0 U	10 U	2.0 U	2.2 U	10 U	2.1 U	2.1 U
METHOXYCHLOR	3.9 U	3.9 U	20 U	3.9 UJ	4.3 U	20 U	4.0 U	4.1 U
TOXAPHENE	80 U	80 U	400 U	79 U	88 U	410 U	81 U	83 U
Herbicides (ug/kg)								
2,4,5-T								
2,4,5-TP (SILVEX)								
2,4-D								
DINOSEB								
Inorganics (mg/kg)								
ALUMINUM								
ANTIMONY								
ARSENIC								
BARIUM								
BERYLLIUM								
CADMIUM								
CALCIUM								
CHROMIUM								
COBALT								
COPPER								
IRON								
LEAD								
MAGNESIUM								
MANGANESE								
MERCURY								
NICKEL								
POTASSIUM								

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	009	010	011	012	013	014	015	016
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S03	NCBC10S03	NCBC10S04	NCBC10S04	NCBC10S04	NCBC10S05	NCBC10S05	NCBC10S05
nsample	NCBC10S0313-D	NCBC10S0318	NCBC10S0401	NCBC10S0411	NCBC10S0420	NCBC10S0502	NCBC10S0511	NCBC10S0520
sample	NCBC10S0313D	NCBC10S0318	NCBC10S0401	NCBC10S0411	NCBC10S0420	NCBC10S0502	NCBC10S0511	NCBC10S0520
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	13 - 13	18 - 18	1 - 1	11 - 11	20 - 20	2 - 2	11 - 11	20 - 20
gis_date	20020111	20020111	20020111	20020111	20020111	20020111	20020111	20020111
sample_dat	01/11/02	01/11/02	01/11/02	01/11/02	01/11/02	01/11/02	01/11/02	01/11/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_009**	**c_010**	**c_011**	**c_012**	**c_013**	**c_014**	**c_015**	**c_016**
SELENIUM								
SILVER								
SODIUM								
THALLIUM								
VANADIUM								
ZINC								
Miscellaneous Parameters (mg/kg)								
CYANIDE								
TOTAL SOLIDS (%)								

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	017	018	019	020	021	022	023	024
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S06	NCBC10S06	NCBC10S06	NCBC10S06	NCBC10S07	NCBC10S07	NCBC10S07	NCBC10S08
nsample	NCBC10S0602	NCBC10S0608	NCBC10S0620	NCBC10S0620-D	NCBC10S0705	NCBC10S0710	NCBC10S0723	NCBC10S0805
sample	NCBC10S0602	NCBC10S0608	NCBC10S0620	NCBC10S0620D	NCBC10S0705	NCBC10S0710	NCBC10S0723	NCBC10S0805
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	2 - 2	8 - 8	20 - 20	20 - 20	5 - 5	10 - 10	23 - 23	5 - 5
gis_date	20020111	20020111	20020111	20020111	20020110	20020110	20020110	20020110
sample_dat	01/11/02	01/11/02	01/11/02	01/11/02	01/10/02	01/10/02	01/10/02	01/10/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_017**	**c_018**	**c_019**	**c_020**	**c_021**	**c_022**	**c_023**	**c_024**
Volatile Organics (ug/kg)								
1,1,1-TRICHLOROETHANE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 UJ	6.1 UJ	6 U	5.4 UJ
1,1,2,2-TETRACHLOROETHANE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
1,1,2-TRICHLOROETHANE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
1,1,2-TRICHLOROTRIFLUOROETHANE								
1,1-DICHLOROETHANE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
1,1-DICHLOROETHENE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
1,2,3-TRICHLOROBENZENE								
1,2,4-TRICHLOROBENZENE								
1,2-DIBROMO-3-CHLOROPROPANE	12 U	9.9 U	12 UJ	12 UJ	10 U	12 U	12 U	11 U
1,2-DIBROMOETHANE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
1,2-DICHLOROBENZENE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
1,2-DICHLOROETHANE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
1,2-DICHLOROPROPANE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
1,3-DICHLOROBENZENE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
1,4-DICHLOROBENZENE	6.1 U	1.4 J	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
2-BUTANONE	24 UJ	20 UJ	24 UJ	25 UJ	21 U	24 U	24 UJ	21 U
2-HEXANONE	24 U	20 U	24 UJ	25 UJ	21 U	24 U	24 U	21 U
4-METHYL-2-PENTANONE	24 U	20 U	24 UJ	25 UJ	21 U	24 U	24 U	21 U
ACETONE	8.7 J	5.4 J	7.5 J	25 UJ	6.2 J	24 UJ	24 UJ	5.6 J
BENZENE	230	65	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	1.4 J
BROMOCHLOROMETHANE								
BROMODICHLOROMETHANE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
BROMOFORM	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
BROMOMETHANE	12 UJ	9.9 UJ	12 UJ	12 UJ	10 U	12 U	12 U	11 U
CARBON DISULFIDE	6.1 U	4.9 U	6.1 U	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
CARBON TETRACHLORIDE	6.1 UJ	4.9 UJ	6.1 UJ	6.1 UJ	5.2 UJ	6.1 UJ	6 UJ	5.4 UJ
CHLOROBENZENE	110	75	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
CHLORODIBROMOMETHANE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
CHLOROETHANE	12 U	9.9 U	12 UJ	12 UJ	10 U	12 U	12 U	11 U
CHLOROFORM	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
CHLOROMETHANE	12 UJ	9.9 UJ	12 UJ	12 UJ	10 U	12 U	12 U	11 U
CIS-1,2-DICHLOROETHENE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
CIS-1,3-DICHLOROPROPENE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
CYCLOHEXANE								
DICHLORODIFLUOROMETHANE								
ETHYLBENZENE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
ISOPROPYLBENZENE								
M+P-XYLENES								
METHYL ACETATE								
METHYL CYCLOHEXANE								
METHYL TERT-BUTYL ETHER								
METHYLENE CHLORIDE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U

from _10sosam.dbf
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from q:\sql_server\gulfport\upload

order	017	018	019	020	021	022	023	024
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S06	NCBC10S06	NCBC10S06	NCBC10S06	NCBC10S07	NCBC10S07	NCBC10S07	NCBC10S08
nsample	NCBC10S0602	NCBC10S0608	NCBC10S0620	NCBC10S0620-D	NCBC10S0705	NCBC10S0710	NCBC10S0723	NCBC10S0805
sample	NCBC10S0602	NCBC10S0608	NCBC10S0620	NCBC10S0620D	NCBC10S0705	NCBC10S0710	NCBC10S0723	NCBC10S0805
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	2 - 2	8 - 8	20 - 20	20 - 20	5 - 5	10 - 10	23 - 23	5 - 5
gis_date	20020111	20020111	20020111	20020111	20020110	20020110	20020110	20020110
sample_dat	01/11/02	01/11/02	01/11/02	01/11/02	01/10/02	01/10/02	01/10/02	01/10/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_017**	**c_018**	**c_019**	**c_020**	**c_021**	**c_022**	**c_023**	**c_024**
O-XYLENE								
STYRENE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
TETRACHLOROETHENE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 UJ	6.1 UJ	6 U	5.4 UJ
TOLUENE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
TOTAL 1,2-DICHLOROETHENE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
TOTAL XYLENES	18 U	15 U	18 UJ	18 UJ	16 U	18 U	18 U	16 U
TRANS-1,2-DICHLOROETHENE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
TRANS-1,3-DICHLOROPROPENE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
TRICHLOROETHENE	6.1 U	4.9 U	6.1 UJ	6.1 UJ	5.2 U	6.1 U	6 U	5.4 U
TRICHLOROFLUOROMETHANE	12 UJ	9.9 UJ	12 UJ	12 UJ	10 UJ	12 UJ	12 UJ	11 UJ
VINYL CHLORIDE	12 U	9.9 U	12 UJ	12 UJ	10 U	12 U	12 U	11 U
Semivolatile Organics (ug/kg)								
1,1-BIPHENYL								
2,2'-OXYBIS(1-CHLOROPROPANE)								
2,4,5-TRICHLOROPHENOL								
2,4,6-TRICHLOROPHENOL								
2,4-DICHLOROPHENOL								
2,4-DIMETHYLPHENOL								
2,4-DINITROPHENOL								
2,4-DINITROTOLUENE								
2,6-DINITROTOLUENE								
2-CHLORONAPHTHALENE								
2-CHLOROPHENOL								
2-METHYLNAPHTHALENE								
2-METHYLPHENOL								
2-NITROANILINE								
2-NITROPHENOL								
3,3'-DICHLOROBENZIDINE								
3-NITROANILINE								
4,6-DINITRO-2-METHYLPHENOL								
4-BROMOPHENYL PHENYL ETHER								
4-CHLORO-3-METHYLPHENOL								
4-CHLOROANILINE								
4-CHLOROPHENYL PHENYL ETHER								
4-METHYLPHENOL								
4-NITROANILINE								
4-NITROPHENOL								
ACENAPHTHENE								
ACENAPHTHYLENE								
ACETOPHENONE								
ANTHRACENE								
ATRAZINE								
BENZALDEHYDE								

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

CTO 288
soils
full appendix results

order	017	018	019	020	021	022	023	024
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S06	NCBC10S06	NCBC10S06	NCBC10S06	NCBC10S07	NCBC10S07	NCBC10S07	NCBC10S08
nsample	NCBC10S0602	NCBC10S0608	NCBC10S0620	NCBC10S0620-D	NCBC10S0705	NCBC10S0710	NCBC10S0723	NCBC10S0805
sample	NCBC10S0602	NCBC10S0608	NCBC10S0620	NCBC10S0620D	NCBC10S0705	NCBC10S0710	NCBC10S0723	NCBC10S0805
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	2 - 2	8 - 8	20 - 20	20 - 20	5 - 5	10 - 10	23 - 23	5 - 5
gis_date	20020111	20020111	20020111	20020111	20020110	20020110	20020110	20020110
sample_dat	01/11/02	01/11/02	01/11/02	01/11/02	01/10/02	01/10/02	01/10/02	01/10/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_017**	**c_018**	**c_019**	**c_020**	**c_021**	**c_022**	**c_023**	**c_024**
BENZO(A)ANTHRACENE								
BENZO(A)PYRENE								
BENZO(B)FLUORANTHENE								
BENZO(G,H,I)PERYLENE								
BENZO(K)FLUORANTHENE								
BIS(2-CHLOROETHOXY)METHANE								
BIS(2-CHLOROETHYL)ETHER								
BIS(2-ETHYLHEXYL)PHTHALATE								
BUTYL BENZYL PHTHALATE								
CAPROLACTAM								
CARBAZOLE								
CHRYSENE								
DI-N-BUTYL PHTHALATE								
DI-N-OCTYL PHTHALATE								
DIBENZO(A,H)ANTHRACENE								
DIBENZOFURAN								
DIETHYL PHTHALATE								
DIMETHYL PHTHALATE								
FLUORANTHENE								
FLUORENE								
HEXACHLOROBENZENE								
HEXACHLOROBUTADIENE								
HEXACHLOROCYCLOPENTADIENE								
HEXACHLOROETHANE								
INDENO(1,2,3-CD)PYRENE								
ISOPHORONE								
N-NITROSO-DI-N-PROPYLAMINE								
N-NITROSODIPHENYLAMINE								
NAPHTHALENE								
NITROBENZENE								
PENTACHLOROPHENOL								
PHENANTHRENE								
PHENOL								
PYRENE								
Pesticides/PCBs (ug/kg)								
4,4'-DDD	110 U	100 U	2.1 U	2.2 U	2.0 UJ	2.2 UJ	2.2 UJ	2.0 UJ
4,4'-DDE	110 U	100 U	2.1 U	2.2 U	2.0 U	2.2 U	2.2 U	2.0 U
4,4'-DDT	360 R	100 R	2.1 UJ	2.2 UJ	2.0 UJ	2.2 UJ	2.2 UJ	2.0 UJ
ALDRIN	110 U	100 U	2.1 U	2.2 U	2.0 U	2.2 U	2.2 U	2.0 U
ALPHA-BHC	110 U	100 U	2.1 U	2.2 U	2.0 U	2.2 U	2.2 U	2.0 U
ALPHA-CHLORDANE	64 J	25 R	0.40 J	2.2 U	2.0 U	2.2 U	2.2 U	2.0 U
AROCLOR-1016	8600 U	2000 U	42 U	42 U	39 U	42 U	42 U	39 U
AROCLOR-1221	8600 U	2000 U	42 U	42 U	39 U	42 U	42 U	39 U

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	017	018	019	020	021	022	023	024
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S06	NCBC10S06	NCBC10S06	NCBC10S06	NCBC10S07	NCBC10S07	NCBC10S07	NCBC10S08
nsample	NCBC10S0602	NCBC10S0608	NCBC10S0620	NCBC10S0620-D	NCBC10S0705	NCBC10S0710	NCBC10S0723	NCBC10S0805
sample	NCBC10S0602	NCBC10S0608	NCBC10S0620	NCBC10S0620D	NCBC10S0705	NCBC10S0710	NCBC10S0723	NCBC10S0805
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	2 - 2	8 - 8	20 - 20	20 - 20	5 - 5	10 - 10	23 - 23	5 - 5
gis_date	20020111	20020111	20020111	20020111	20020110	20020110	20020110	20020110
sample_dat	01/11/02	01/11/02	01/11/02	01/11/02	01/10/02	01/10/02	01/10/02	01/10/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_017**	**c_018**	**c_019**	**c_020**	**c_021**	**c_022**	**c_023**	**c_024**
AROCLOR-1232	8600 U	2000 U	42 U	42 U	39 U	42 U	42 U	39 U
AROCLOR-1242	8600 U	2000 U	42 U	42 U	39 U	42 U	42 U	39 U
AROCLOR-1248	8600 U	2000 U	42 U	42 U	39 U	42 U	42 U	39 U
AROCLOR-1254	8600 U	2000 U	42 U	42 U	39 U	42 U	42 U	39 U
AROCLOR-1260	83000	19000	42 U	38 J	39 U	42 U	42 U	39 U
BETA-BHC	110 U	100 U	2.1 U	2.2 U	2.0 U	2.2 U	2.2 U	2.0 U
DELTA-BHC	110 U	100 U	2.1 U	2.2 U	2.0 U	2.2 U	2.2 U	2.0 U
DIELDRIN	240 R	60 R	2.1 U	0.14 J	2.0 U	2.2 U	2.2 U	2.0 U
ENDOSULFAN I	110 U	100 U	2.1 U	2.2 U	2.0 U	2.2 U	2.2 U	2.0 U
ENDOSULFAN II	1500	370	2.1 U	0.76 J	2.0 U	2.2 U	2.2 U	2.0 U
ENDOSULFAN SULFATE	110 U	100 U	2.1 U	2.2 U	2.0 U	2.2 U	2.2 U	2.0 U
ENDRIN	700 R	230 R	0.82 J	0.29 R	2.0 U	2.2 U	2.2 U	2.0 U
ENDRIN ALDEHYDE	190 R	53 R	2.1 U	2.2 U	2.0 U	2.2 U	2.2 U	2.0 U
ENDRIN KETONE	110 U	100 U	2.1 U	2.2 U	2.0 U	2.2 U	2.2 U	2.0 U
GAMMA-BHC (LINDANE)	110 U	100 U	2.1 U	2.2 U	2.0 U	2.2 U	2.2 U	2.0 U
GAMMA-CHLORDANE	110 U	100 U	2.1 U	2.2 U	2.0 U	2.2 U	2.2 U	2.0 U
HEPTACHLOR	110 U	100 U	2.1 U	2.2 U	2.0 U	2.2 U	2.2 U	2.0 U
HEPTACHLOR EPOXIDE	110 U	100 U	2.1 U	2.2 U	2.0 U	2.2 U	2.2 U	2.0 U
METHOXYCHLOR	210 U	200 U	4.2 U	4.2 U	3.9 U	4.2 U	4.2 U	3.9 U
TOXAPHENE	4400 U	4000 U	85 U	86 U	79 U	86 U	85 U	79 U
Herbicides (ug/kg)								
2,4,5-T								
2,4,5-TP (SILVEX)								
2,4-D								
DINOSEB								
Inorganics (mg/kg)								
ALUMINUM								
ANTIMONY								
ARSENIC								
BARIUM								
BERYLLIUM								
CADMIUM								
CALCIUM								
CHROMIUM								
COBALT								
COPPER								
IRON								
LEAD								
MAGNESIUM								
MANGANESE								
MERCURY								
NICKEL								
POTASSIUM								

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	017	018	019	020	021	022	023	024
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S06	NCBC10S06	NCBC10S06	NCBC10S06	NCBC10S07	NCBC10S07	NCBC10S07	NCBC10S08
nsample	NCBC10S0602	NCBC10S0608	NCBC10S0620	NCBC10S0620-D	NCBC10S0705	NCBC10S0710	NCBC10S0723	NCBC10S0805
sample	NCBC10S0602	NCBC10S0608	NCBC10S0620	NCBC10S0620D	NCBC10S0705	NCBC10S0710	NCBC10S0723	NCBC10S0805
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	2 - 2	8 - 8	20 - 20	20 - 20	5 - 5	10 - 10	23 - 23	5 - 5
gis_date	20020111	20020111	20020111	20020111	20020110	20020110	20020110	20020110
sample_dat	01/11/02	01/11/02	01/11/02	01/11/02	01/10/02	01/10/02	01/10/02	01/10/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_017**	**c_018**	**c_019**	**c_020**	**c_021**	**c_022**	**c_023**	**c_024**
SELENIUM								
SILVER								
SODIUM								
THALLIUM								
VANADIUM								
ZINC								
Miscellaneous Parameters (mg/kg)								
CYANIDE								
TOTAL SOLIDS (%)								

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

CTO 288
soils
full appendix results

order	025	026	027	028	029	030	031	032
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S08	NCBC10S08	NCBC10S09	NCBC10S09	NCBC10S09	NCBC10S09	NCBC10S10	NCBC10S10
nsample	NCBC10S0810	NCBC10S0823	NCBC10S0905	NCBC10S0910	NCBC10S0910-D	NCBC10S0923	NCBC10S1005	NCBC10S1010
sample	NCBC10S0810	NCBC10S0823	NCBC10S0905	NCBC10S0910	NCBC10S0910D	NCBC10S0923	NCBC10S1005	NCBC10S1010
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	10 - 10	23 - 23	5 - 5	10 - 10	10 - 10	23 - 23	5 - 5	10 - 10
gis_date	20020110	20020110	20020110	20020110	20020110	20020110	20020109	20020109
sample_dat	01/10/02	01/10/02	01/10/02	01/10/02	01/10/02	01/10/02	01/09/02	01/09/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_025**	**c_026**	**c_027**	**c_028**	**c_029**	**c_030**	**c_031**	**c_032**
Volatile Organics (ug/kg)								
1,1,1-TRICHLOROETHANE	5.7 UJ	5.8 U	4.6 UJ	6.5 UJ	5.7 UJ	8.4 UJ	5.4 U	5.8 UJ
1,1,2,2-TETRACHLOROETHANE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
1,1,2-TRICHLOROETHANE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
1,1,2-TRICHLOROTRIFLUOROETHANE								
1,1-DICHLOROETHANE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
1,1-DICHLOROETHENE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
1,2,3-TRICHLOROBENZENE								
1,2,4-TRICHLOROBENZENE								
1,2-DIBROMO-3-CHLOROPROPANE	11 U	12 U	9.2 U	13 U	11 U	17 U	11 U	12 U
1,2-DIBROMOETHANE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
1,2-DICHLOROBENZENE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
1,2-DICHLOROETHANE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
1,2-DICHLOROPROPANE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
1,3-DICHLOROBENZENE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
1,4-DICHLOROBENZENE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
2-BUTANONE	23 U	23 UJ	18 U	26 U	23 U	33 U	21 U	23 U
2-HEXANONE	23 U	23 U	18 U	26 U	23 U	33 U	21 U	23 U
4-METHYL-2-PENTANONE	23 U	23 U	18 U	26 U	23 U	33 U	21 U	23 U
ACETONE	9.7 J	23 UJ	18 UJ	15 J	13 J	9.2 J	21 UJ	9.5 J
BENZENE	1.3 J	5.8 U	0.94 J	1.6 J	1.4 J	8.4 U	5.4 U	5.8 U
BROMOCHLOROMETHANE								
BROMODICHLOROMETHANE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
BROMOFORM	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
BROMOMETHANE	11 U	12 U	9.2 U	13 U	11 U	17 U	11 UJ	12 U
CARBON DISULFIDE	5.7 U	5.8 U	4.6 U	3.8 J	2.5 J	8.4 U	5.4 U	5.8 U
CARBON TETRACHLORIDE	5.7 UJ	5.8 UJ	4.6 UJ	6.5 UJ	5.7 UJ	8.4 UJ	5.4 U	5.8 UJ
CHLOROBENZENE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
CHLORODIBROMOMETHANE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
CHLOROETHANE	11 U	12 U	9.2 U	13 U	11 U	17 U	11 U	12 U
CHLOROFORM	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
CHLOROMETHANE	11 U	12 U	9.2 U	13 U	11 U	17 U	11 UJ	12 U
CIS-1,2-DICHLOROETHENE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
CIS-1,3-DICHLOROPROPENE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
CYCLOHEXANE								
DICHLORODIFLUOROMETHANE								
ETHYLBENZENE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
ISOPROPYLBENZENE								
M+P-XYLENES								
METHYL ACETATE								
METHYL CYCLOHEXANE								
METHYL TERT-BUTYL ETHER								
METHYLENE CHLORIDE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	025	026	027	028	029	030	031	032
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S08	NCBC10S08	NCBC10S09	NCBC10S09	NCBC10S09	NCBC10S09	NCBC10S10	NCBC10S10
nsample	NCBC10S0810	NCBC10S0823	NCBC10S0905	NCBC10S0910	NCBC10S0910-D	NCBC10S0923	NCBC10S1005	NCBC10S1010
sample	NCBC10S0810	NCBC10S0823	NCBC10S0905	NCBC10S0910	NCBC10S0910D	NCBC10S0923	NCBC10S1005	NCBC10S1010
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	10 - 10	23 - 23	5 - 5	10 - 10	10 - 10	23 - 23	5 - 5	10 - 10
gis_date	20020110	20020110	20020110	20020110	20020110	20020110	20020109	20020109
sample_dat	01/10/02	01/10/02	01/10/02	01/10/02	01/10/02	01/10/02	01/09/02	01/09/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_025**	**c_026**	**c_027**	**c_028**	**c_029**	**c_030**	**c_031**	**c_032**
O-XYLENE								
STYRENE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
TETRACHLOROETHENE	5.7 UJ	5.8 U	4.6 UJ	6.5 UJ	5.7 UJ	8.4 UJ	5.4 U	5.8 UJ
TOLUENE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
TOTAL 1,2-DICHLOROETHENE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
TOTAL XYLENES	17 U	17 U	14 U	19 U	17 U	25 U	16 U	17 U
TRANS-1,2-DICHLOROETHENE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
TRANS-1,3-DICHLOROPROPENE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
TRICHLOROETHENE	5.7 U	5.8 U	4.6 U	6.5 U	5.7 U	8.4 U	5.4 U	5.8 U
TRICHLOROFLUOROMETHANE	11 UJ	12 UJ	9.2 UJ	13 UJ	11 UJ	17 UJ	11 UJ	12 UJ
VINYL CHLORIDE	11 U	12 U	9.2 U	13 U	11 U	17 U	11 U	12 U
Semivolatile Organics (ug/kg)								
1,1-BIPHENYL								
2,2'-OXYBIS(1-CHLOROPROPANE)								
2,4,5-TRICHLOROPHENOL								
2,4,6-TRICHLOROPHENOL								
2,4-DICHLOROPHENOL								
2,4-DIMETHYLPHENOL								
2,4-DINITROPHENOL								
2,4-DINITROTOLUENE								
2,6-DINITROTOLUENE								
2-CHLORONAPHTHALENE								
2-CHLOROPHENOL								
2-METHYLNAPHTHALENE								
2-METHYLPHENOL								
2-NITROANILINE								
2-NITROPHENOL								
3,3'-DICHLOROBENZIDINE								
3-NITROANILINE								
4,6-DINITRO-2-METHYLPHENOL								
4-BROMOPHENYL PHENYL ETHER								
4-CHLORO-3-METHYLPHENOL								
4-CHLOROANILINE								
4-CHLOROPHENYL PHENYL ETHER								
4-METHYLPHENOL								
4-NITROANILINE								
4-NITROPHENOL								
ACENAPHTHENE								
ACENAPHTHYLENE								
ACETOPHENONE								
ANTHRACENE								
ATRAZINE								
BENZALDEHYDE								

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	025	026	027	028	029	030	031	032
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S08	NCBC10S08	NCBC10S09	NCBC10S09	NCBC10S09	NCBC10S09	NCBC10S10	NCBC10S10
nsample	NCBC10S0810	NCBC10S0823	NCBC10S0905	NCBC10S0910	NCBC10S0910-D	NCBC10S0923	NCBC10S1005	NCBC10S1010
sample	NCBC10S0810	NCBC10S0823	NCBC10S0905	NCBC10S0910	NCBC10S0910D	NCBC10S0923	NCBC10S1005	NCBC10S1010
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	10 - 10	23 - 23	5 - 5	10 - 10	10 - 10	23 - 23	5 - 5	10 - 10
gis_date	20020110	20020110	20020110	20020110	20020110	20020110	20020109	20020109
sample_dat	01/10/02	01/10/02	01/10/02	01/10/02	01/10/02	01/10/02	01/09/02	01/09/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_025**	**c_026**	**c_027**	**c_028**	**c_029**	**c_030**	**c_031**	**c_032**
BENZO(A)ANTHRACENE								
BENZO(A)PYRENE								
BENZO(B)FLUORANTHENE								
BENZO(G,H,I)PERYLENE								
BENZO(K)FLUORANTHENE								
BIS(2-CHLOROETHOXY)METHANE								
BIS(2-CHLOROETHYL)ETHER								
BIS(2-ETHYLHEXYL)PHTHALATE								
BUTYL BENZYL PHTHALATE								
CAPROLACTAM								
CARBAZOLE								
CHRYSENE								
DI-N-BUTYL PHTHALATE								
DI-N-OCTYL PHTHALATE								
DIBENZO(A,H)ANTHRACENE								
DIBENZOFURAN								
DIETHYL PHTHALATE								
DIMETHYL PHTHALATE								
FLUORANTHENE								
FLUORENE								
HEXACHLOROBENZENE								
HEXACHLOROBUTADIENE								
HEXACHLOROCYCLOPENTADIENE								
HEXACHLOROETHANE								
INDENO(1,2,3-CD)PYRENE								
ISOPHORONE								
N-NITROSO-DI-N-PROPYLAMINE								
N-NITROSODIPHENYLAMINE								
NAPHTHALENE								
NITROBENZENE								
PENTACHLOROPHENOL								
PHENANTHRENE								
PHENOL								
PYRENE								
Pesticides/PCBs (ug/kg)								
4,4'-DDD	2.0 U	2.1 U	1.9 UJ	2.0 UJ	2.1 UJ	2.2 UJ	2.0 U	0.30 J
4,4'-DDE	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
4,4'-DDT	2.0 UJ	2.1 UJ	1.9 UJ	2.0 UJ	2.1 UJ	2.2 UJ	2.0 UJ	2.1 U
ALDRIN	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
ALPHA-BHC	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
ALPHA-CHLORDANE	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
AROCLOR-1016	39 U	42 U	37 U	39 U	40 U	42 U	39 U	41 U
AROCLOR-1221	39 U	42 U	37 U	39 U	40 U	42 U	39 U	41 U

from _10sosam.dbf
from _10sores.dbf
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full appendix results

order	025	026	027	028	029	030	031	032
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S08	NCBC10S08	NCBC10S09	NCBC10S09	NCBC10S09	NCBC10S09	NCBC10S10	NCBC10S10
nsample	NCBC10S0810	NCBC10S0823	NCBC10S0905	NCBC10S0910	NCBC10S0910-D	NCBC10S0923	NCBC10S1005	NCBC10S1010
sample	NCBC10S0810	NCBC10S0823	NCBC10S0905	NCBC10S0910	NCBC10S0910D	NCBC10S0923	NCBC10S1005	NCBC10S1010
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	10 - 10	23 - 23	5 - 5	10 - 10	10 - 10	23 - 23	5 - 5	10 - 10
gis_date	20020110	20020110	20020110	20020110	20020110	20020110	20020109	20020109
sample_dat	01/10/02	01/10/02	01/10/02	01/10/02	01/10/02	01/10/02	01/09/02	01/09/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_025**	**c_026**	**c_027**	**c_028**	**c_029**	**c_030**	**c_031**	**c_032**
AROCLOR-1232	39 U	42 U	37 U	39 U	40 U	42 U	39 U	41 U
AROCLOR-1242	39 U	42 U	37 U	39 U	40 U	42 U	39 U	41 U
AROCLOR-1248	39 U	42 U	37 U	39 U	40 U	42 U	39 U	41 U
AROCLOR-1254	39 U	42 U	37 U	39 U	40 U	42 U	39 U	41 U
AROCLOR-1260	39 U	42 U	37 U	39 U	40 U	42 U	39 U	41 U
BETA-BHC	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
DELTA-BHC	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
DIELDRIN	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
ENDOSULFAN I	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
ENDOSULFAN II	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
ENDOSULFAN SULFATE	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
ENDRIN	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
ENDRIN ALDEHYDE	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 UJ	2.1 U
ENDRIN KETONE	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
GAMMA-BHC (LINDANE)	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
GAMMA-CHLORDANE	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
HEPTACHLOR	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
HEPTACHLOR EPOXIDE	2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.2 U	2.0 U	2.1 U
METHOXYCHLOR	3.9 U	4.2 U	3.7 U	3.9 U	4.0 U	4.2 U	3.9 U	4.1 U
TOXAPHENE	80 U	84 U	76 U	80 U	82 U	85 U	79 U	83 U
Herbicides (ug/kg)								
2,4,5-T								
2,4,5-TP (SILVEX)								
2,4-D								
DINOSEB								
Inorganics (mg/kg)								
ALUMINUM								
ANTIMONY								
ARSENIC								
BARIUM								
BERYLLIUM								
CADMIUM								
CALCIUM								
CHROMIUM								
COBALT								
COPPER								
IRON								
LEAD								
MAGNESIUM								
MANGANESE								
MERCURY								
NICKEL								
POTASSIUM								

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	025	026	027	028	029	030	031	032
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S08	NCBC10S08	NCBC10S09	NCBC10S09	NCBC10S09	NCBC10S09	NCBC10S10	NCBC10S10
nsample	NCBC10S0810	NCBC10S0823	NCBC10S0905	NCBC10S0910	NCBC10S0910-D	NCBC10S0923	NCBC10S1005	NCBC10S1010
sample	NCBC10S0810	NCBC10S0823	NCBC10S0905	NCBC10S0910	NCBC10S0910D	NCBC10S0923	NCBC10S1005	NCBC10S1010
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	10 - 10	23 - 23	5 - 5	10 - 10	10 - 10	23 - 23	5 - 5	10 - 10
gis_date	20020110	20020110	20020110	20020110	20020110	20020110	20020109	20020109
sample_dat	01/10/02	01/10/02	01/10/02	01/10/02	01/10/02	01/10/02	01/09/02	01/09/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_025**	**c_026**	**c_027**	**c_028**	**c_029**	**c_030**	**c_031**	**c_032**
SELENIUM								
SILVER								
SODIUM								
THALLIUM								
VANADIUM								
ZINC								
Miscellaneous Parameters (mg/kg)								
CYANIDE								
TOTAL SOLIDS (%)								

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	033	034	035	036	037	038	039	040
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S10	NCBC10S10	NCBC10S11	NCBC10S11	NCBC10S11	NCBC10S12	NCBC10S12	NCBC10S12
nsample	NCBC10S1023	NCBC10S1023-D	NCBC10S1105	NCBC10S1110	NCBC10S1123	NCBC10S1205	NCBC10S1210	NCBC10S1223
sample	NCBC10S1023	NCBC10S1023D	NCBC10S1105	NCBC10S1110	NCBC10S1123	NCBC10S1205	NCBC10S1210	NCBC10S1223
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	23 - 23	23 - 23	5 - 5	10 - 10	23 - 23	5 - 5	10 - 10	23 - 23
gis_date	20020109	20020109	20020109	20020109	20020109	20020109	20020109	20020109
sample_dat	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_033**	**c_034**	**c_035**	**c_036**	**c_037**	**c_038**	**c_039**	**c_040**
Volatile Organics (ug/kg)								
1,1,1-TRICHLOROETHANE	6.9 UJ	6 UJ	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
1,1,2,2-TETRACHLOROETHANE	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
1,1,2-TRICHLOROETHANE	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
1,1,2-TRICHLOROTRIFLUOROETHANE								
1,1-DICHLOROETHANE	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
1,1-DICHLOROETHENE	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
1,2,3-TRICHLOROBENZENE								
1,2,4-TRICHLOROBENZENE								
1,2-DIBROMO-3-CHLOROPROPANE	14 U	12 U	10 U	11 U	12 U	9.3 U	11 U	14 U
1,2-DIBROMOETHANE	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
1,2-DICHLOROBENZENE	6.9 U	6 U	2.3 J	5 J	6 U	4.6 U	5.6 U	6.8 U
1,2-DICHLOROETHANE	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
1,2-DICHLOROPROPANE	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
1,3-DICHLOROBENZENE	6.9 U	6 U	12	34	6 U	4.6 U	5.6 U	6.8 U
1,4-DICHLOROBENZENE	6.9 U	6 U	13	83	6 U	4.6 U	5.6 U	6.8 U
2-BUTANONE	28 U	24 U	20 U	22 U	24 U	19 U	22 U	27 U
2-HEXANONE	28 U	24 U	20 U	22 U	24 U	19 U	22 U	27 U
4-METHYL-2-PENTANONE	28 U	24 U	20 U	22 U	24 U	19 U	22 U	27 U
ACETONE	28 UJ	24 UJ	20 UJ	9.3 J	10 J	19 UJ	8.2 J	9.1 J
BENZENE	6.9 U	6 U	26	6.5	6 U	4.6 U	5.6 U	6.8 U
BROMOCHLOROMETHANE								
BROMODICHLOROMETHANE	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
BROMOFORM	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
BROMOMETHANE	14 U	12 U	10 UJ	11 UJ	12 UJ	9.3 UJ	11 UJ	14 UJ
CARBON DISULFIDE	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
CARBON TETRACHLORIDE	6.9 UJ	6 UJ	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
CHLOROBENZENE	6.9 U	6 U	110	76	6 U	4.6 U	5.6 U	6.8 U
CHLORODIBROMOMETHANE	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
CHLOROETHANE	14 U	12 U	10 U	11 U	12 U	9.3 U	11 U	14 U
CHLOROFORM	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
CHLOROMETHANE	14 U	12 U	10 UJ	11 UJ	12 UJ	9.3 UJ	11 UJ	14 UJ
CIS-1,2-DICHLOROETHENE	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
CIS-1,3-DICHLOROPROPENE	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
CYCLOHEXANE								
DICHLORODIFLUOROMETHANE								
ETHYLBENZENE	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
ISOPROPYLBENZENE								
M+P-XYLENES								
METHYL ACETATE								
METHYL CYCLOHEXANE								
METHYL TERT-BUTYL ETHER								
METHYLENE CHLORIDE	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	033	034	035	036	037	038	039	040
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S10	NCBC10S10	NCBC10S11	NCBC10S11	NCBC10S11	NCBC10S12	NCBC10S12	NCBC10S12
nsample	NCBC10S1023	NCBC10S1023-D	NCBC10S1105	NCBC10S1110	NCBC10S1123	NCBC10S1205	NCBC10S1210	NCBC10S1223
sample	NCBC10S1023	NCBC10S1023D	NCBC10S1105	NCBC10S1110	NCBC10S1123	NCBC10S1205	NCBC10S1210	NCBC10S1223
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	23 - 23	23 - 23	5 - 5	10 - 10	23 - 23	5 - 5	10 - 10	23 - 23
gis_date	20020109	20020109	20020109	20020109	20020109	20020109	20020109	20020109
sample_dat	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_033**	**c_034**	**c_035**	**c_036**	**c_037**	**c_038**	**c_039**	**c_040**
O-XYLENE								
STYRENE	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
TETRACHLOROETHENE	6.9 UJ	6 UJ	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
TOLUENE	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
TOTAL 1,2-DICHLOROETHENE	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
TOTAL XYLENES	21 U	18 U	15 U	17 U	18 U	14 U	17 U	20 U
TRANS-1,2-DICHLOROETHENE	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
TRANS-1,3-DICHLOROPROPENE	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
TRICHLOROETHENE	6.9 U	6 U	5 U	5.5 U	6 U	4.6 U	5.6 U	6.8 U
TRICHLOROFLUOROMETHANE	14 UJ	12 UJ	10 UJ	11 UJ	12 UJ	9.3 UJ	11 UJ	14 UJ
VINYL CHLORIDE	14 U	12 U	10 U	11 U	12 U	9.3 U	11 U	14 U
Semivolatile Organics (ug/kg)								
1,1-BIPHENYL								
2,2'-OXYBIS(1-CHLOROPROPANE)								
2,4,5-TRICHLOROPHENOL								
2,4,6-TRICHLOROPHENOL								
2,4-DICHLOROPHENOL								
2,4-DIMETHYLPHENOL								
2,4-DINITROPHENOL								
2,4-DINITROTOLUENE								
2,6-DINITROTOLUENE								
2-CHLORONAPHTHALENE								
2-CHLOROPHENOL								
2-METHYLNAPHTHALENE								
2-METHYLPHENOL								
2-NITROANILINE								
2-NITROPHENOL								
3,3'-DICHLOROBENZIDINE								
3-NITROANILINE								
4,6-DINITRO-2-METHYLPHENOL								
4-BROMOPHENYL PHENYL ETHER								
4-CHLORO-3-METHYLPHENOL								
4-CHLOROANILINE								
4-CHLOROPHENYL PHENYL ETHER								
4-METHYLPHENOL								
4-NITROANILINE								
4-NITROPHENOL								
ACENAPHTHENE								
ACENAPHTHYLENE								
ACETOPHENONE								
ANTHRACENE								
ATRAZINE								
BENZALDEHYDE								

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

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order	033	034	035	036	037	038	039	040
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S10	NCBC10S10	NCBC10S11	NCBC10S11	NCBC10S11	NCBC10S12	NCBC10S12	NCBC10S12
nsample	NCBC10S1023	NCBC10S1023-D	NCBC10S1105	NCBC10S1110	NCBC10S1123	NCBC10S1205	NCBC10S1210	NCBC10S1223
sample	NCBC10S1023	NCBC10S1023D	NCBC10S1105	NCBC10S1110	NCBC10S1123	NCBC10S1205	NCBC10S1210	NCBC10S1223
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	23 - 23	23 - 23	5 - 5	10 - 10	23 - 23	5 - 5	10 - 10	23 - 23
gis_date	20020109	20020109	20020109	20020109	20020109	20020109	20020109	20020109
sample_dat	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_033**	**c_034**	**c_035**	**c_036**	**c_037**	**c_038**	**c_039**	**c_040**
BENZO(A)ANTHRACENE								
BENZO(A)PYRENE								
BENZO(B)FLUORANTHENE								
BENZO(G,H,I)PERYLENE								
BENZO(K)FLUORANTHENE								
BIS(2-CHLOROETHOXY)METHANE								
BIS(2-CHLOROETHYL)ETHER								
BIS(2-ETHYLHEXYL)PHTHALATE								
BUTYL BENZYL PHTHALATE								
CAPROLACTAM								
CARBAZOLE								
CHRYSENE								
DI-N-BUTYL PHTHALATE								
DI-N-OCTYL PHTHALATE								
DIBENZO(A,H)ANTHRACENE								
DIBENZOFURAN								
DIETHYL PHTHALATE								
DIMETHYL PHTHALATE								
FLUORANTHENE								
FLUORENE								
HEXACHLOROBENZENE								
HEXACHLOROBUTADIENE								
HEXACHLOROCYCLOPENTADIENE								
HEXACHLOROETHANE								
INDENO(1,2,3-CD)PYRENE								
ISOPHORONE								
N-NITROSO-DI-N-PROPYLAMINE								
N-NITROSODIPHENYLAMINE								
NAPHTHALENE								
NITROBENZENE								
PENTACHLOROPHENOL								
PHENANTHRENE								
PHENOL								
PYRENE								
Pesticides/PCBs (ug/kg)								
4,4'-DDD	2.2 U	0.39 J	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
4,4'-DDE	2.2 U	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
4,4'-DDT	2.2 UJ	2.1 U	1.9 UJ	2.0 UJ	2.1 UJ	1.9 U	2.0 U	2.2 U
ALDRIN	2.2 U	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
ALPHA-BHC	2.2 U	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
ALPHA-CHLORDANE	2.2 U	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
AROCLOR-1016	42 U	41 U	38 U	40 U	41 U	36 U	40 U	43 U
AROCLOR-1221	42 U	41 U	38 U	40 U	41 U	36 U	40 U	43 U

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	033	034	035	036	037	038	039	040
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S10	NCBC10S10	NCBC10S11	NCBC10S11	NCBC10S11	NCBC10S12	NCBC10S12	NCBC10S12
nsample	NCBC10S1023	NCBC10S1023-D	NCBC10S1105	NCBC10S1110	NCBC10S1123	NCBC10S1205	NCBC10S1210	NCBC10S1223
sample	NCBC10S1023	NCBC10S1023D	NCBC10S1105	NCBC10S1110	NCBC10S1123	NCBC10S1205	NCBC10S1210	NCBC10S1223
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	23 - 23	23 - 23	5 - 5	10 - 10	23 - 23	5 - 5	10 - 10	23 - 23
gis_date	20020109	20020109	20020109	20020109	20020109	20020109	20020109	20020109
sample_dat	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_033**	**c_034**	**c_035**	**c_036**	**c_037**	**c_038**	**c_039**	**c_040**
AROCLOR-1232	42 U	41 U	38 U	40 U	41 U	36 U	40 U	43 U
AROCLOR-1242	42 U	41 U	38 U	40 U	41 U	36 U	40 U	43 U
AROCLOR-1248	42 U	41 U	38 U	40 U	41 U	36 U	40 U	43 U
AROCLOR-1254	42 U	41 U	38 U	40 U	41 U	7.7 J	40 U	43 U
AROCLOR-1260	42 U	41 U	38 U	40 U	41 U	36 U	40 U	43 U
BETA-BHC	2.2 U	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
DELTA-BHC	2.2 UJ	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
DIELDRIN	2.2 U	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
ENDOSULFAN I	2.2 U	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
ENDOSULFAN II	2.2 U	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
ENDOSULFAN SULFATE	2.2 UJ	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
ENDRIN	2.2 U	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
ENDRIN ALDEHYDE	2.2 U	2.1 U	1.9 UJ	2.0 UJ	2.1 UJ	1.9 U	2.0 U	2.2 U
ENDRIN KETONE	2.2 UJ	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
GAMMA-BHC (LINDANE)	2.2 U	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
GAMMA-CHLORDANE	2.2 U	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
HEPTACHLOR	2.2 U	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
HEPTACHLOR EPOXIDE	2.2 U	2.1 U	1.9 U	2.0 U	2.1 U	1.9 U	2.0 U	2.2 U
METHOXYCHLOR	4.2 UJ	4.1 U	3.8 U	4.0 U	4.1 U	3.6 U	4.0 U	4.3 U
TOXAPHENE	85 U	83 U	77 U	81 U	84 U	74 U	80 U	86 U
Herbicides (ug/kg)								
2,4,5-T								
2,4,5-TP (SILVEX)								
2,4-D								
DINOSEB								
Inorganics (mg/kg)								
ALUMINUM								
ANTIMONY								
ARSENIC								
BARIUM								
BERYLLIUM								
CADMIUM								
CALCIUM								
CHROMIUM								
COBALT								
COPPER								
IRON								
LEAD								
MAGNESIUM								
MANGANESE								
MERCURY								
NICKEL								
POTASSIUM								

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from q:\sql_server\gulfport\upload

order	033	034	035	036	037	038	039	040
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S10	NCBC10S10	NCBC10S11	NCBC10S11	NCBC10S11	NCBC10S12	NCBC10S12	NCBC10S12
nsample	NCBC10S1023	NCBC10S1023-D	NCBC10S1105	NCBC10S1110	NCBC10S1123	NCBC10S1205	NCBC10S1210	NCBC10S1223
sample	NCBC10S1023	NCBC10S1023D	NCBC10S1105	NCBC10S1110	NCBC10S1123	NCBC10S1205	NCBC10S1210	NCBC10S1223
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	23 - 23	23 - 23	5 - 5	10 - 10	23 - 23	5 - 5	10 - 10	23 - 23
gis_date	20020109	20020109	20020109	20020109	20020109	20020109	20020109	20020109
sample_dat	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_033**	**c_034**	**c_035**	**c_036**	**c_037**	**c_038**	**c_039**	**c_040**
SELENIUM								
SILVER								
SODIUM								
THALLIUM								
VANADIUM								
ZINC								
Miscellaneous Parameters (mg/kg)								
CYANIDE								
TOTAL SOLIDS (%)								

from _10sosam.dbf
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from q:\sql_server\gulfport\upload

order	041	042	043	044	045	046	047	048
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S13	NCBC10S13	NCBC10S13	NCBC10S14	NCBC10S14	NCBC10S14	NCBC10S14	NCBC10S15
nsample	NCBC10S1305	NCBC10S1310	NCBC10S1323	NCBC10S1405	NCBC10S1405-D	NCBC10S1410	NCBC10S1420	NCBC10S1505
sample	NCBC10S1305	NCBC10S1310	NCBC10S1323	NCBC10S1405	NCBC10S1405D	NCBC10S1410	NCBC10S1420	NCBC10S1505
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	5 - 5	10 - 10	23 - 23	5 - 5	5 - 5	10 - 10	20 - 20	5 - 5
gis_date	20020109	20020109	20020109	20020109	20020109	20020109	20020109	20020108
sample_dat	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/08/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_041**	**c_042**	**c_043**	**c_044**	**c_045**	**c_046**	**c_047**	**c_048**
Volatile Organics (ug/kg)								
1,1,1-TRICHLOROETHANE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
1,1,2,2-TETRACHLOROETHANE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
1,1,2-TRICHLOROETHANE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
1,1,2-TRICHLOROTRIFLUOROETHANE								
1,1-DICHLOROETHANE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
1,1-DICHLOROETHENE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
1,2,3-TRICHLOROBENZENE								
1,2,4-TRICHLOROBENZENE								
1,2-DIBROMO-3-CHLOROPROPANE	11 U	11 U	12 UJ	10 U	9.6 U	12 U	14 U	11 U
1,2-DIBROMOETHANE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
1,2-DICHLOROBENZENE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
1,2-DICHLOROETHANE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
1,2-DICHLOROPROPANE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
1,3-DICHLOROBENZENE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
1,4-DICHLOROBENZENE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
2-BUTANONE	21 U	22 U	24 UJ	20 U	19 U	23 U	29 U	21 U
2-HEXANONE	21 U	22 U	24 UJ	20 U	19 U	23 U	29 U	21 U
4-METHYL-2-PENTANONE	21 U	22 U	24 UJ	20 U	19 U	23 U	29 U	21 U
ACETONE	21 UJ	6.3 J	12 J	20 U	19 UJ	23 UJ	29 UJ	21 UJ
BENZENE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
BROMOCHLOROMETHANE								
BROMODICHLOROMETHANE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
BROMOFORM	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
BROMOMETHANE	11 UJ	11 UJ	12 UJ	10 UJ	9.6 UJ	12 UJ	14 UJ	11 UJ
CARBON DISULFIDE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
CARBON TETRACHLORIDE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
CHLOROBENZENE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
CHLORODIBROMOMETHANE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
CHLOROETHANE	11 U	11 U	12 UJ	10 U	9.6 U	12 U	14 U	11 U
CHLOROFORM	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
CHLOROMETHANE	11 UJ	11 UJ	12 UJ	10 UJ	9.6 UJ	12 UJ	14 UJ	11 UJ
CIS-1,2-DICHLOROETHENE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
CIS-1,3-DICHLOROPROPENE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
CYCLOHEXANE								
DICHLORODIFLUOROMETHANE								
ETHYLBENZENE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
ISOPROPYLBENZENE								
M+P-XYLENES								
METHYL ACETATE								
METHYL CYCLOHEXANE								
METHYL TERT-BUTYL ETHER								
METHYLENE CHLORIDE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U

from _10sosam.dbf
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order	041	042	043	044	045	046	047	048
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S13	NCBC10S13	NCBC10S13	NCBC10S14	NCBC10S14	NCBC10S14	NCBC10S14	NCBC10S15
nsample	NCBC10S1305	NCBC10S1310	NCBC10S1323	NCBC10S1405	NCBC10S1405-D	NCBC10S1410	NCBC10S1420	NCBC10S1505
sample	NCBC10S1305	NCBC10S1310	NCBC10S1323	NCBC10S1405	NCBC10S1405D	NCBC10S1410	NCBC10S1420	NCBC10S1505
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	5 - 5	10 - 10	23 - 23	5 - 5	5 - 5	10 - 10	20 - 20	5 - 5
gis_date	20020109	20020109	20020109	20020109	20020109	20020109	20020109	20020108
sample_dat	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/08/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_041**	**c_042**	**c_043**	**c_044**	**c_045**	**c_046**	**c_047**	**c_048**
O-XYLENE								
STYRENE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
TETRACHLOROETHENE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
TOLUENE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
TOTAL 1,2-DICHLOROETHENE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
TOTAL XYLENES	16 U	16 U	18 UJ	15 U	14 U	18 U	22 U	16 U
TRANS-1,2-DICHLOROETHENE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
TRANS-1,3-DICHLOROPROPENE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
TRICHLOROETHENE	5.3 U	5.4 U	5.9 UJ	5 U	4.8 U	5.9 U	7.2 U	5.3 U
TRICHLOROFLUOROMETHANE	11 UJ	11 UJ	12 UJ	10 UJ	9.6 UJ	12 UJ	14 UJ	11 UJ
VINYL CHLORIDE	11 U	11 U	12 UJ	10 U	9.6 U	12 U	14 U	11 U
Semivolatile Organics (ug/kg)								
1,1-BIPHENYL								
2,2'-OXYBIS(1-CHLOROPROPANE)								
2,4,5-TRICHLOROPHENOL								
2,4,6-TRICHLOROPHENOL								
2,4-DICHLOROPHENOL								
2,4-DIMETHYLPHENOL								
2,4-DINITROPHENOL								
2,4-DINITROTOLUENE								
2,6-DINITROTOLUENE								
2-CHLORONAPHTHALENE								
2-CHLOROPHENOL								
2-METHYLNAPHTHALENE								
2-METHYLPHENOL								
2-NITROANILINE								
2-NITROPHENOL								
3,3'-DICHLOROBENZIDINE								
3-NITROANILINE								
4,6-DINITRO-2-METHYLPHENOL								
4-BROMOPHENYL PHENYL ETHER								
4-CHLORO-3-METHYLPHENOL								
4-CHLOROANILINE								
4-CHLOROPHENYL PHENYL ETHER								
4-METHYLPHENOL								
4-NITROANILINE								
4-NITROPHENOL								
ACENAPHTHENE								
ACENAPHTHYLENE								
ACETOPHENONE								
ANTHRACENE								
ATRAZINE								
BENZALDEHYDE								

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order	041	042	043	044	045	046	047	048
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S13	NCBC10S13	NCBC10S13	NCBC10S14	NCBC10S14	NCBC10S14	NCBC10S14	NCBC10S15
nsample	NCBC10S1305	NCBC10S1310	NCBC10S1323	NCBC10S1405	NCBC10S1405-D	NCBC10S1410	NCBC10S1420	NCBC10S1505
sample	NCBC10S1305	NCBC10S1310	NCBC10S1323	NCBC10S1405	NCBC10S1405D	NCBC10S1410	NCBC10S1420	NCBC10S1505
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	5 - 5	10 - 10	23 - 23	5 - 5	5 - 5	10 - 10	20 - 20	5 - 5
gis_date	20020109	20020109	20020109	20020109	20020109	20020109	20020109	20020108
sample_dat	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/08/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_041**	**c_042**	**c_043**	**c_044**	**c_045**	**c_046**	**c_047**	**c_048**
BENZO(A)ANTHRACENE								
BENZO(A)PYRENE								
BENZO(B)FLUORANTHENE								
BENZO(G,H,I)PERYLENE								
BENZO(K)FLUORANTHENE								
BIS(2-CHLOROETHOXY)METHANE								
BIS(2-CHLOROETHYL)ETHER								
BIS(2-ETHYLHEXYL)PHTHALATE								
BUTYL BENZYL PHTHALATE								
CAPROLACTAM								
CARBAZOLE								
CHRYSENE								
DI-N-BUTYL PHTHALATE								
DI-N-OCTYL PHTHALATE								
DIBENZO(A,H)ANTHRACENE								
DIBENZOFURAN								
DIETHYL PHTHALATE								
DIMETHYL PHTHALATE								
FLUORANTHENE								
FLUORENE								
HEXACHLOROBENZENE								
HEXACHLOROBUTADIENE								
HEXACHLOROCYCLOPENTADIENE								
HEXACHLOROETHANE								
INDENO(1,2,3-CD)PYRENE								
ISOPHORONE								
N-NITROSO-DI-N-PROPYLAMINE								
N-NITROSODIPHENYLAMINE								
NAPHTHALENE								
NITROBENZENE								
PENTACHLOROPHENOL								
PHENANTHRENE								
PHENOL								
PYRENE								
Pesticides/PCBs (ug/kg)								
4,4'-DDD	2.0 U	2.0 U	2.2 U	1.9 U	0.18 R	2.1 U	2.6 U	1.9 U
4,4'-DDE	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
4,4'-DDT	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
ALDRIN	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
ALPHA-BHC	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
ALPHA-CHLORDANE	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
AROCLOR-1016	39 U	39 U	42 U	38 U	38 U	40 U	50 U	38 U
AROCLOR-1221	39 U	39 U	42 U	38 U	38 U	40 U	50 U	38 U

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	041	042	043	044	045	046	047	048
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S13	NCBC10S13	NCBC10S13	NCBC10S14	NCBC10S14	NCBC10S14	NCBC10S14	NCBC10S15
nsample	NCBC10S1305	NCBC10S1310	NCBC10S1323	NCBC10S1405	NCBC10S1405-D	NCBC10S1410	NCBC10S1420	NCBC10S1505
sample	NCBC10S1305	NCBC10S1310	NCBC10S1323	NCBC10S1405	NCBC10S1405D	NCBC10S1410	NCBC10S1420	NCBC10S1505
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	5 - 5	10 - 10	23 - 23	5 - 5	5 - 5	10 - 10	20 - 20	5 - 5
gis_date	20020109	20020109	20020109	20020109	20020109	20020109	20020109	20020108
sample_dat	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/08/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_041**	**c_042**	**c_043**	**c_044**	**c_045**	**c_046**	**c_047**	**c_048**
AROCLOR-1232	39 U	39 U	42 U	38 U	38 U	40 U	50 U	38 U
AROCLOR-1242	39 U	39 U	42 U	38 U	38 U	40 U	50 U	38 U
AROCLOR-1248	39 U	39 U	42 U	38 U	38 U	40 U	50 U	38 U
AROCLOR-1254	39 U	39 U	42 U	38 U	38 U	40 U	50 U	38 U
AROCLOR-1260	39 U	39 U	42 U	38 U	38 U	40 U	50 U	11 J
BETA-BHC	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
DELTA-BHC	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
DIELDRIN	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
ENDOSULFAN I	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
ENDOSULFAN II	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	0.17 J
ENDOSULFAN SULFATE	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
ENDRIN	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
ENDRIN ALDEHYDE	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 UR	1.9 U
ENDRIN KETONE	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
GAMMA-BHC (LINDANE)	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
GAMMA-CHLORDANE	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
HEPTACHLOR	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
HEPTACHLOR EPOXIDE	2.0 U	2.0 U	2.2 U	1.9 U	2.0 U	2.1 U	2.6 U	1.9 U
METHOXYCHLOR	3.9 U	3.9 U	4.2 U	3.8 U	3.8 U	4.0 U	5.0 U	3.8 U
TOXAPHENE	79 U	79 U	86 U	77 U	77 U	82 U	100 U	77 U
Herbicides (ug/kg)								
2,4,5-T								
2,4,5-TP (SILVEX)								
2,4-D								
DINOSEB								
Inorganics (mg/kg)								
ALUMINUM								
ANTIMONY								
ARSENIC								
BARIUM								
BERYLLIUM								
CADMIUM								
CALCIUM								
CHROMIUM								
COBALT								
COPPER								
IRON								
LEAD								
MAGNESIUM								
MANGANESE								
MERCURY								
NICKEL								
POTASSIUM								

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	041	042	043	044	045	046	047	048
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S13	NCBC10S13	NCBC10S13	NCBC10S14	NCBC10S14	NCBC10S14	NCBC10S14	NCBC10S15
nsample	NCBC10S1305	NCBC10S1310	NCBC10S1323	NCBC10S1405	NCBC10S1405-D	NCBC10S1410	NCBC10S1420	NCBC10S1505
sample	NCBC10S1305	NCBC10S1310	NCBC10S1323	NCBC10S1405	NCBC10S1405D	NCBC10S1410	NCBC10S1420	NCBC10S1505
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	5 - 5	10 - 10	23 - 23	5 - 5	5 - 5	10 - 10	20 - 20	5 - 5
gis_date	20020109	20020109	20020109	20020109	20020109	20020109	20020109	20020108
sample_dat	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/09/02	01/08/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_041**	**c_042**	**c_043**	**c_044**	**c_045**	**c_046**	**c_047**	**c_048**
SELENIUM								
SILVER								
SODIUM								
THALLIUM								
VANADIUM								
ZINC								
Miscellaneous Parameters (mg/kg)								
CYANIDE								
TOTAL SOLIDS (%)								

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	049	050	051	052	053	054	055	056
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S15	NCBC10S15	NCBC10S16	NCBC10S16	NCBC10S16	NCBC10S17	NCBC10S17	NCBC10S17
nsample	NCBC10S1510	NCBC10S1519	NCBC10S1605	NCBC10S1610	NCBC10S1620	NCBC10S1702	NCBC10S1711	NCBC10S1720
sample	NCBC10S1510	NCBC10S1519	NCBC10S1605	NCBC10S1610	NCBC10S1620	NCBC10S1702	NCBC10S1711	NCBC10S1720
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	10 - 10	19 - 19	5 - 5	10 - 10	20 - 20	2 - 2	11 - 11	20 - 20
gis_date	20020108	20020108	20020108	20020108	20020108	20020112	20020112	20020112
sample_dat	01/08/02	01/08/02	01/08/02	01/08/02	01/08/02	01/12/02	01/12/02	01/12/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_049**	**c_050**	**c_051**	**c_052**	**c_053**	**c_054**	**c_055**	**c_056**
Volatile Organics (ug/kg)								
1,1,1-TRICHLOROETHANE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
1,1,2,2-TETRACHLOROETHANE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
1,1,2-TRICHLOROETHANE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
1,1,2-TRICHLOROTRIFLUOROETHANE								
1,1-DICHLOROETHANE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
1,1-DICHLOROETHENE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
1,2,3-TRICHLOROBENZENE								
1,2,4-TRICHLOROBENZENE								
1,2-DIBROMO-3-CHLOROPROPANE	12 U	15 U	10 U	12 U	13 U			
1,2-DIBROMOETHANE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
1,2-DICHLOROBENZENE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
1,2-DICHLOROETHANE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
1,2-DICHLOROPROPANE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
1,3-DICHLOROBENZENE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
1,4-DICHLOROBENZENE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
2-BUTANONE	23 U	29 U	21 U	25 U	27 U			
2-HEXANONE	23 U	29 U	21 U	25 U	27 U			
4-METHYL-2-PENTANONE	23 U	29 U	21 U	25 U	27 U			
ACETONE	6.6 J	8.6 J	21 UJ	7.6 J	27 UJ			
BENZENE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
BROMOCHLOROMETHANE								
BROMODICHLOROMETHANE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
BROMOFORM	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
BROMOMETHANE	12 UJ	15 UJ	10 UJ	12 UJ	13 UJ			
CARBON DISULFIDE	5.8 U	7.4 U	5.2 U	6.2 U	3.9 J			
CARBON TETRACHLORIDE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
CHLOROBENZENE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
CHLORODIBROMOMETHANE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
CHLOROETHANE	12 U	15 U	10 U	12 U	13 U			
CHLOROFORM	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
CHLOROMETHANE	12 UJ	15 UJ	10 UJ	12 UJ	13 UJ			
CIS-1,2-DICHLOROETHENE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
CIS-1,3-DICHLOROPROPENE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
CYCLOHEXANE								
DICHLORODIFLUOROMETHANE								
ETHYLBENZENE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
ISOPROPYLBENZENE								
M+P-XYLENES								
METHYL ACETATE								
METHYL CYCLOHEXANE								
METHYL TERT-BUTYL ETHER								
METHYLENE CHLORIDE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	049	050	051	052	053	054	055	056
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S15	NCBC10S15	NCBC10S16	NCBC10S16	NCBC10S16	NCBC10S17	NCBC10S17	NCBC10S17
nsample	NCBC10S1510	NCBC10S1519	NCBC10S1605	NCBC10S1610	NCBC10S1620	NCBC10S1702	NCBC10S1711	NCBC10S1720
sample	NCBC10S1510	NCBC10S1519	NCBC10S1605	NCBC10S1610	NCBC10S1620	NCBC10S1702	NCBC10S1711	NCBC10S1720
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	10 - 10	19 - 19	5 - 5	10 - 10	20 - 20	2 - 2	11 - 11	20 - 20
gis_date	20020108	20020108	20020108	20020108	20020108	20020112	20020112	20020112
sample_dat	01/08/02	01/08/02	01/08/02	01/08/02	01/08/02	01/12/02	01/12/02	01/12/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_049**	**c_050**	**c_051**	**c_052**	**c_053**	**c_054**	**c_055**	**c_056**
O-XYLENE								
STYRENE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
TETRACHLOROETHENE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
TOLUENE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
TOTAL 1,2-DICHLOROETHENE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
TOTAL XYLENES	17 U	22 U	16 U	19 U	20 U			
TRANS-1,2-DICHLOROETHENE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
TRANS-1,3-DICHLOROPROPENE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
TRICHLOROETHENE	5.8 U	7.4 U	5.2 U	6.2 U	6.7 U			
TRICHLOROFLUOROMETHANE	12 UJ	15 UJ	10 UJ	12 UJ	13 UJ			
VINYL CHLORIDE	12 U	15 U	10 U	12 U	13 U			
Semivolatile Organics (ug/kg)								
1,1-BIPHENYL								
2,2'-OXYBIS(1-CHLOROPROPANE)								
2,4,5-TRICHLOROPHENOL								
2,4,6-TRICHLOROPHENOL								
2,4-DICHLOROPHENOL								
2,4-DIMETHYLPHENOL								
2,4-DINITROPHENOL								
2,4-DINITROTOLUENE								
2,6-DINITROTOLUENE								
2-CHLORONAPHTHALENE								
2-CHLOROPHENOL								
2-METHYLNAPHTHALENE								
2-METHYLPHENOL								
2-NITROANILINE								
2-NITROPHENOL								
3,3'-DICHLOROBENZIDINE								
3-NITROANILINE								
4,6-DINITRO-2-METHYLPHENOL								
4-BROMOPHENYL PHENYL ETHER								
4-CHLORO-3-METHYLPHENOL								
4-CHLOROANILINE								
4-CHLOROPHENYL PHENYL ETHER								
4-METHYLPHENOL								
4-NITROANILINE								
4-NITROPHENOL								
ACENAPHTHENE								
ACENAPHTHYLENE								
ACETOPHENONE								
ANTHRACENE								
ATRAZINE								
BENZALDEHYDE								

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	049	050	051	052	053	054	055	056
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S15	NCBC10S15	NCBC10S16	NCBC10S16	NCBC10S16	NCBC10S17	NCBC10S17	NCBC10S17
nsample	NCBC10S1510	NCBC10S1519	NCBC10S1605	NCBC10S1610	NCBC10S1620	NCBC10S1702	NCBC10S1711	NCBC10S1720
sample	NCBC10S1510	NCBC10S1519	NCBC10S1605	NCBC10S1610	NCBC10S1620	NCBC10S1702	NCBC10S1711	NCBC10S1720
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	10 - 10	19 - 19	5 - 5	10 - 10	20 - 20	2 - 2	11 - 11	20 - 20
gis_date	20020108	20020108	20020108	20020108	20020108	20020112	20020112	20020112
sample_dat	01/08/02	01/08/02	01/08/02	01/08/02	01/08/02	01/12/02	01/12/02	01/12/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_049**	**c_050**	**c_051**	**c_052**	**c_053**	**c_054**	**c_055**	**c_056**
BENZO(A)ANTHRACENE								
BENZO(A)PYRENE								
BENZO(B)FLUORANTHENE								
BENZO(G,H,I)PERYLENE								
BENZO(K)FLUORANTHENE								
BIS(2-CHLOROETHOXY)METHANE								
BIS(2-CHLOROETHYL)ETHER								
BIS(2-ETHYLHEXYL)PHTHALATE								
BUTYL BENZYL PHTHALATE								
CAPROLACTAM								
CARBAZOLE								
CHRYSENE								
DI-N-BUTYL PHTHALATE								
DI-N-OCTYL PHTHALATE								
DIBENZO(A,H)ANTHRACENE								
DIBENZOFURAN								
DIETHYL PHTHALATE								
DIMETHYL PHTHALATE								
FLUORANTHENE								
FLUORENE								
HEXACHLOROBENZENE								
HEXACHLOROBUTADIENE								
HEXACHLOROCYCLOPENTADIENE								
HEXACHLOROETHANE								
INDENO(1,2,3-CD)PYRENE								
ISOPHORONE								
N-NITROSO-DI-N-PROPYLAMINE								
N-NITROSODIPHENYLAMINE								
NAPHTHALENE								
NITROBENZENE								
PENTACHLOROPHENOL								
PHENANTHRENE								
PHENOL								
PYRENE								
Pesticides/PCBs (ug/kg)								
4,4'-DDD	2.1 U	2.1 U	10 U	2.0 U	2.1 U	1.1 J	2.1 U	2.4 U
4,4'-DDE	2.1 U	2.1 U	10 U	2.0 U	2.1 U	0.29 J	2.1 U	2.4 U
4,4'-DDT	2.1 U	2.1 U	11 R	2.0 U	2.1 U	0.20 R	2.1 U	0.29 J
ALDRIN	2.1 U	2.1 U	10 U	2.0 U	2.1 U	2.0 U	2.1 U	2.4 U
ALPHA-BHC	2.1 U	2.1 U	10 U	2.0 U	2.1 U	2.0 U	2.1 U	2.4 U
ALPHA-CHLORDANE	2.1 U	2.1 U	2.2 R	2.0 U	2.1 U	2.0 U	2.1 U	2.4 U
AROCLOR-1016	40 U	40 U	160 U	38 U	41 U	38 U	40 U	46 U
AROCLOR-1221	40 U	40 U	160 U	38 U	41 U	38 U	40 U	46 U

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	049	050	051	052	053	054	055	056
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S15	NCBC10S15	NCBC10S16	NCBC10S16	NCBC10S16	NCBC10S17	NCBC10S17	NCBC10S17
nsample	NCBC10S1510	NCBC10S1519	NCBC10S1605	NCBC10S1610	NCBC10S1620	NCBC10S1702	NCBC10S1711	NCBC10S1720
sample	NCBC10S1510	NCBC10S1519	NCBC10S1605	NCBC10S1610	NCBC10S1620	NCBC10S1702	NCBC10S1711	NCBC10S1720
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	10 - 10	19 - 19	5 - 5	10 - 10	20 - 20	2 - 2	11 - 11	20 - 20
gis_date	20020108	20020108	20020108	20020108	20020108	20020112	20020112	20020112
sample_dat	01/08/02	01/08/02	01/08/02	01/08/02	01/08/02	01/12/02	01/12/02	01/12/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_049**	**c_050**	**c_051**	**c_052**	**c_053**	**c_054**	**c_055**	**c_056**
AROCLOR-1232	40 U	40 U	160 U	38 U	41 U	38 U	40 U	46 U
AROCLOR-1242	40 U	40 U	160 U	38 U	41 U	38 U	40 U	46 U
AROCLOR-1248	40 U	40 U	160 U	38 U	41 U	38 U	40 U	46 U
AROCLOR-1254	40 U	40 U	160 U	38 U	41 U	38 U	40 U	46 U
AROCLOR-1260	40 U	40 U	1800	38 U	41 U	13 J	40 U	46 U
BETA-BHC	2.1 U	2.1 U	10 U	2.0 U	2.1 U	2.0 U	2.1 U	2.4 U
DELTA-BHC	0.094 R	2.1 U	10 U	2.0 U	2.1 U	2.0 U	2.1 U	2.4 U
DIELDRIN	2.1 U	2.1 U	46	2.0 U	2.1 U	2.0 U	2.1 U	2.4 U
ENDOSULFAN I	2.1 U	2.1 U	10 U	2.0 U	2.1 U	2.0 U	2.1 U	2.4 U
ENDOSULFAN II	2.1 U	2.1 U	47 J	2.0 U	2.1 U	0.25 J	2.1 U	2.4 U
ENDOSULFAN SULFATE	2.1 U	2.1 U	10 U	2.0 U	2.1 U	2.0 U	2.1 U	2.4 U
ENDRIN	2.1 U	2.1 U	19 R	2.0 U	2.1 U	2.0 U	2.1 U	2.4 U
ENDRIN ALDEHYDE	2.1 U	2.1 U	6.1 R	2.0 U	2.1 U	2.0 U	2.1 U	2.4 U
ENDRIN KETONE	2.1 U	2.1 U	10 U	2.0 U	2.1 U	2.0 U	2.1 U	2.4 U
GAMMA-BHC (LINDANE)	2.1 U	2.1 U	10 U	2.0 U	2.1 U	2.0 U	2.1 U	2.4 U
GAMMA-CHLORDANE	2.1 U	2.1 U	10 U	2.0 U	2.1 U	2.0 U	2.1 U	2.4 U
HEPTACHLOR	2.1 U	2.1 U	10 U	2.0 U	2.1 U	2.0 U	2.1 U	2.4 U
HEPTACHLOR EPOXIDE	2.1 U	2.1 U	10 U	2.0 U	2.1 U	2.0 U	2.1 U	2.4 U
METHOXYCHLOR	4.0 U	4.0 U	20 U	3.8 U	4.1 U	3.8 U	4.0 U	4.6 U
TOXAPHENE	81 U	81 U	400 U	77 U	82 U	77 U	82 U	93 U
Herbicides (ug/kg)								
2,4,5-T								
2,4,5-TP (SILVEX)								
2,4-D								
DINOSEB								
Inorganics (mg/kg)								
ALUMINUM								
ANTIMONY								
ARSENIC								
BARIUM								
BERYLLIUM								
CADMIUM								
CALCIUM								
CHROMIUM								
COBALT								
COPPER								
IRON								
LEAD								
MAGNESIUM								
MANGANESE								
MERCURY								
NICKEL								
POTASSIUM								

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	049	050	051	052	053	054	055	056
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S15	NCBC10S15	NCBC10S16	NCBC10S16	NCBC10S16	NCBC10S17	NCBC10S17	NCBC10S17
nsample	NCBC10S1510	NCBC10S1519	NCBC10S1605	NCBC10S1610	NCBC10S1620	NCBC10S1702	NCBC10S1711	NCBC10S1720
sample	NCBC10S1510	NCBC10S1519	NCBC10S1605	NCBC10S1610	NCBC10S1620	NCBC10S1702	NCBC10S1711	NCBC10S1720
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	10 - 10	19 - 19	5 - 5	10 - 10	20 - 20	2 - 2	11 - 11	20 - 20
gis_date	20020108	20020108	20020108	20020108	20020108	20020112	20020112	20020112
sample_dat	01/08/02	01/08/02	01/08/02	01/08/02	01/08/02	01/12/02	01/12/02	01/12/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_049**	**c_050**	**c_051**	**c_052**	**c_053**	**c_054**	**c_055**	**c_056**
SELENIUM								
SILVER								
SODIUM								
THALLIUM								
VANADIUM								
ZINC								
Miscellaneous Parameters (mg/kg)								
CYANIDE								
TOTAL SOLIDS (%)								

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	057	058	059	060	061	062	063	064
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S18	NCBC10S18	NCBC10S18	NCBC10S18	NCBC10S19	NCBC10S20	NCBC10S21	NCBC10S22
nsample	NCBC10S1805	NCBC10S1810	NCBC10S1810-D	NCBC10S1823	NCBC10S1905	NCBC10S2005	NCBC10S2105	NCBC10S2205
sample	NCBC10S1805	NCBC10S1810	NCBC10S1810D	NCBC10S1823	NCBC10S1905	NCBC10S2005	NCBC10S2105	NCBC10S2205
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	5 - 5	10 - 10	10 - 10	23 - 23	5 - 5	5 - 5	5 - 5	5 - 5
gis_date	20020112	20020112	20020112	20020112	20020212	20020212	20020212	20020213
sample_dat	01/12/02	01/12/02	01/12/02	01/12/02	02/12/02	02/12/02	02/12/02	02/13/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_057**	**c_058**	**c_059**	**c_060**	**c_061**	**c_062**	**c_063**	**c_064**
Volatile Organics (ug/kg)								
1,1,1-TRICHLOROETHANE								4.8 U
1,1,2,2-TETRACHLOROETHANE								4.8 U
1,1,2-TRICHLOROETHANE								4.8 U
1,1,2-TRICHLOROTRIFLUOROETHANE								
1,1-DICHLOROETHANE								4.8 U
1,1-DICHLOROETHENE								4.8 U
1,2,3-TRICHLOROBENZENE								
1,2,4-TRICHLOROBENZENE								
1,2-DIBROMO-3-CHLOROPROPANE								9.5 U
1,2-DIBROMOETHANE								4.8 U
1,2-DICHLOROBENZENE								4.8 U
1,2-DICHLOROETHANE								4.8 U
1,2-DICHLOROPROPANE								4.8 U
1,3-DICHLOROBENZENE								4.8 U
1,4-DICHLOROBENZENE								4.8 U
2-BUTANONE								19 U
2-HEXANONE								19 U
4-METHYL-2-PENTANONE								19 U
ACETONE								19 U
BENZENE								4.8 U
BROMOCHLOROMETHANE								
BROMODICHLOROMETHANE								4.8 U
BROMOFORM								4.8 U
BROMOMETHANE								9.5 U
CARBON DISULFIDE								4.8 U
CARBON TETRACHLORIDE								4.8 U
CHLOROBENZENE								4.8 U
CHLORODIBROMOMETHANE								4.8 U
CHLOROETHANE								9.5 U
CHLOROFORM								4.8 U
CHLOROMETHANE								9.5 U
CIS-1,2-DICHLOROETHENE								4.8 U
CIS-1,3-DICHLOROPROPENE								4.8 U
CYCLOHEXANE								
DICHLORODIFLUOROMETHANE								
ETHYLBENZENE								4.8 U
ISOPROPYLBENZENE								
M+P-XYLENES								
METHYL ACETATE								
METHYL CYCLOHEXANE								
METHYL TERT-BUTYL ETHER								
METHYLENE CHLORIDE								4.8 U

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	057	058	059	060	061	062	063	064
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S18	NCBC10S18	NCBC10S18	NCBC10S18	NCBC10S19	NCBC10S20	NCBC10S21	NCBC10S22
nsample	NCBC10S1805	NCBC10S1810	NCBC10S1810-D	NCBC10S1823	NCBC10S1905	NCBC10S2005	NCBC10S2105	NCBC10S2205
sample	NCBC10S1805	NCBC10S1810	NCBC10S1810D	NCBC10S1823	NCBC10S1905	NCBC10S2005	NCBC10S2105	NCBC10S2205
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	5 - 5	10 - 10	10 - 10	23 - 23	5 - 5	5 - 5	5 - 5	5 - 5
gis_date	20020112	20020112	20020112	20020112	20020212	20020212	20020212	20020213
sample_dat	01/12/02	01/12/02	01/12/02	01/12/02	02/12/02	02/12/02	02/12/02	02/13/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_057**	**c_058**	**c_059**	**c_060**	**c_061**	**c_062**	**c_063**	**c_064**
O-XYLENE								
STYRENE								4.8 U
TETRACHLOROETHENE								4.8 U
TOLUENE								4.8 U
TOTAL 1,2-DICHLOROETHENE								4.8 U
TOTAL XYLENES								14 U
TRANS-1,2-DICHLOROETHENE								4.8 U
TRANS-1,3-DICHLOROPROPENE								4.8 U
TRICHLOROETHENE								4.8 U
TRICHLOROFLUOROMETHANE								9.5 U
VINYL CHLORIDE								9.5 U
Semivolatile Organics (ug/kg)								
1,1-BIPHENYL								
2,2'-OXYBIS(1-CHLOROPROPANE)								
2,4,5-TRICHLOROPHENOL								
2,4,6-TRICHLOROPHENOL								
2,4-DICHLOROPHENOL								
2,4-DIMETHYLPHENOL								
2,4-DINITROPHENOL								
2,4-DINITROTOLUENE								
2,6-DINITROTOLUENE								
2-CHLORONAPHTHALENE								
2-CHLOROPHENOL								
2-METHYLNAPHTHALENE								
2-METHYLPHENOL								
2-NITROANILINE								
2-NITROPHENOL								
3,3'-DICHLOROBENZIDINE								
3-NITROANILINE								
4,6-DINITRO-2-METHYLPHENOL								
4-BROMOPHENYL PHENYL ETHER								
4-CHLORO-3-METHYLPHENOL								
4-CHLOROANILINE								
4-CHLOROPHENYL PHENYL ETHER								
4-METHYLPHENOL								
4-NITROANILINE								
4-NITROPHENOL								
ACENAPHTHENE								
ACENAPHTHYLENE								
ACETOPHENONE								
ANTHRACENE								
ATRAZINE								
BENZALDEHYDE								

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	057	058	059	060	061	062	063	064
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S18	NCBC10S18	NCBC10S18	NCBC10S18	NCBC10S19	NCBC10S20	NCBC10S21	NCBC10S22
nsample	NCBC10S1805	NCBC10S1810	NCBC10S1810-D	NCBC10S1823	NCBC10S1905	NCBC10S2005	NCBC10S2105	NCBC10S2205
sample	NCBC10S1805	NCBC10S1810	NCBC10S1810D	NCBC10S1823	NCBC10S1905	NCBC10S2005	NCBC10S2105	NCBC10S2205
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	5 - 5	10 - 10	10 - 10	23 - 23	5 - 5	5 - 5	5 - 5	5 - 5
gis_date	20020112	20020112	20020112	20020112	20020212	20020212	20020212	20020213
sample_dat	01/12/02	01/12/02	01/12/02	01/12/02	02/12/02	02/12/02	02/12/02	02/13/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_057**	**c_058**	**c_059**	**c_060**	**c_061**	**c_062**	**c_063**	**c_064**
BENZO(A)ANTHRACENE								
BENZO(A)PYRENE								
BENZO(B)FLUORANTHENE								
BENZO(G,H,I)PERYLENE								
BENZO(K)FLUORANTHENE								
BIS(2-CHLOROETHOXY)METHANE								
BIS(2-CHLOROETHYL)ETHER								
BIS(2-ETHYLHEXYL)PHTHALATE								
BUTYL BENZYL PHTHALATE								
CAPROLACTAM								
CARBAZOLE								
CHRYSENE								
DI-N-BUTYL PHTHALATE								
DI-N-OCTYL PHTHALATE								
DIBENZO(A,H)ANTHRACENE								
DIBENZOFURAN								
DIETHYL PHTHALATE								
DIMETHYL PHTHALATE								
FLUORANTHENE								
FLUORENE								
HEXACHLOROBENZENE								
HEXACHLOROBUTADIENE								
HEXACHLOROCYCLOPENTADIENE								
HEXACHLOROETHANE								
INDENO(1,2,3-CD)PYRENE								
ISOPHORONE								
N-NITROSO-DI-N-PROPYLAMINE								
N-NITROSODIPHENYLAMINE								
NAPHTHALENE								
NITROBENZENE								
PENTACHLOROPHENOL								
PHENANTHRENE								
PHENOL								
PYRENE								
Pesticides/PCBs (ug/kg)								
4,4'-DDD	1.9 U	2.1 U	2.2 U	2.1 U				
4,4'-DDE	1.9 U	2.1 U	2.2 U	2.1 U				
4,4'-DDT	0.23 J	2.1 U	2.2 U	2.1 U				
ALDRIN	1.9 U	2.1 U	2.2 U	2.1 U				
ALPHA-BHC	1.9 U	2.1 U	2.2 U	2.1 U				
ALPHA-CHLORDANE	1.9 U	2.1 U	2.2 U	2.1 U				
AROCLOR-1016	38 U	41 U	42 U	42 U	39 U	38 U	37 U	
AROCLOR-1221	38 U	41 U	42 U	42 U	39 U	38 U	37 U	

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	057	058	059	060	061	062	063	064
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S18	NCBC10S18	NCBC10S18	NCBC10S18	NCBC10S19	NCBC10S20	NCBC10S21	NCBC10S22
nsample	NCBC10S1805	NCBC10S1810	NCBC10S1810-D	NCBC10S1823	NCBC10S1905	NCBC10S2005	NCBC10S2105	NCBC10S2205
sample	NCBC10S1805	NCBC10S1810	NCBC10S1810D	NCBC10S1823	NCBC10S1905	NCBC10S2005	NCBC10S2105	NCBC10S2205
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	5 - 5	10 - 10	10 - 10	23 - 23	5 - 5	5 - 5	5 - 5	5 - 5
gis_date	20020112	20020112	20020112	20020112	20020212	20020212	20020212	20020213
sample_dat	01/12/02	01/12/02	01/12/02	01/12/02	02/12/02	02/12/02	02/12/02	02/13/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_057**	**c_058**	**c_059**	**c_060**	**c_061**	**c_062**	**c_063**	**c_064**
AROCLOR-1232	38 U	41 U	42 U	42 U	39 U	38 U	37 U	
AROCLOR-1242	38 U	41 U	42 U	42 U	39 U	38 U	37 U	
AROCLOR-1248	38 U	41 U	42 U	42 U	39 U	38 U	37 U	
AROCLOR-1254	38 U	41 U	42 U	42 U	39 U	38 U	37 U	
AROCLOR-1260	38 U	41 U	42 U	42 U	39 U	15 J	37 U	
BETA-BHC	1.9 U	2.1 U	2.2 U	2.1 U				
DELTA-BHC	1.9 U	2.1 U	2.2 U	2.1 U				
DIELDRIN	1.9 U	2.1 U	2.2 U	2.1 U				
ENDOSULFAN I	1.9 U	2.1 U	2.2 U	2.1 U				
ENDOSULFAN II	1.9 U	2.1 U	2.2 U	2.1 U				
ENDOSULFAN SULFATE	1.9 U	2.1 U	2.2 U	2.1 U				
ENDRIN	1.9 U	2.1 U	2.2 U	2.1 U				
ENDRIN ALDEHYDE	1.9 U	2.1 U	2.2 U	2.1 U				
ENDRIN KETONE	1.9 U	2.1 U	2.2 U	2.1 U				
GAMMA-BHC (LINDANE)	1.9 U	2.1 U	2.2 U	2.1 U				
GAMMA-CHLORDANE	1.9 U	2.1 U	2.2 U	2.1 U				
HEPTACHLOR	1.9 U	2.1 U	2.2 U	2.1 U				
HEPTACHLOR EPOXIDE	1.9 U	2.1 U	2.2 U	2.1 U				
METHOXYCHLOR	3.8 U	4.1 U	4.2 U	4.2 U				
TOXAPHENE	76 U	83 U	86 U	84 U				
Herbicides (ug/kg)								
2,4,5-T								
2,4,5-TP (SILVEX)								
2,4-D								
DINOSEB								
Inorganics (mg/kg)								
ALUMINUM								
ANTIMONY								
ARSENIC								
BARIUM								
BERYLLIUM								
CADMIUM								
CALCIUM								
CHROMIUM								
COBALT								
COPPER								
IRON								
LEAD								
MAGNESIUM								
MANGANESE								
MERCURY								
NICKEL								
POTASSIUM								

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

order	**057**	**058**	**059**	**060**	**061**	**062**	**063**	**064**
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S18	NCBC10S18	NCBC10S18	NCBC10S18	NCBC10S19	NCBC10S20	NCBC10S21	NCBC10S22
nsample	NCBC10S1805	NCBC10S1810	NCBC10S1810-D	NCBC10S1823	NCBC10S1905	NCBC10S2005	NCBC10S2105	NCBC10S2205
sample	NCBC10S1805	NCBC10S1810	NCBC10S1810D	NCBC10S1823	NCBC10S1905	NCBC10S2005	NCBC10S2105	NCBC10S2205
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	5 - 5	10 - 10	10 - 10	23 - 23	5 - 5	5 - 5	5 - 5	5 - 5
gis_date	20020112	20020112	20020112	20020112	20020212	20020212	20020212	20020213
sample_dat	01/12/02	01/12/02	01/12/02	01/12/02	02/12/02	02/12/02	02/12/02	02/13/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_057**	**c_058**	**c_059**	**c_060**	**c_061**	**c_062**	**c_063**	**c_064**
SELENIUM								
SILVER								
SODIUM								
THALLIUM								
VANADIUM								
ZINC								
Miscellaneous Parameters (mg/kg)								
CYANIDE								
TOTAL SOLIDS (%)								

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

CTO 288
soils
full appendix results

order	065	066	067	068	069	070	071	072
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S23	NCBC10S24	NCBC10S25	NCBC10S26	NCBC10S27	NCBC10S28	NCBC10S29	NCBC10S29
nsample	NCBC10S2305	DP1024S01	DP1025S01	DP1026S01	DP1027S01	DP1028S01	DP1029S01	DP1029S01-D
sample	NCBC10S2305	DP1024S01	DP1025S01	DP1026S01	DP1027S01	DP1028S01	DP1029S01	DP1029S01D
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	5 - 5	6 - 7	7 - 8	18 - 19	6 - 7	6 - 7	6 - 7	6 - 7
gis_date	20020213	20031216	20031216	20031216	20031216	20031216	20031216	20031216
sample_dat	02/13/02	12/16/03	12/16/03	12/16/03	12/16/03	12/16/03	12/16/03	12/16/03
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	288	288	288	288	288	288	288
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_065**	**c_066**	**c_067**	**c_068**	**c_069**	**c_070**	**c_071**	**c_072**
Volatile Organics (ug/kg)								
1,1,1-TRICHLOROETHANE	5 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
1,1,2,2-TETRACHLOROETHANE	5 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
1,1,2-TRICHLOROETHANE	5 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
1,1,2-TRICHLOROTRIFLUOROETHANE		6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
1,1-DICHLOROETHANE	5 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
1,1-DICHLOROETHENE	5 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
1,2,3-TRICHLOROBENZENE		0.5 J	27	6 U	6 U	11 J	3 J	2 J
1,2,4-TRICHLOROBENZENE		6 U	660	6 U	6 U	550	160 J	100
1,2-DIBROMO-3-CHLOROPROPANE	9.9 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
1,2-DIBROMOETHANE	5 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
1,2-DICHLOROBENZENE	5 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
1,2-DICHLOROETHANE	5 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
1,2-DICHLOROPROPANE	5 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
1,3-DICHLOROBENZENE	5 U	6 U	160 J	6 U	6 U	87 J	57	59
1,4-DICHLOROBENZENE	5 U	6 U	390 J	6 U	6 U	290 J	140	160
2-BUTANONE	20 U	29 U	30 U	30 U	29 U	33 UJ	28 U	31 U
2-HEXANONE	20 U	29 U	30 U	30 U	29 U	33 UJ	28 U	31 U
4-METHYL-2-PENTANONE	20 U	29 U	30 U	30 U	29 U	33 UJ	28 U	31 U
ACETONE	20 U	18 J	30 U	30 U	29 U	33 UJ	28 U	31 U
BENZENE	5 U	6 U	8	6 U	6 U	4 J	6 U	6 U
BROMOCHLOROMETHANE		6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
BROMODICHLOROMETHANE	5 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
BROMOFORM	5 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
BROMOMETHANE	9.9 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
CARBON DISULFIDE	5 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
CARBON TETRACHLORIDE	5 U	6 UJ	6 UJ	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ
CHLOROBENZENE	5 U	6 U	150	6 U	6 U	160 J	43	34
CHLORODIBROMOMETHANE	5 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
CHLOROETHANE	9.9 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
CHLOROFORM	5 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
CHLOROMETHANE	9.9 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
CIS-1,2-DICHLOROETHENE	5 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
CIS-1,3-DICHLOROPROPENE	5 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
CYCLOHEXANE		6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
DICHLORODIFLUOROMETHANE		6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
ETHYLBENZENE	5 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
ISOPROPYLBENZENE		6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
M+P-XYLENES		12 U	12 U	12 U	12 U	13 UJ	11 U	12 U
METHYL ACETATE		6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
METHYL CYCLOHEXANE		6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
METHYL TERT-BUTYL ETHER		12 U	12 U	12 U	12 U	13 UJ	11 U	12 U
METHYLENE CHLORIDE	5 U	10 U	12 U	12 U	12 U	13 UJ	11 U	12 U

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

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aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S23	NCBC10S24	NCBC10S25	NCBC10S26	NCBC10S27	NCBC10S28	NCBC10S29	NCBC10S29
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sample	NCBC10S2305	DP1024S01	DP1025S01	DP1026S01	DP1027S01	DP1028S01	DP1029S01	DP1029S01D
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	5 - 5	6 - 7	7 - 8	18 - 19	6 - 7	6 - 7	6 - 7	6 - 7
gis_date	20020213	20031216	20031216	20031216	20031216	20031216	20031216	20031216
sample_dat	02/13/02	12/16/03	12/16/03	12/16/03	12/16/03	12/16/03	12/16/03	12/16/03
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	288	288	288	288	288	288	288
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_065**	**c_066**	**c_067**	**c_068**	**c_069**	**c_070**	**c_071**	**c_072**
O-XYLENE		6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
STYRENE	5 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
TETRACHLOROETHENE	5 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
TOLUENE	5 U	1 J	6 U	6 U	6 U	7 UJ	6 U	6 U
TOTAL 1,2-DICHLOROETHENE	5 U	12 U	12 U	12 U	12 U	13 UJ	11 U	12 U
TOTAL XYLENES	15 U	18 U	18 U	18 U	18 U	20 UJ	17 U	18 U
TRANS-1,2-DICHLOROETHENE	5 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
TRANS-1,3-DICHLOROPROPENE	5 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
TRICHLOROETHENE	5 U	6 UR	6 U	6 U	6 U	7 UJ	6 U	6 U
TRICHLOROFLUOROMETHANE	9.9 U	6	1 J	4 J	1 J	7 UJ	3 J	7
VINYL CHLORIDE	9.9 U	6 U	6 U	6 U	6 U	7 UJ	6 U	6 U
Semivolatile Organics (ug/kg)								
1,1-BIPHENYL		400 U	400 U	390 U	390 U	410 U	400 U	390 U
2,2'-OXYBIS(1-CHLOROPROPANE)		400 UJ	400 UJ	390 UJ	390 UJ	410 UJ	400 UJ	390 UJ
2,4,5-TRICHLOROPHENOL		400 U	400 U	390 U	390 U	410 U	400 U	390 U
2,4,6-TRICHLOROPHENOL		400 U	400 U	390 U	390 U	410 U	400 U	390 U
2,4-DICHLOROPHENOL		400 U	400 U	390 U	390 U	410 U	400 U	390 U
2,4-DIMETHYLPHENOL		400 U	400 U	390 U	390 U	410 U	400 U	390 U
2,4-DINITROPHENOL		400 UJ	400 UJ	390 UJ	390 UJ	410 UJ	400 UJ	390 UJ
2,4-DINITROTOLUENE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
2,6-DINITROTOLUENE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
2-CHLORONAPHTHALENE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
2-CHLOROPHENOL		400 U	400 U	390 U	390 U	410 U	400 U	390 U
2-METHYLNAPHTHALENE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
2-METHYLPHENOL		400 U	400 U	390 U	390 U	410 U	400 U	390 U
2-NITROANILINE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
2-NITROPHENOL		400 U	400 U	390 U	390 U	410 U	400 U	390 U
3,3'-DICHLOROBENZIDINE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
3-NITROANILINE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
4,6-DINITRO-2-METHYLPHENOL		400 U	400 U	390 U	390 U	410 U	400 U	390 U
4-BROMOPHENYL PHENYL ETHER		400 U	400 U	390 U	390 U	410 U	400 U	390 U
4-CHLORO-3-METHYLPHENOL		400 U	400 U	390 U	390 U	410 U	400 U	390 U
4-CHLOROANILINE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
4-CHLOROPHENYL PHENYL ETHER		400 U	400 U	390 U	390 U	410 U	400 U	390 U
4-METHYLPHENOL		400 U	400 U	390 U	390 U	410 U	400 U	390 U
4-NITROANILINE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
4-NITROPHENOL		400 U	400 U	390 U	390 U	410 U	400 U	390 U
ACENAPHTHENE		280 J	400 U	390 U	280 J	410 U	400 U	390 U
ACENAPHTHYLENE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
ACETOPHENONE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
ANTHRACENE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
ATRAZINE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
BENZALDEHYDE		400 UJ	400 UJ	390 UJ	390 UJ	410 UJ	400 UJ	390 UJ

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from q:\sql_server\gulfport\upload

order	065	066	067	068	069	070	071	072
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S23	NCBC10S24	NCBC10S25	NCBC10S26	NCBC10S27	NCBC10S28	NCBC10S29	NCBC10S29
nsample	NCBC10S2305	DP1024S01	DP1025S01	DP1026S01	DP1027S01	DP1028S01	DP1029S01	DP1029S01-D
sample	NCBC10S2305	DP1024S01	DP1025S01	DP1026S01	DP1027S01	DP1028S01	DP1029S01	DP1029S01D
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	5 - 5	6 - 7	7 - 8	18 - 19	6 - 7	6 - 7	6 - 7	6 - 7
gis_date	20020213	20031216	20031216	20031216	20031216	20031216	20031216	20031216
sample_dat	02/13/02	12/16/03	12/16/03	12/16/03	12/16/03	12/16/03	12/16/03	12/16/03
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	288	288	288	288	288	288	288
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_065**	**c_066**	**c_067**	**c_068**	**c_069**	**c_070**	**c_071**	**c_072**
BENZO(A)ANTHRACENE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
BENZO(A)PYRENE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
BENZO(B)FLUORANTHENE		470 U	400 U	460 U	390 U	410 U	460 U	390 U
BENZO(G,H,I)PERYLENE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
BENZO(K)FLUORANTHENE		470 U	400 U	460 U	390 U	410 U	460 U	390 U
BIS(2-CHLOROETHOXY)METHANE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
BIS(2-CHLOROETHYL)ETHER		400 U	400 U	390 U	390 U	410 U	400 U	390 U
BIS(2-ETHYLHEXYL)PHTHALATE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
BUTYL BENZYL PHTHALATE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
CAPROLACTAM		400 UJ	400 UJ	390 UJ	390 UJ	410 UJ	400 UJ	390 UJ
CARBAZOLE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
CHRYSENE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
DI-N-BUTYL PHTHALATE		260 J	280 J	260 J	390 U	410 U	260 J	250 J
DI-N-OCTYL PHTHALATE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
DIBENZO(A,H)ANTHRACENE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
DIBENZOFURAN		400 U	400 U	390 U	390 U	410 U	400 U	390 U
DIETHYL PHTHALATE		400 UJ	400 UJ	390 UJ	390 UJ	410 UJ	400 UJ	390 UJ
DIMETHYL PHTHALATE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
FLUORANTHENE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
FLUORENE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
HEXACHLOROBENZENE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
HEXACHLOROBUTADIENE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
HEXACHLOROCYCLOPENTADIENE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
HEXACHLOROETHANE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
INDENO(1,2,3-CD)PYRENE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
ISOPHORONE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
N-NITROSO-DI-N-PROPYLAMINE		400 UJ	400 UJ	390 UJ	390 UJ	410 U	400 UJ	390 UJ
N-NITROSODIPHENYLAMINE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
NAPHTHALENE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
NITROBENZENE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
PENTACHLOROPHENOL		400 U	400 U	390 U	390 U	410 U	400 U	390 U
PHENANTHRENE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
PHENOL		400 U	400 U	390 U	390 U	410 U	400 U	390 U
PYRENE		400 U	400 U	390 U	390 U	410 U	400 U	390 U
Pesticides/PCBs (ug/kg)								
4,4'-DDD		2 U	2.1 U	2 U	2 U	2.1 U	2 U	2 U
4,4'-DDE		2 U	2.1 U	2 U	2 U	2.1 U	2 U	2 U
4,4'-DDT		2 U	2.1 U	2 U	2 U	2.1 U	2 U	2 U
ALDRIN		2 U	2.1 U	2 U	2 U	2.1 U	2 U	2 U
ALPHA-BHC		2 U	2.1 U	2 U	2 U	2.1 U	2 U	2 U
ALPHA-CHLORDANE		2 U	2.1 U	2 U	2 U	2.1 U	2 U	2 U
AROCLOR-1016		20 U	21 U	20 U	20 UJ	21 U	20 U	20 U
AROCLOR-1221		20 U	21 U	20 U	20 UJ	21 U	20 U	20 U

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from _10sores.dbf
from _10sores.xls
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location	NCBC10S23	NCBC10S24	NCBC10S25	NCBC10S26	NCBC10S27	NCBC10S28	NCBC10S29	NCBC10S29
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sample	NCBC10S2305	DP1024S01	DP1025S01	DP1026S01	DP1027S01	DP1028S01	DP1029S01	DP1029S01D
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	5 - 5	6 - 7	7 - 8	18 - 19	6 - 7	6 - 7	6 - 7	6 - 7
gis_date	20020213	20031216	20031216	20031216	20031216	20031216	20031216	20031216
sample_dat	02/13/02	12/16/03	12/16/03	12/16/03	12/16/03	12/16/03	12/16/03	12/16/03
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	288	288	288	288	288	288	288
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_065**	**c_066**	**c_067**	**c_068**	**c_069**	**c_070**	**c_071**	**c_072**
AROCLOR-1232		20 U	21 U	20 U	20 UJ	21 U	20 U	20 U
AROCLOR-1242		20 U	21 U	20 U	20 UJ	21 U	20 U	20 U
AROCLOR-1248		20 U	21 U	20 U	20 UJ	21 U	20 U	20 U
AROCLOR-1254		20 U	21 U	20 U	20 UJ	21 U	20 U	20 U
AROCLOR-1260		20 U	21 U	14 J	20 UJ	21 U	20 U	20 U
BETA-BHC		2 U	2.1 U	2 U	2 U	2.1 U	2 U	2 U
DELTA-BHC		2 U	2.1 U	2 U	2 U	2.1 U	2 U	2 U
DIELDRIN		2 U	2.1 U	2 U	2 U	2.1 U	2 U	2 U
ENDOSULFAN I		2 U	2.1 U	2 U	2 U	2.1 U	2 U	2 U
ENDOSULFAN II		2 U	2.1 U	2 U	2 U	2.1 U	2 U	2 U
ENDOSULFAN SULFATE		2 U	2.1 U	2 U	2 U	2.1 U	2 U	2 U
ENDRIN		2 U	2.1 U	2 U	2 U	2.1 U	2 U	2 U
ENDRIN ALDEHYDE		2 U	2.1 U	2 U	2 U	2.1 U	2 U	2 U
ENDRIN KETONE		2 U	2.1 U	2 U	2 U	2.1 U	2 U	2 U
GAMMA-BHC (LINDANE)		2 U	2.1 U	2 U	2 U	2.1 U	2 U	2 U
GAMMA-CHLORDANE		2 U	2.1 U	2 U	2 U	2.1 U	2 U	2 U
HEPTACHLOR		2 U	2.1 U	2 U	2 U	2.1 U	2 U	2 U
HEPTACHLOR EPOXIDE		2 U	2.1 U	2 U	2 U	2.1 U	2 U	2 U
METHOXYCHLOR		2 U	2.1 U	2 U	2 U	2.1 U	2 U	2 U
TOXAPHENE		2 U	2.1 U	2 U	2 U	2.1 U	2 U	2 U
Herbicides (ug/kg)								
2,4,5-T		24 U	25 U	24 U	24 U	24 U	24 U	24 U
2,4,5-TP (SILVEX)		12 U	12 U	12 U	12 U	12 U	12 U	12 U
2,4-D		83 U	86 U	84 U	84 U	84 U	85 U	84 U
DINOSEB		59 U	61 U	60 U	60 U	60 U	61 U	60 U
Inorganics (mg/kg)								
ALUMINUM		2050	795	447	1310	1520	1330	1360
ANTIMONY		0.33 U	0.22 U	0.17 U	0.18 U	0.26 U	0.25 U	0.16 U
ARSENIC		1.5	0.5	0.6	0.21	0.44	0.45	0.42
BARIUM		4.4	2.7	1.5	4.4	4.4	5.4	6
BERYLLIUM		0.11 U	0.05 U	0.03 U	0.05 U	0.08 U	0.07 U	0.07 U
CADMIUM		0.27 U	0.28 U	0.23 U	0.27 U	0.28 U	0.28 U	0.25 U
CALCIUM		51.2	33.1	31.3	48	30.9	30	32.1
CHROMIUM		3.3	1.4	0.73	1.4	1.8	1.2	1.3
COBALT		0.73	0.31 U	0.26 U	0.30 U	0.32	0.32	0.28 U
COPPER		1.1	0.65	0.68	1.1	1.2	1.4	1.2
IRON		278	132	303	170	185	207	207
LEAD		0.90 U	0.54 U	0.74 U	0.84 U	1.0 U	0.66 U	0.82 U
MAGNESIUM		32.2	21	17.2	43.6	43.6	48.6	48.3
MANGANESE		1.1 U	1.6	1.1	1.1 U	1.3	1.1 U	1.2
MERCURY		0.01 U	0.02 U	0.01 U	0.02 U	0.03 U	0.02 U	0.02 U
NICKEL		1.5	1.26 U	1.06 U	1.22 U	1.28 U	1.29 U	1.13 U
POTASSIUM		48.19 U	49.80 U	41.85 U	48.31 U	58.2	51.12 U	44.92 U

from _10sosam.dbf
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from _10sores.xls
from q:\sql_server\gulfport\upload

CTO 288
soils
full appendix results

order	065	066	067	068	069	070	071	072
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aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10S23	NCBC10S24	NCBC10S25	NCBC10S26	NCBC10S27	NCBC10S28	NCBC10S29	NCBC10S29
nsample	NCBC10S2305	DP1024S01	DP1025S01	DP1026S01	DP1027S01	DP1028S01	DP1029S01	DP1029S01-D
sample	NCBC10S2305	DP1024S01	DP1025S01	DP1026S01	DP1027S01	DP1028S01	DP1029S01	DP1029S01D
matrix	SO	SO	SO	SO	SO	SO	SO	SO
depth_rang	5 - 5	6 - 7	7 - 8	18 - 19	6 - 7	6 - 7	6 - 7	6 - 7
gis_date	20020213	20031216	20031216	20031216	20031216	20031216	20031216	20031216
sample_dat	02/13/02	12/16/03	12/16/03	12/16/03	12/16/03	12/16/03	12/16/03	12/16/03
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	288	288	288	288	288	288	288
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_065**	**c_066**	**c_067**	**c_068**	**c_069**	**c_070**	**c_071**	**c_072**
SELENIUM		0.27	0.24 U	0.20 U	0.23 U	0.25 U	0.25 U	0.22 U
SILVER		0.12 U	0.12 U	0.10 U	0.12 U	0.12 U	0.12 U	0.11 U
SODIUM		9.2	10.4	9.4	10.3	13.7	14.8	12.8
THALLIUM		0.55 U	0.52 U	0.27 U	0.36 U	0.53 U	0.48 U	0.33 U
VANADIUM		3.1	1.4	0.99	1.8	2.5	1.6	1.6
ZINC		0.54	0.35	2.3	0.54	0.74	0.6	0.54
Miscellaneous Parameters (mg/kg)								
CYANIDE		0.60 U	0.61 U	0.59 U	0.60 U	0.62 U	0.60 U	0.59 U
TOTAL SOLIDS (%)		83 %	82 %	84 %	84 %	80 %	83 %	85 %

from _10sosam.dbf
from _10sores.dbf
from _10sores.xls
from q:\sql_server\gulfport\upload

CTO 288
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full appendix results

order	001	002	003	004	005	006	007	008
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
round	2003Q4	2003Q4	2003Q4	2003Q4	2003Q4	2003Q4	2002Q1	2002Q1
location	NCBC10G01	NCBC10G02	NCBC10G02	NCBC10G03	NCBC10G04	NCBC10G05	NCBC10G01	NCBC10G02
nsample	MW1001G02	MW1002G02	MW1002G02-D	MW1003G02	MW1004G02	MW1005G02	NCBC10G01	NCBC10G02
sample	MW1001G02	MW1002G02	MW1002G02D	MW1003G02	MW1004G02	MW1005G02	NCBC10G01	NCBC10G02
depth_rang	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999
gis_date	20031218	20031218	20031218	20031218	20031218	20031218	20020214	20020214
sample_dat	12/18/03	12/18/03	12/18/03	12/18/03	12/18/03	12/18/03	02/14/02	02/14/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	288	288	288	288	288	288	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_001**	**c_002**	**c_003**	**c_004**	**c_005**	**c_006**	**c_007**	**c_008**
Volatile Organics (ug/L)								
1,1,1-TRICHLOROETHANE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-TETRACHLOROETHANE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-TRICHLOROETHANE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-TRICHLOROTRIFLUOROETHANE	1 U	1 U	1 U	1 U	1 UJ	1 U		
1,1-DICHLOROETHANE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHENE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-TRICHLOROBENZENE	1 U	1 U	1 U	1 U	1 U	1 U		
1,2,4-TRICHLOROBENZENE	1 U	25	24	1 U	1 U	1 U		
1,2-DIBROMO-3-CHLOROPROPANE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DIBROMOETHANE	1 U	1 U	1 U	1 U	1 U	1 U	0.02 U	0.02 U
1,2-DICHLOROBENZENE	1 U	0.4 J	0.4 J	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROETHANE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROPROPANE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-DICHLOROBENZENE	1 U	4	4	1 U	1 U	1 U	1 U	2.7
1,4-DICHLOROBENZENE	1 U	6	6	1 U	1 U	1 U	1 U	1.1
2-BUTANONE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-HEXANONE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-METHYL-2-PENTANONE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
ACETONE	5 UR	5 UR	5 UR	5 UR	5 UR	5 UR	10 UJ	10 UJ
BENZENE	1 U	3	3	1 U	1 U	1 U	1 U	1 U
BROMOCHLOROMETHANE	1 U	1 U	1 U	1 U	1 U	1 U		
BROMODICHLOROMETHANE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BROMOFORM	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BROMOMETHANE	2 U	2 U	2 U	2 U	2 U	2 U	1 U	1 U
CARBON DISULFIDE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CARBON TETRACHLORIDE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROBENZENE	0.3 J	2	2	1 U	1 U	1 U	1 U	1 U
CHLORODIBROMOMETHANE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROETHANE	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
CHLOROFORM	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROMETHANE	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
CIS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CIS-1,3-DICHLOROPROPENE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CYCLOHEXANE	1 U	1 U	1 U	1 U	1 U	1 U		
DICHLORODIFLUOROMETHANE	2 U	2 U	2 U	2 U	2 U	2 U		
ETHYLBENZENE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
ISOPROPYLBENZENE	1 U	1 U	1 U	1 U	1 U	1 U		
M+P-XYLENES	2 U	2 U	2 U	2 U	2 U	2 U		
METHYL ACETATE	1 U	1 U	1 U	1 U	1 U	1 U		
METHYL CYCLOHEXANE	1 U	1 U	1 U	1 U	1 U	1 U		
METHYL TERT-BUTYL ETHER	2 U	2 U	2 U	2 U	2 UJ	2 U		
METHYLENE CHLORIDE	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U

from _10gwsam.dbf
from _10gwres.dbf
from _10gwres.xls
from q:\sql_server\gulfport\upload

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full appendix results

order	001	002	003	004	005	006	007	008
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
round	2003Q4	2003Q4	2003Q4	2003Q4	2003Q4	2003Q4	2002Q1	2002Q1
location	NCBC10G01	NCBC10G02	NCBC10G02	NCBC10G03	NCBC10G04	NCBC10G05	NCBC10G01	NCBC10G02
nsample	MW1001G02	MW1002G02	MW1002G02-D	MW1003G02	MW1004G02	MW1005G02	NCBC10G01	NCBC10G02
sample	MW1001G02	MW1002G02	MW1002G02D	MW1003G02	MW1004G02	MW1005G02	NCBC10G01	NCBC10G02
depth_rang	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999
gis_date	20031218	20031218	20031218	20031218	20031218	20031218	20020214	20020214
sample_dat	12/18/03	12/18/03	12/18/03	12/18/03	12/18/03	12/18/03	02/14/02	02/14/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	288	288	288	288	288	288	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_001**	**c_002**	**c_003**	**c_004**	**c_005**	**c_006**	**c_007**	**c_008**
O-XYLENE	1 U	1 U	1 U	1 U	1 U	1 U		
STYRENE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TETRACHLOROETHENE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TOLUENE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TOTAL 1,2-DICHLOROETHENE	2 U	2 U	2 U	2 U	2 U	2 U	1 U	1 U
TOTAL XYLENES	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
TRANS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRANS-1,3-DICHLOROPROPENE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRICHLOROETHENE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRICHLOROFLUOROMETHANE	5 U	5 U	5 U	5 U	5 U	5 U	2 U	2 U
VINYL CHLORIDE	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Semivolatile Organics (ug/L)								
1,1-BIPHENYL	10 U	10 U	10 U	10 U	10 U	10 U		
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 UJ	10 UJ	10 UJ	10 U	10 UJ		
2,4,5-TRICHLOROPHENOL	25 U	25 U	25 U	25 U	25 U	25 U		
2,4,6-TRICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U		
2,4-DICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U		
2,4-DIMETHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U		
2,4-DINITROPHENOL	25 U	25 UJ	25 UJ	25 UJ	25 U	25 UJ		
2,4-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U		
2,6-DINITROTOLUENE	10 UJ	10 U	10 U	10 U	10 UJ	10 U		
2-CHLORONAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U		
2-CHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U		
2-METHYLNAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U		
2-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U		
2-NITROANILINE	25 UJ	25 U	25 U	25 U	25 UJ	25 U		
2-NITROPHENOL	10 UJ	10 U	10 U	10 U	10 UJ	10 U		
3,3'-DICHLOROBENZIDINE	10 UJ	10 U	10 U	10 U	10 UJ	10 U		
3-NITROANILINE	25 UJ	25 U	25 U	25 U	25 UJ	25 U		
4,6-DINITRO-2-METHYLPHENOL	25 U	25 U	25 U	25 U	25 U	25 U		
4-BROMOPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	10 U		
4-CHLORO-3-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U		
4-CHLOROANILINE	10 U	10 U	10 U	10 U	10 U	10 U		
4-CHLOROPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	10 U		
4-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U		
4-NITROANILINE	25 U	25 U	25 U	25 U	25 U	25 U		
4-NITROPHENOL	25 U	25 U	25 U	25 U	25 U	25 U		
ACENAPHTHENE	10 U	10 U	10 U	10 U	10 U	10 U		
ACENAPHTHYLENE	10 U	10 U	10 U	10 U	10 U	10 U		
ACETOPHENONE	10 U	10 U	10 U	10 U	10 U	10 U		
ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U		
ATRAZINE	10 U	10 U	10 U	10 U	10 U	10 U		
BENZALDEHYDE	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ		

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from _10gwres.dbf
from _10gwres.xls
from q:\sql_server\gulfport\upload

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order	001	002	003	004	005	006	007	008
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
round	2003Q4	2003Q4	2003Q4	2003Q4	2003Q4	2003Q4	2002Q1	2002Q1
location	NCBC10G01	NCBC10G02	NCBC10G02	NCBC10G03	NCBC10G04	NCBC10G05	NCBC10G01	NCBC10G02
nsample	MW1001G02	MW1002G02	MW1002G02-D	MW1003G02	MW1004G02	MW1005G02	NCBC10G01	NCBC10G02
sample	MW1001G02	MW1002G02	MW1002G02D	MW1003G02	MW1004G02	MW1005G02	NCBC10G01	NCBC10G02
depth_rang	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999
gis_date	20031218	20031218	20031218	20031218	20031218	20031218	20020214	20020214
sample_dat	12/18/03	12/18/03	12/18/03	12/18/03	12/18/03	12/18/03	02/14/02	02/14/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	288	288	288	288	288	288	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_001**	**c_002**	**c_003**	**c_004**	**c_005**	**c_006**	**c_007**	**c_008**
BENZO(A)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U		
BENZO(A)PYRENE	10 U	10 U	10 U	10 U	10 U	10 U		
BENZO(B)FLUORANTHENE	10 U	11 U	10 U	10 U	10 U	11 U		
BENZO(G,H,I)PERYLENE	10 UJ	10 U	10 U	10 U	10 UJ	10 U		
BENZO(K)FLUORANTHENE	10 U	11 J	10 UJ	10 U	10 U	11		
BIS(2-CHLOROETHOXY)METHANE	10 UJ	10 U	10 U	10 U	10 UJ	10 U		
BIS(2-CHLOROETHYL)ETHER	10 U	10 U	10 U	10 U	10 U	10 U		
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U		
BUTYL BENZYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U		
CAPROLACTAM	10 U	10 U	10 U	10 U	10 U	10 U		
CARBAZOLE	10 U	10 U	10 U	10 U	10 U	10 U		
CHRYSENE	10 U	10 U	10 U	10 U	10 U	10 U		
DI-N-BUTYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U		
DI-N-OCTYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U		
DIBENZO(A,H)ANTHRACENE	10 UJ	10 U	10 U	10 U	10 UJ	10 U		
DIBENZOFURAN	10 U	10 U	10 U	10 U	10 U	10 U		
DIETHYL PHTHALATE	10 U	10 UJ	10 UJ	10 UJ	10 U	10 UJ		
DIMETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U		
FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U		
FLUORENE	10 U	10 U	10 U	10 U	10 U	10 U		
HEXACHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U		
HEXACHLOROBUTADIENE	10 U	10 U	10 U	10 U	10 U	10 U		
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	10 U	10 U	10 U	10 U		
HEXACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U		
INDENO(1,2,3-CD)PYRENE	10 U	10 U	10 U	10 U	10 U	10 U		
ISOPHORONE	10 U	10 U	10 U	10 U	10 U	10 U		
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 UJ	10 UJ	10 UJ	10 U	10 UJ		
N-NITROSODIPHENYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U		
NAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U		
NITROBENZENE	10 UJ	10 U	10 U	10 U	10 UJ	10 U		
PENTACHLOROPHENOL	25 U	25 U	25 U	25 U	25 U	25 U		
PHENANTHRENE	10 U	10 U	10 U	10 U	10 U	10 U		
PHENOL	10 U	10 U	10 U	10 U	10 U	10 U		
PYRENE	10 U	10 U	10 U	10 U	10 U	10 U		
Pesticides/PCBs (ug/L)								
4,4'-DDD	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.03 J	0.050 U	0.050 U
4,4'-DDE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.050 U	0.050 U
4,4'-DDT	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.026 J	0.050 U	0.050 U
ALDRIN	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.050 U	0.050 U
ALPHA-BHC	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.050 U	0.050 U
ALPHA-CHLORDANE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.050 U	0.050 U
AROCLOR-1016	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.0 U	1.0 U
AROCLOR-1221	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.0 U	1.0 U

from _10gwsam.dbf
from _10gwres.dbf
from _10gwres.xls
from q:\sql_server\gulfport\upload

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order	001	002	003	004	005	006	007	008
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
round	2003Q4	2003Q4	2003Q4	2003Q4	2003Q4	2003Q4	2002Q1	2002Q1
location	NCBC10G01	NCBC10G02	NCBC10G02	NCBC10G03	NCBC10G04	NCBC10G05	NCBC10G01	NCBC10G02
nsample	MW1001G02	MW1002G02	MW1002G02-D	MW1003G02	MW1004G02	MW1005G02	NCBC10G01	NCBC10G02
sample	MW1001G02	MW1002G02	MW1002G02D	MW1003G02	MW1004G02	MW1005G02	NCBC10G01	NCBC10G02
depth_rang	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999
gis_date	20031218	20031218	20031218	20031218	20031218	20031218	20020214	20020214
sample_dat	12/18/03	12/18/03	12/18/03	12/18/03	12/18/03	12/18/03	02/14/02	02/14/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	288	288	288	288	288	288	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_001**	**c_002**	**c_003**	**c_004**	**c_005**	**c_006**	**c_007**	**c_008**
AROCLOR-1232	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.0 U	1.0 U
AROCLOR-1242	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.0 U	1.0 U
AROCLOR-1248	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.0 U	1.0 U
AROCLOR-1254	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.0 U	1.0 U
AROCLOR-1260	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.0 U	1.0 U
BETA-BHC	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.050 U	0.050 U
DELTA-BHC	0.02 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.050 U	0.050 U
DIELDRIN	0.057	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.050 U	0.050 U
ENDOSULFAN I	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.050 U	0.050 U
ENDOSULFAN II	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.050 U	0.050 U
ENDOSULFAN SULFATE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.050 U	0.050 U
ENDRIN	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.050 U	0.050 U
ENDRIN ALDEHYDE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.050 U	0.050 U
ENDRIN KETONE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.050 U	0.050 U
GAMMA-BHC (LINDANE)	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.050 U	0.050 U
GAMMA-CHLORDANE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.050 U	0.050 U
HEPTACHLOR	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.050 U	0.050 U
HEPTACHLOR EPOXIDE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.050 U	0.050 U
METHOXYCHLOR	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.10 U	0.10 U
TOXAPHENE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	2.0 U	2.0 U
Herbicides (ug/L)								
2,4,5-T	3 U	3 U	3 U	3 U	3 U	3 U		
2,4,5-TP (SILVEX)	1 U	1 U	1 U	1 U	1 U	1 U		
2,4-D	3 U	3 U	3 U	3 U	3 U	3 U		
DINOSEB	5 U	5 U	5 U	5 U	5 U	5 U		
Inorganics (ug/L)								
ALUMINUM	386 U	307 U	270 U	310 U	234 U	96.6 U		
ANTIMONY	1.74 U	1.74 U	1.74 U	1.74 U	1.74 U	1.74 U		
ARSENIC	2.13 U	2.13 U	2.13 U	2.13 U	2.13 U	2.13 U		
BARIUM	42.9	45.8	45.7	42.4	45.4	34		
BERYLLIUM	0.22 U	0.61 U	0.63 U	0.65 U	0.22 U	0.88 U		
CADMIUM	0.25 U	2.66 U	2.66 U	2.66 U	0.25 U	2.66 U		
CALCIUM	7250	7990	7690	5950	3670	7180		
CHROMIUM	0.88 U	1.1	0.88 U	0.88	0.88	0.88 U		
COBALT	0.58 U	0.58 U	0.58 U	0.58 U	0.58 U	0.58 U		
COPPER	1.14 U	3.3 U	3.3 U	3.3 U	10	3.3 U		
IRON	2610 J	3930	3790	3010	2780 J	1920		
LEAD	3.4 U	1.56 U	1.56 U	1.56 U	3.3 U	1.56 U		
MAGNESIUM	1610	2220	2220	2170	1710	1420		
MANGANESE	14.8	77.9	75.4	63.6	36.4	12.4		
MERCURY	0.04 U	0.06 U	0.06 U	0.09 U	0.04 U	0.04 U		
NICKEL	1.9 U	11.9 U	12.1 U	11.6 U	1.9 U	11.5 U		
POTASSIUM	694 U	767 U	561 U	708 U	770 U	479 U		

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from _10gwres.dbf
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from q:\sql_server\gulfport\upload

CTO 288
groundwaters
full appendix results

order	001	002	003	004	005	006	007	008
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
round	2003Q4	2003Q4	2003Q4	2003Q4	2003Q4	2003Q4	2002Q1	2002Q1
location	NCBC10G01	NCBC10G02	NCBC10G02	NCBC10G03	NCBC10G04	NCBC10G05	NCBC10G01	NCBC10G02
nsample	MW1001G02	MW1002G02	MW1002G02-D	MW1003G02	MW1004G02	MW1005G02	NCBC10G01	NCBC10G02
sample	MW1001G02	MW1002G02	MW1002G02D	MW1003G02	MW1004G02	MW1005G02	NCBC10G01	NCBC10G02
depth_rang	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999
gis_date	20031218	20031218	20031218	20031218	20031218	20031218	20020214	20020214
sample_dat	12/18/03	12/18/03	12/18/03	12/18/03	12/18/03	12/18/03	02/14/02	02/14/02
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	288	288	288	288	288	288	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_001**	**c_002**	**c_003**	**c_004**	**c_005**	**c_006**	**c_007**	**c_008**
SELENIUM	2.32 U	2.32 U	2.32 U	2.32 U	2.32 U	2.32 U		
SILVER	1.16 U	3.6 U	3.6 U	3.6 U	1.16 U	3.6 U		
SODIUM	4220	9590	9710	6070	5180	3750		
THALLIUM	2.77 U	2.77 U	2.77 U	2.77 U	2.77 U	2.77 U		
VANADIUM	1.2	3.6 U	3.6 U	3.6 U	0.74 U	3.6 U		
ZINC	28.8 U	3.1 U	2.0 U	23	22.4 U	2.8 U		
Miscellaneous Parameters (ug/L)								
CYANIDE	10 U	10 U	10 U	10 U	7.3 J	10 U		

from _10gwsam.dbf
from _10gwres.dbf
from _10gwres.xls
from q:\sql_server\gulfport\upload

CTO 288
groundwaters
full appendix results

order	009	010	011	012
site	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
round	2002Q1	2002Q1	2002Q1	2002Q1
location	NCBC10G03	NCBC10G04	NCBC10G04	NCBC10G05
nsample	NCBC10G03	NCBC10G04	NCBC10G04-D	NCBC10G05
sample	NCBC10G03	NCBC10G04	NCBC10G04D	NCBC10G05
depth_rang	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999
gis_date	20020213	20020213	20020213	20020214
sample_dat	02/13/02	02/13/02	02/13/02	02/14/02
validated	Y	Y	Y	Y
cto_proj	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_009**	**c_010**	**c_011**	**c_012**
Volatile Organics (ug/L)				
1,1,1-TRICHLOROETHANE	1 U	1 U	1 U	1 U
1,1,2,2-TETRACHLOROETHANE	1 U	1 U	1 U	1 U
1,1,2-TRICHLOROETHANE	1 U	1 U	1 U	1 U
1,1,2-TRICHLOROTRIFLUOROETHANE				
1,1-DICHLOROETHANE	1 U	1 U	1 U	1 U
1,1-DICHLOROETHENE	1 U	1 U	1 U	1 U
1,2,3-TRICHLOROBENZENE				
1,2,4-TRICHLOROBENZENE				
1,2-DIBROMO-3-CHLOROPROPANE	1 U	1 U	1 U	1 U
1,2-DIBROMOETHANE	0.02 U	0.02 U	0.02 U	0.02 U
1,2-DICHLOROBENZENE	1 U	1 U	1 U	1 U
1,2-DICHLOROETHANE	1 U	1 U	1 U	1 U
1,2-DICHLOROPROPANE	1 U	1 U	1 U	1 U
1,3-DICHLOROBENZENE	1 U	1 U	1 U	1 U
1,4-DICHLOROBENZENE	1 U	1 U	1 U	1 U
2-BUTANONE	5 U	5 U	5 U	5 U
2-HEXANONE	5 U	5 U	5 U	5 U
4-METHYL-2-PENTANONE	5 U	5 U	5 U	5 U
ACETONE	10 UJ	10 UJ	10 UJ	10 UJ
BENZENE	1 U	1 U	1 U	1 U
BROMOCHLOROMETHANE				
BROMODICHLOROMETHANE	1 U	1 U	1 U	1 U
BROMOFORM	1 U	1 U	1 U	1 U
BROMOMETHANE	1 U	1 U	1 U	1 U
CARBON DISULFIDE	1 U	1 U	1 U	1 U
CARBON TETRACHLORIDE	1 U	1 U	1 U	1 U
CHLOROBENZENE	1 U	1 U	1 U	1 U
CHLORODIBROMOMETHANE	1 U	1 U	1 U	1 U
CHLOROETHANE	2 U	2 U	2 U	2 U
CHLOROFORM	1 U	1 U	1 U	1 U
CHLOROMETHANE	2 U	2 U	2 U	2 U
CIS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U
CIS-1,3-DICHLOROPROPENE	1 U	1 U	1 U	1 U
CYCLOHEXANE				
DICHLORODIFLUOROMETHANE				
ETHYLBENZENE	1 U	1 U	1 U	1 U
ISOPROPYLBENZENE				
M+P-XYLENES				
METHYL ACETATE				
METHYL CYCLOHEXANE				
METHYL TERT-BUTYL ETHER				
METHYLENE CHLORIDE	2 U	2 U	2 U	2 U

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from _10gwres.dbf
from _10gwres.xls
from q:\sql_server\gulfport\upload

order	009	010	011	012
site	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
round	2002Q1	2002Q1	2002Q1	2002Q1
location	NCBC10G03	NCBC10G04	NCBC10G04	NCBC10G05
nsample	NCBC10G03	NCBC10G04	NCBC10G04-D	NCBC10G05
sample	NCBC10G03	NCBC10G04	NCBC10G04D	NCBC10G05
depth_rang	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999
gis_date	20020213	20020213	20020213	20020214
sample_dat	02/13/02	02/13/02	02/13/02	02/14/02
validated	Y	Y	Y	Y
cto_proj	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_009**	**c_010**	**c_011**	**c_012**
O-XYLENE				
STYRENE	1 U	1 U	1 U	1 U
TETRACHLOROETHENE	1 U	1 U	1 U	1 U
TOLUENE	1 U	1 U	1 U	1 U
TOTAL 1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U
TOTAL XYLENES	3 U	3 U	3 U	3 U
TRANS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U
TRANS-1,3-DICHLOROPROPENE	1 U	1 U	1 U	1 U
TRICHLOROETHENE	1 U	1 U	1 U	1 U
TRICHLOROFLUOROMETHANE	2 U	2 U	2 U	2 U
VINYL CHLORIDE	2 U	2 U	2 U	2 U
Semivolatile Organics (ug/L)				
1,1-BIPHENYL				
2,2'-OXYBIS(1-CHLOROPROPANE)				
2,4,5-TRICHLOROPHENOL				
2,4,6-TRICHLOROPHENOL				
2,4-DICHLOROPHENOL				
2,4-DIMETHYLPHENOL				
2,4-DINITROPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
2-CHLORONAPHTHALENE				
2-CHLOROPHENOL				
2-METHYLNAPHTHALENE				
2-METHYLPHENOL				
2-NITROANILINE				
2-NITROPHENOL				
3,3'-DICHLOROBENZIDINE				
3-NITROANILINE				
4,6-DINITRO-2-METHYLPHENOL				
4-BROMOPHENYL PHENYL ETHER				
4-CHLORO-3-METHYLPHENOL				
4-CHLOROANILINE				
4-CHLOROPHENYL PHENYL ETHER				
4-METHYLPHENOL				
4-NITROANILINE				
4-NITROPHENOL				
ACENAPHTHENE				
ACENAPHTHYLENE				
ACETOPHENONE				
ANTHRACENE				
ATRAZINE				
BENZALDEHYDE				

from _10gwsam.dbf
from _10gwres.dbf
from _10gwres.xls
from q:\sql_server\gulfport\upload

order	009	010	011	012
site	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
round	2002Q1	2002Q1	2002Q1	2002Q1
location	NCBC10G03	NCBC10G04	NCBC10G04	NCBC10G05
nsample	NCBC10G03	NCBC10G04	NCBC10G04-D	NCBC10G05
sample	NCBC10G03	NCBC10G04	NCBC10G04D	NCBC10G05
depth_rang	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999
gis_date	20020213	20020213	20020213	20020214
sample_dat	02/13/02	02/13/02	02/13/02	02/14/02
validated	Y	Y	Y	Y
cto_proj	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_009**	**c_010**	**c_011**	**c_012**
BENZO(A)ANTHRACENE				
BENZO(A)PYRENE				
BENZO(B)FLUORANTHENE				
BENZO(G,H,I)PERYLENE				
BENZO(K)FLUORANTHENE				
BIS(2-CHLOROETHOXY)METHANE				
BIS(2-CHLOROETHYL)ETHER				
BIS(2-ETHYLHEXYL)PHTHALATE				
BUTYL BENZYL PHTHALATE				
CAPROLACTAM				
CARBAZOLE				
CHRYSENE				
DI-N-BUTYL PHTHALATE				
DI-N-OCTYL PHTHALATE				
DIBENZO(A,H)ANTHRACENE				
DIBENZOFURAN				
DIETHYL PHTHALATE				
DIMETHYL PHTHALATE				
FLUORANTHENE				
FLUORENE				
HEXACHLOROBENZENE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
HEXACHLOROETHANE				
INDENO(1,2,3-CD)PYRENE				
ISOPHORONE				
N-NITROSO-DI-N-PROPYLAMINE				
N-NITROSODIPHENYLAMINE				
NAPHTHALENE				
NITROBENZENE				
PENTACHLOROPHENOL				
PHENANTHRENE				
PHENOL				
PYRENE				
Pesticides/PCBs (ug/L)				
4,4'-DDD	0.050 U	0.050 U	0.050 U	0.050 U
4,4'-DDE	0.050 U	0.050 U	0.050 U	0.050 U
4,4'-DDT	0.050 U	0.050 U	0.050 U	0.050 U
ALDRIN	0.050 U	0.050 U	0.050 U	0.050 U
ALPHA-BHC	0.050 U	0.050 U	0.050 U	0.050 U
ALPHA-CHLORDANE	0.050 U	0.050 U	0.050 U	0.050 U
AROCLOR-1016	1.0 U	1.0 U	1.0 U	1.0 U
AROCLOR-1221	1.0 U	1.0 U	1.0 U	1.0 U

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from _10gwres.dbf
from _10gwres.xls
from q:\sql_server\gulfport\upload

order	009	010	011	012
site	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
round	2002Q1	2002Q1	2002Q1	2002Q1
location	NCBC10G03	NCBC10G04	NCBC10G04	NCBC10G05
nsample	NCBC10G03	NCBC10G04	NCBC10G04-D	NCBC10G05
sample	NCBC10G03	NCBC10G04	NCBC10G04D	NCBC10G05
depth_rang	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999
gis_date	20020213	20020213	20020213	20020214
sample_dat	02/13/02	02/13/02	02/13/02	02/14/02
validated	Y	Y	Y	Y
cto_proj	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_009**	**c_010**	**c_011**	**c_012**
AROCLOR-1232	1.0 U	1.0 U	1.0 U	1.0 U
AROCLOR-1242	1.0 U	1.0 U	1.0 U	1.0 U
AROCLOR-1248	1.0 U	1.0 U	1.0 U	1.0 U
AROCLOR-1254	1.0 U	1.0 U	1.0 U	1.0 U
AROCLOR-1260	1.0 U	1.0 U	1.0 U	1.0 U
BETA-BHC	0.050 U	0.050 U	0.050 U	0.050 U
DELTA-BHC	0.050 U	0.050 U	0.050 U	0.050 U
DIELDRIN	0.050 U	0.050 U	0.050 U	0.050 U
ENDOSULFAN I	0.050 U	0.050 U	0.050 U	0.050 U
ENDOSULFAN II	0.050 U	0.050 U	0.050 U	0.050 U
ENDOSULFAN SULFATE	0.050 U	0.050 U	0.050 U	0.050 U
ENDRIN	0.050 U	0.050 U	0.050 U	0.050 U
ENDRIN ALDEHYDE	0.050 U	0.050 UR	0.050 U	0.050 U
ENDRIN KETONE	0.050 U	0.050 U	0.050 U	0.050 U
GAMMA-BHC (LINDANE)	0.050 U	0.050 U	0.050 U	0.050 U
GAMMA-CHLORDANE	0.050 U	0.050 U	0.050 U	0.050 U
HEPTACHLOR	0.050 U	0.050 U	0.050 U	0.050 U
HEPTACHLOR EPOXIDE	0.050 U	0.050 U	0.050 U	0.050 U
METHOXYCHLOR	0.10 U	0.10 U	0.10 U	0.10 U
TOXAPHENE	2.0 U	2.0 U	2.0 U	2.0 U
Herbicides (ug/L)				
2,4,5-T				
2,4,5-TP (SILVEX)				
2,4-D				
DINOSEB				
Inorganics (ug/L)				
ALUMINUM				
ANTIMONY				
ARSENIC				
BARIUM				
BERYLLIUM				
CADMIUM				
CALCIUM				
CHROMIUM				
COBALT				
COPPER				
IRON				
LEAD				
MAGNESIUM				
MANGANESE				
MERCURY				
NICKEL				
POTASSIUM				

from _10gwsam.dbf
from _10gwres.dbf
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from q:\sql_server\gulfport\upload

CTO 288
groundwaters
full appendix results

order	009	010	011	012
site	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
round	2002Q1	2002Q1	2002Q1	2002Q1
location	NCBC10G03	NCBC10G04	NCBC10G04	NCBC10G05
nsample	NCBC10G03	NCBC10G04	NCBC10G04-D	NCBC10G05
sample	NCBC10G03	NCBC10G04	NCBC10G04D	NCBC10G05
depth_rang	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999
gis_date	20020213	20020213	20020213	20020214
sample_dat	02/13/02	02/13/02	02/13/02	02/14/02
validated	Y	Y	Y	Y
cto_proj	193	193	193	193
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_009**	**c_010**	**c_011**	**c_012**
SELENIUM				
SILVER				
SODIUM				
THALLIUM				
VANADIUM				
ZINC				
Miscellaneous Parameters (ug/L)				
CYANIDE				

from _10gwsam.dbf
from _10gwres.dbf
from _10gwres.xls
from q:\sql_server\gulfport\upload

CTO 288
surface water
full appendix results

order	001	002	003	004	005	006
site	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10W01-D01	NCBC10W01-D01	NCBC10W02-D02	NCBC10W03-D03	NCBC10W10-D10	NCBC10W11-D11
nsample	NCBC10W01	NCBC10W01-D	NCBC10W02	NCBC10W03	SW1006W01	SW1007W01
sample	NCBC10W01	NCBC10W01D	NCBC10W02	NCBC10W03	SW1006W01	SW1007W01
matrix	SW	SW	SW	SW	SW	SW
depth_rang	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999
gis_date	20020110	20020110	20020110	20020110	20031218	20031218
sample_dat	01/10/02	01/10/02	01/10/02	01/10/02	12/18/03	12/18/03
validated	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	288	288
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_001**	**c_002**	**c_003**	**c_004**	**c_005**	**c_006**
Volatile Organics (ug/L)						
1,1,1-TRICHLOROETHANE	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-TETRACHLOROETHANE	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-TRICHLOROETHANE	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-TRICHLOROTRIFLUOROETHANE					1 U	1 U
1,1-DICHLOROETHANE	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHENE	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-TRICHLOROBENZENE					1 U	1 U
1,2,4-TRICHLOROBENZENE					1 U	1 U
1,2-DIBROMO-3-CHLOROPROPANE	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 U
1,2-DIBROMOETHANE	0.02 U	0.02 U	0.02 U	0.02 U	1 U	1 U
1,2-DICHLOROBENZENE	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROETHANE	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROPROPANE	1 U	1 U	1 U	1 U	1 U	1 U
1,3-DICHLOROBENZENE	1 U	1 U	1 U	1 U	1 U	1 U
1,4-DICHLOROBENZENE	1 U	1 U	1 U	1 U	1 U	1 U
2-BUTANONE	5 UJ	5 UJ	5 UJ	5 UJ	5 U	5 U
2-HEXANONE	5 UJ	5 UJ	5 UJ	5 UJ	5 U	5 U
4-METHYL-2-PENTANONE	5 UJ	5 UJ	5 UJ	5 UJ	5 U	5 U
ACETONE	10 UJ	10 UJ	10 UJ	10 UJ	5 U	5 UR
BENZENE	1 U	1 U	1 U	1 U	1 U	1 U
BROMOCHLOROMETHANE					1 U	1 U
BROMODICHLOROMETHANE	1 U	1 U	1 U	1 U	1 U	1 U
BROMOFORM	1 U	1 U	1 U	1 U	1 U	1 U
BROMOMETHANE	1 UJ	1 UJ	1 UJ	1 UJ	2 U	2 U
CARBON DISULFIDE	1 U	1 U	1 U	1 U	1 U	1 U
CARBON TETRACHLORIDE	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROBENZENE	1 U	1 U	1 U	1 U	0.2 J	1 U
CHLORODIBROMOMETHANE	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROETHANE	2 U	2 U	2 U	2 U	2 U	2 U
CHLOROFORM	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROMETHANE	2 UJ	2 UJ	2 UJ	2 UJ	2 U	2 U
CIS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U	1 U	1 U
CIS-1,3-DICHLOROPROPENE	1 U	1 U	1 U	1 U	1 U	1 U
CYCLOHEXANE					1 U	1 U
DICHLORODIFLUOROMETHANE					2 U	2 U
ETHYLBENZENE	1 U	1 U	1 U	1 U	1 U	1 U
ISOPROPYLBENZENE					1 U	1 U
M+P-XYLENES					2 U	2 U
METHYL ACETATE					1 U	1 U
METHYL CYCLOHEXANE					1 U	1 U
METHYL TERT-BUTYL ETHER					2 U	2 U
METHYLENE CHLORIDE	2 U	2 U	2 U	2 U	2 U	2 U

from _10swsam.dbf
from _10swres.dbf
from _10swres.xls
from q:\sql_server\gulfport\upload

CTO 288
surface water
full appendix results

order	001	002	003	004	005	006
site	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10W01-D01	NCBC10W01-D01	NCBC10W02-D02	NCBC10W03-D03	NCBC10W10-D10	NCBC10W11-D11
nsample	NCBC10W01	NCBC10W01-D	NCBC10W02	NCBC10W03	SW1006W01	SW1007W01
sample	NCBC10W01	NCBC10W01D	NCBC10W02	NCBC10W03	SW1006W01	SW1007W01
matrix	SW	SW	SW	SW	SW	SW
depth_rang	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999
gis_date	20020110	20020110	20020110	20020110	20031218	20031218
sample_dat	01/10/02	01/10/02	01/10/02	01/10/02	12/18/03	12/18/03
validated	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	288	288
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_001**	**c_002**	**c_003**	**c_004**	**c_005**	**c_006**
O-XYLENE					1 U	1 U
STYRENE	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 U
TETRACHLOROETHENE	1 U	1 U	1 U	1 U	1 U	1 U
TOLUENE	1 U	1 U	1 U	1 U	1 U	1 U
TOTAL 1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U	2 U	2 U
TOTAL XYLENES	3 U	3 U	3 U	3 U	3 U	3 U
TRANS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U	1 U	1 U
TRANS-1,3-DICHLOROPROPENE	1 U	1 U	1 U	1 U	1 U	1 U
TRICHLOROETHENE	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 U
TRICHLOROFLUOROMETHANE	2 UJ	2 UJ	2 UJ	2 UJ	5 U	5 U
VINYL CHLORIDE	2 U	2 U	2 U	2 U	2 U	2 U
Semivolatile Organics (ug/L)						
1,1-BIPHENYL					12 U	11 U
2,2'-OXYBIS(1-CHLOROPROPANE)					12 U	11 U
2,4,5-TRICHLOROPHENOL					30 U	27 U
2,4,6-TRICHLOROPHENOL					12 U	11 U
2,4-DICHLOROPHENOL					12 U	11 U
2,4-DIMETHYLPHENOL					12 U	11 U
2,4-DINITROPHENOL					30 U	27 U
2,4-DINITROTOLUENE					12 U	11 UJ
2,6-DINITROTOLUENE					12 UJ	11 U
2-CHLORONAPHTHALENE					12 U	11 U
2-CHLOROPHENOL					12 U	11 U
2-METHYLNAPHTHALENE					12 U	11 U
2-METHYLPHENOL					12 U	11 U
2-NITROANILINE					30 UJ	27 UJ
2-NITROPHENOL					12 UJ	11 UJ
3,3'-DICHLOROBENZIDINE					12 UJ	11 UJ
3-NITROANILINE					30 UJ	27 UJ
4,6-DINITRO-2-METHYLPHENOL					30 U	27 U
4-BROMOPHENYL PHENYL ETHER					12 U	11 U
4-CHLORO-3-METHYLPHENOL					12 U	11 U
4-CHLOROANILINE					12 U	11 U
4-CHLOROPHENYL PHENYL ETHER					12 U	11 U
4-METHYLPHENOL					12 U	11 U
4-NITROANILINE					30 U	27 U
4-NITROPHENOL					30 U	27 U
ACENAPHTHENE					12 U	11 U
ACENAPHTHYLENE					12 U	11 U
ACETOPHENONE					12 U	11 U
ANTHRACENE					12 U	11 U
ATRAZINE					12 U	11 U
BENZALDEHYDE					12 UJ	11 UJ

from _10swsam.dbf
from _10swres.dbf
from _10swres.xls
from q:\sql_server\gulfport\upload

CTO 288
surface water
full appendix results

order	001	002	003	004	005	006
site	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10W01-D01	NCBC10W01-D01	NCBC10W02-D02	NCBC10W03-D03	NCBC10W10-D10	NCBC10W11-D11
nsample	NCBC10W01	NCBC10W01-D	NCBC10W02	NCBC10W03	SW1006W01	SW1007W01
sample	NCBC10W01	NCBC10W01D	NCBC10W02	NCBC10W03	SW1006W01	SW1007W01
matrix	SW	SW	SW	SW	SW	SW
depth_rang	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999
gis_date	20020110	20020110	20020110	20020110	20031218	20031218
sample_dat	01/10/02	01/10/02	01/10/02	01/10/02	12/18/03	12/18/03
validated	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	288	288
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_001**	**c_002**	**c_003**	**c_004**	**c_005**	**c_006**
BENZO(A)ANTHRACENE					12 U	11 U
BENZO(A)PYRENE					12 U	11 U
BENZO(B)FLUORANTHENE					12 U	11 U
BENZO(G,H,I)PERYLENE					12 UJ	11 UJ
BENZO(K)FLUORANTHENE					12 U	11 U
BIS(2-CHLOROETHOXY)METHANE					12 UJ	11 UJ
BIS(2-CHLOROETHYL)ETHER					12 U	11 U
BIS(2-ETHYLHEXYL)PHTHALATE					12 U	11 U
BUTYL BENZYL PHTHALATE					12 U	11 U
CAPROLACTAM					12 U	11 U
CARBAZOLE					12 U	11 U
CHRYSENE					12 U	11 U
DI-N-BUTYL PHTHALATE					12 U	11 U
DI-N-OCTYL PHTHALATE					12 U	11 U
DIBENZO(A,H)ANTHRACENE					12 UJ	11 U
DIBENZOFURAN					12 U	11 U
DIETHYL PHTHALATE					12 U	11 U
DIMETHYL PHTHALATE					12 U	11 U
FLUORANTHENE					9 J	8 J
FLUORENE					12 U	11 U
HEXACHLOROBENZENE					12 U	11 U
HEXACHLOROBUTADIENE					12 U	11 U
HEXACHLOROCYCLOPENTADIENE					12 U	11 U
HEXACHLOROETHANE					12 U	11 U
INDENO(1,2,3-CD)PYRENE					7 J	11 U
ISOPHORONE					12 U	11 U
N-NITROSO-DI-N-PROPYLAMINE					12 U	11 U
N-NITROSODIPHENYLAMINE					12 U	11 U
NAPHTHALENE					12 U	11 U
NITROBENZENE					12 UJ	11 UJ
PENTACHLOROPHENOL					30 U	27 U
PHENANTHRENE					7 J	6 J
PHENOL					12 U	11 U
PYRENE					12 U	11 U
Pesticides/PCBs (ug/L)						
4,4'-DDD	0.050 U	0.050 U	0.050 U	0.050 U	0.05 U	0.056 U
4,4'-DDE	0.050 U	0.050 U	0.050 U	0.050 U	0.05 U	0.056 U
4,4'-DDT	0.050 U	0.050 U	0.050 U	0.050 U	0.05 U	0.056 U
ALDRIN	0.050 U	0.050 U	0.050 U	0.050 U	0.05 U	0.056 U
ALPHA-BHC	0.050 U	0.050 U	0.050 U	0.050 U	0.05 U	0.056 U
ALPHA-CHLORDANE	0.050 U	0.050 U	0.050 U	0.050 U	0.05 U	0.056 U
AROCLOR-1016	1.0 U	1.0 U	1.0 U	1.0 U	0.5 UJ	0.56 UJ
AROCLOR-1221	1.0 U	1.0 U	1.0 U	1.0 U	0.5 UJ	0.56 UJ

from _10swsam.dbf
from _10swres.dbf
from _10swres.xls
from q:\sql_server\gulfport\upload

CTO 288
surface water
full appendix results

order	001	002	003	004	005	006
site	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10W01-D01	NCBC10W01-D01	NCBC10W02-D02	NCBC10W03-D03	NCBC10W10-D10	NCBC10W11-D11
nsample	NCBC10W01	NCBC10W01-D	NCBC10W02	NCBC10W03	SW1006W01	SW1007W01
sample	NCBC10W01	NCBC10W01D	NCBC10W02	NCBC10W03	SW1006W01	SW1007W01
matrix	SW	SW	SW	SW	SW	SW
depth_rang	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999
gis_date	20020110	20020110	20020110	20020110	20031218	20031218
sample_dat	01/10/02	01/10/02	01/10/02	01/10/02	12/18/03	12/18/03
validated	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	288	288
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_001**	**c_002**	**c_003**	**c_004**	**c_005**	**c_006**
AROCLOR-1232	1.0 U	1.0 U	1.0 U	1.0 U	0.5 UJ	0.56 UJ
AROCLOR-1242	1.0 U	1.0 U	1.0 U	1.0 U	0.5 UJ	0.56 UJ
AROCLOR-1248	1.0 U	1.0 U	1.0 U	1.0 U	0.5 UJ	0.56 UJ
AROCLOR-1254	1.0 U	1.0 U	1.0 U	1.0 U	0.5 UJ	0.56 UJ
AROCLOR-1260	1.0 U	1.0 U	1.1	1.0 U	0.5 UJ	0.56 UJ
BETA-BHC	0.050 U	0.050 U	0.050 U	0.050 U	0.05 U	0.056 U
DELTA-BHC	0.050 U	0.050 U	0.050 U	0.050 U	0.05 U	0.056 U
DIELDRIN	0.050 U	0.050 U	0.005 J	0.050 U	0.05 U	0.056 U
ENDOSULFAN I	0.050 U	0.050 U	0.050 U	0.050 U	0.05 U	0.056 U
ENDOSULFAN II	0.050 U	0.050 U	0.018 J	0.050 U	0.05 U	0.056 U
ENDOSULFAN SULFATE	0.050 U	0.050 U	0.050 U	0.050 U	0.05 U	0.056 U
ENDRIN	0.050 U	0.050 U	0.008 R	0.050 U	0.05 U	0.056 U
ENDRIN ALDEHYDE	0.050 U	0.006 J	0.050 U	0.050 U	0.05 U	0.056 U
ENDRIN KETONE	0.050 U	0.050 U	0.050 U	0.050 U	0.05 U	0.056 U
GAMMA-BHC (LINDANE)	0.050 U	0.050 U	0.050 U	0.050 U	0.05 U	0.056 U
GAMMA-CHLORDANE	0.050 U	0.050 U	0.050 U	0.050 U	0.05 U	0.056 U
HEPTACHLOR	0.050 U	0.050 U	0.050 U	0.050 U	0.05 U	0.056 U
HEPTACHLOR EPOXIDE	0.050 U	0.050 U	0.050 U	0.050 U	0.05 U	0.056 U
METHOXYCHLOR	0.10 U	0.10 U	0.10 U	0.10 U	0.05 U	0.056 U
TOXAPHENE	2.0 U	2.0 U	2.0 U	2.0 U	0.05 U	0.056 U
Herbicides (ug/L)						
2,4,5-T					4.3 U	3.3 U
2,4,5-TP (SILVEX)					1.4 U	1.1 U
2,4-D					4.3 U	3.3 U
DINOSEB					7.2 U	5.4 U
Inorganics (ug/L)						
ALUMINUM					874	496 U
ANTIMONY					1.74 U	1.74 U
ARSENIC					2.13 U	2.13 U
BARIUM					22.2	17
BERYLLIUM					0.22 U	0.22 U
CADMIUM					0.25 U	0.25 U
CALCIUM					7450	11600
CHROMIUM					1.4	1.4
COBALT					0.58 U	0.58 U
COPPER					13.1	11.1
IRON					1420 J	616 J
LEAD					4.1 U	2.9 U
MAGNESIUM					1580	1640
MANGANESE					24.1	8.3
MERCURY					0.06 U	0.04 U
NICKEL					2.8 U	3.0 U
POTASSIUM					855 U	906 U

from _10swsam.dbf
from _10swres.dbf
from _10swres.xls
from q:\sql_server\gulfport\upload

CTO 288
surface water
full appendix results

order	001	002	003	004	005	006
site	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10W01-D01	NCBC10W01-D01	NCBC10W02-D02	NCBC10W03-D03	NCBC10W10-D10	NCBC10W11-D11
nsample	NCBC10W01	NCBC10W01-D	NCBC10W02	NCBC10W03	SW1006W01	SW1007W01
sample	NCBC10W01	NCBC10W01D	NCBC10W02	NCBC10W03	SW1006W01	SW1007W01
matrix	SW	SW	SW	SW	SW	SW
depth_rang	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999	-9999 - -9999
gis_date	20020110	20020110	20020110	20020110	20031218	20031218
sample_dat	01/10/02	01/10/02	01/10/02	01/10/02	12/18/03	12/18/03
validated	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	288	288
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_001**	**c_002**	**c_003**	**c_004**	**c_005**	**c_006**
SELENIUM					2.32 U	2.32 U
SILVER					1.16 U	1.16 U
SODIUM					6000	5610
THALLIUM					2.77 U	2.77 U
VANADIUM					1.9	1.6
ZINC					90.2 U	92.9 U
Miscellaneous Parameters (ug/L)						
CYANIDE					10 U	10 U

from _10swsam.dbf
from _10swres.dbf
from _10swres.xls
from q:\sql_server\gulfport\upload

CTO 288
sediments
full appendix results

order	001	002	003	004	005	006	007	008
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10W01-D01	NCBC10W01-D01	NCBC10W02-D02	NCBC10W03-D03	NCBC10D04	NCBC10D05	NCBC10D06	NCBC10D07
nsample	NCBC10D01	NCBC10D01-D	NCBC10D02	NCBC10D03	NCBC10D04	NCBC10D05	NCBC10D06	SD1006D01
sample	NCBC10D01	NCBC10D01D	NCBC10D02	NCBC10D03	NCBC10D04	NCBC10D05	NCBC10D06	SD1006D01
sacode	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
depth_rang	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
gis_date	20020110	20020110	20020110	20020110	20020212	20020212	20020212	20031218
sample_dat	01/10/02	01/10/02	01/10/02	01/10/02	02/12/02	02/12/02	02/12/02	12/18/03
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	288
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_001**	**c_002**	**c_003**	**c_004**	**c_005**	**c_006**	**c_007**	**c_008**
Volatile Organics (ug/kg)								
1,1,1-TRICHLOROETHANE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
1,1,2,2-TETRACHLOROETHANE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
1,1,2-TRICHLOROETHANE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
1,1,2-TRICHLOROTRIFLUOROETHANE								7 U
1,1-DICHLOROETHANE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
1,1-DICHLOROETHENE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
1,2,3-TRICHLOROBENZENE								7 U
1,2,4-TRICHLOROBENZENE								7 U
1,2-DIBROMO-3-CHLOROPROPANE	13 U	14 U	16 U	13 U	11 U	12 U	11 U	7 U
1,2-DIBROMOETHANE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
1,2-DICHLOROBENZENE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
1,2-DICHLOROETHANE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
1,2-DICHLOROPROPANE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
1,3-DICHLOROBENZENE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
1,4-DICHLOROBENZENE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
2-BUTANONE	27 UJ	28 UJ	31 UJ	25 UJ	22 U	3.8 J	22 U	34 U
2-HEXANONE	27 U	28 U	31 U	25 U	22 U	24 U	22 U	34 U
4-METHYL-2-PENTANONE	27 U	28 U	31 U	25 U	22 U	24 U	22 U	34 U
ACETONE	27 UJ	28 UJ	31 UJ	10 J	6.3 J	11 J	14 J	34 U
BENZENE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
BROMOCHLOROMETHANE								7 U
BROMODICHLOROMETHANE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
BROMOFORM	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
BROMOMETHANE	13 U	14 U	16 U	13 U	11 U	12 U	11 U	7 U
CARBON DISULFIDE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
CARBON TETRACHLORIDE	6.7 UJ	7.1 UJ	7.8 UJ	6.3 UJ	5.6 U	6.1 U	5.5 U	7 UJ
CHLOROBENZENE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
CHLORODIBROMOMETHANE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
CHLOROETHANE	13 U	14 U	16 U	13 U	11 U	12 U	11 U	7 U
CHLOROFORM	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
CHLOROMETHANE	13 U	14 U	16 U	13 U	11 U	12 U	11 U	7 U
CIS-1,2-DICHLOROETHENE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
CIS-1,3-DICHLOROPROPENE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
CYCLOHEXANE								7 U
DICHLORODIFLUOROMETHANE								7 U
ETHYLBENZENE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
ISOPROPYLBENZENE								7 U
M+P-XYLENES								14 U
METHYL ACETATE								7 U
METHYL CYCLOHEXANE								7 U
METHYL TERT-BUTYL ETHER								14 U
METHYLENE CHLORIDE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	14 U

from _10sdsam.dbf
from _10sdres.dbf
from _10sdres.xls
from q:\sql_server\gulfport\upload

CTO 288
sediments
full appendix results

order	001	002	003	004	005	006	007	008
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10W01-D01	NCBC10W01-D01	NCBC10W02-D02	NCBC10W03-D03	NCBC10D04	NCBC10D05	NCBC10D06	NCBC10D07
nsample	NCBC10D01	NCBC10D01-D	NCBC10D02	NCBC10D03	NCBC10D04	NCBC10D05	NCBC10D06	SD1006D01
sample	NCBC10D01	NCBC10D01D	NCBC10D02	NCBC10D03	NCBC10D04	NCBC10D05	NCBC10D06	SD1006D01
sacode	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
depth_rang	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
gis_date	20020110	20020110	20020110	20020110	20020212	20020212	20020212	20031218
sample_dat	01/10/02	01/10/02	01/10/02	01/10/02	02/12/02	02/12/02	02/12/02	12/18/03
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	288
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_001**	**c_002**	**c_003**	**c_004**	**c_005**	**c_006**	**c_007**	**c_008**
O-XYLENE								7 U
STYRENE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
TETRACHLOROETHENE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
TOLUENE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	5.3 J	5.5 U	7 U
TOTAL 1,2-DICHLOROETHENE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	14 U
TOTAL XYLENES	20 U	21 U	23 U	19 U	17 U	18 U	16 U	20 U
TRANS-1,2-DICHLOROETHENE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
TRANS-1,3-DICHLOROPROPENE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 U
TRICHLOROETHENE	6.7 U	7.1 U	7.8 U	6.3 U	5.6 U	6.1 U	5.5 U	7 UR
TRICHLOROFLUOROMETHANE	13 UJ	14 UJ	16 UJ	13 UJ	11 U	12 U	11 U	6 J
VINYL CHLORIDE	13 U	14 U	16 U	13 U	11 U	12 U	11 U	7 U
Semivolatile Organics (ug/kg)								
1,1-BIPHENYL								420 U
2,2'-OXYBIS(1-CHLOROPROPANE)								420 U
2,4,5-TRICHLOROPHENOL								420 U
2,4,6-TRICHLOROPHENOL								420 U
2,4-DICHLOROPHENOL								420 U
2,4-DIMETHYLPHENOL								420 U
2,4-DINITROPHENOL								420 UJ
2,4-DINITROTOLUENE								420 U
2,6-DINITROTOLUENE								420 U
2-CHLORONAPHTHALENE								420 U
2-CHLOROPHENOL								420 U
2-METHYLNAPHTHALENE								420 U
2-METHYLPHENOL								420 U
2-NITROANILINE								420 U
2-NITROPHENOL								420 U
3,3'-DICHLOROBENZIDINE								420 U
3-NITROANILINE								420 U
4,6-DINITRO-2-METHYLPHENOL								420 U
4-BROMOPHENYL PHENYL ETHER								420 U
4-CHLORO-3-METHYLPHENOL								420 U
4-CHLOROANILINE								420 U
4-CHLOROPHENYL PHENYL ETHER								420 U
4-METHYLPHENOL								420 U
4-NITROANILINE								420 U
4-NITROPHENOL								420 U
ACENAPHTHENE								420 U
ACENAPHTHYLENE								420 U
ACETOPHENONE								420 U
ANTHRACENE								420 U
ATRAZINE								420 U
BENZALDEHYDE								420 UJ

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CTO 288
sediments
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order	001	002	003	004	005	006	007	008
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10W01-D01	NCBC10W01-D01	NCBC10W02-D02	NCBC10W03-D03	NCBC10D04	NCBC10D05	NCBC10D06	NCBC10D07
nsample	NCBC10D01	NCBC10D01-D	NCBC10D02	NCBC10D03	NCBC10D04	NCBC10D05	NCBC10D06	SD1006D01
sample	NCBC10D01	NCBC10D01D	NCBC10D02	NCBC10D03	NCBC10D04	NCBC10D05	NCBC10D06	SD1006D01
sacode	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
depth_rang	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
gis_date	20020110	20020110	20020110	20020110	20020212	20020212	20020212	20031218
sample_dat	01/10/02	01/10/02	01/10/02	01/10/02	02/12/02	02/12/02	02/12/02	12/18/03
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	288
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_001**	**c_002**	**c_003**	**c_004**	**c_005**	**c_006**	**c_007**	**c_008**
BENZO(A)ANTHRACENE								420 U
BENZO(A)PYRENE								170 J
BENZO(B)FLUORANTHENE								500 U
BENZO(G,H,I)PERYLENE								420 U
BENZO(K)FLUORANTHENE								500 U
BIS(2-CHLOROETHOXY)METHANE								420 U
BIS(2-CHLOROETHYL)ETHER								420 U
BIS(2-ETHYLHEXYL)PHTHALATE								420 U
BUTYL BENZYL PHTHALATE								420 U
CAPROLACTAM								420 U
CARBAZOLE								420 U
CHRYSENE								420 U
DI-N-BUTYL PHTHALATE								420 U
DI-N-OCTYL PHTHALATE								420 U
DIBENZO(A,H)ANTHRACENE								420 U
DIBENZOFURAN								420 U
DIETHYL PHTHALATE								420 UJ
DIMETHYL PHTHALATE								420 U
FLUORANTHENE								170 J
FLUORENE								420 U
HEXACHLOROBENZENE								420 U
HEXACHLOROBUTADIENE								420 U
HEXACHLOROCYCLOPENTADIENE								420 U
HEXACHLOROETHANE								420 U
INDENO(1,2,3-CD)PYRENE								420 U
ISOPHORONE								420 U
N-NITROSO-DI-N-PROPYLAMINE								420 U
N-NITROSODIPHENYLAMINE								420 U
NAPHTHALENE								420 U
NITROBENZENE								420 U
PENTACHLOROPHENOL								420 U
PHENANTHRENE								380 J
PHENOL								420 U
PYRENE								420 U
Pesticides/PCBs (ug/kg)								
4,4'-DDD	2.3 U	2.3 U	2.2 U	2.1 U				2.2 U
4,4'-DDE	1.2 R	2.3 U	2.2 U	2.1 U				2.2 U
4,4'-DDT	4.0 R	2.3 U	2.2 U	3.6 R				2.2 U
ALDRIN	2.3 U	2.3 U	2.2 U	2.1 U				2.2 U
ALPHA-BHC	0.30 J	2.3 U	2.2 U	2.1 U				2.2 U
ALPHA-CHLORDANE	0.90 R	2.3 U	2.2 U	0.92 R				2.2 U
AROCLOR-1016	44 U	45 U	42 U	41 U	41 U	43 U	41 U	22 U
AROCLOR-1221	44 U	45 U	42 U	41 U	41 U	43 U	41 U	22 U

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full appendix results

order	001	002	003	004	005	006	007	008
site	00010	00010	00010	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10W01-D01	NCBC10W01-D01	NCBC10W02-D02	NCBC10W03-D03	NCBC10D04	NCBC10D05	NCBC10D06	NCBC10D07
nsample	NCBC10D01	NCBC10D01-D	NCBC10D02	NCBC10D03	NCBC10D04	NCBC10D05	NCBC10D06	SD1006D01
sample	NCBC10D01	NCBC10D01D	NCBC10D02	NCBC10D03	NCBC10D04	NCBC10D05	NCBC10D06	SD1006D01
sacode	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
depth_rang	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
gis_date	20020110	20020110	20020110	20020110	20020212	20020212	20020212	20031218
sample_dat	01/10/02	01/10/02	01/10/02	01/10/02	02/12/02	02/12/02	02/12/02	12/18/03
validated	Y	Y	Y	Y	Y	Y	Y	Y
cto_proj	193	193	193	193	193	193	193	288
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_001**	**c_002**	**c_003**	**c_004**	**c_005**	**c_006**	**c_007**	**c_008**
AROCLOR-1232	44 U	45 U	42 U	41 U	41 U	43 U	41 U	22 U
AROCLOR-1242	44 U	45 U	42 U	41 U	41 U	43 U	41 U	22 U
AROCLOR-1248	44 U	45 U	42 U	41 U	41 U	43 U	41 U	22 U
AROCLOR-1254	44 U	45 U	42 U	41 U	41 U	43 U	41 U	22 U
AROCLOR-1260	710 J	220 J	94	630	19 J	260	190	65
BETA-BHC	2.3 U	2.3 U	2.2 U	2.1 U				2.2 U
DELTA-BHC	2.3 U	2.3 U	2.2 U	2.1 U				2.2 U
DIELDRIN	3.4 J	0.40 R	0.27 R	1.4 R				2.2 U
ENDOSULFAN I	2.3 U	2.3 U	2.2 U	2.1 U				2.2 U
ENDOSULFAN II	17 J	2.5 J	1.9 J	11				2.2 U
ENDOSULFAN SULFATE	2.3 U	2.3 U	2.2 U	2.1 U				2.2 U
ENDRIN	7.3 R	1.4 R	0.85 R	5.3 R				2.2 U
ENDRIN ALDEHYDE	2.4 R	2.3 U	2.2 U	2.3 R				2.2 U
ENDRIN KETONE	2.3 U	2.3 U	2.2 U	2.1 U				2.2 U
GAMMA-BHC (LINDANE)	0.42 J	2.3 U	2.2 U	2.1 U				2.2 U
GAMMA-CHLORDANE	2.3 U	2.3 U	2.2 U	2.1 U				2.2 U
HEPTACHLOR	0.34 J	2.3 U	2.2 U	2.1 U				2.2 U
HEPTACHLOR EPOXIDE	2.3 U	2.3 U	2.2 U	2.1 U				2.2 U
METHOXYCHLOR	4.4 U	4.5 U	4.2 U	4.1 U				2.2 U
TOXAPHENE	89 U	92 U	86 U	84 U				2.2 U

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full appendix results

order	009	010	011	012	013
site	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10D08	NCBC10D09	NCBC10W10-D10	NCBC10W10-D10	NCBC10W11-D11
nsample	SD1007D01	SD1008D01	SD1009D01	SD1009D01-D	SD1010D01
sample	SD1007D01	SD1008D01	SD1009D01	SD1009D01D	SD1010D01
sacode	NORMAL	NORMAL	ORIG	DUP	NORMAL
depth_rang	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
gis_date	20031218	20031218	20031218	20031218	20031218
sample_dat	12/18/03	12/18/03	12/18/03	12/18/03	12/18/03
validated	Y	Y	Y	Y	Y
cto_proj	288	288	288	288	288
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_009**	**c_010**	**c_011**	**c_012**	**c_013**
Volatile Organics (ug/kg)					
1,1,1-TRICHLOROETHANE	6 UJ	7 U	6 U	6 U	7 U
1,1,2,2-TETRACHLOROETHANE	6 UJ	7 U	6 U	6 U	7 U
1,1,2-TRICHLOROETHANE	6 UJ	7 U	6 U	6 U	7 U
1,1,2-TRICHLOROTRIFLUOROETHANE	6 UJ	7 U	6 U	6 U	7 U
1,1-DICHLOROETHANE	6 UJ	7 U	6 U	6 U	7 U
1,1-DICHLOROETHENE	6 UJ	7 U	6 U	6 U	7 U
1,2,3-TRICHLOROBENZENE	6 UJ	7 U	6 U	6 U	7 U
1,2,4-TRICHLOROBENZENE	6 UJ	7 U	6 U	6 U	7 U
1,2-DIBROMO-3-CHLOROPROPANE	6 UJ	7 U	6 U	6 U	7 U
1,2-DIBROMOETHANE	6 UJ	7 U	6 U	6 U	7 U
1,2-DICHLOROBENZENE	6 UJ	7 U	6 U	6 U	7 U
1,2-DICHLOROETHANE	6 UJ	7 U	6 U	6 U	7 U
1,2-DICHLOROPROPANE	6 UJ	7 U	6 U	6 U	7 U
1,3-DICHLOROBENZENE	6 UJ	7 U	6 U	6 U	7 U
1,4-DICHLOROBENZENE	6 UJ	7 U	6 U	6 U	7 U
2-BUTANONE	33 UJ	33 U	31 U	31 U	34 U
2-HEXANONE	33 UJ	33 U	31 U	31 U	34 U
4-METHYL-2-PENTANONE	33 UJ	33 U	31 U	31 U	34 U
ACETONE	120 J	33 U	44 J	31 U	34 U
BENZENE	6 UJ	7 U	6 U	6 U	7 U
BROMOCHLOROMETHANE	6 UJ	7 U	6 U	6 U	7 U
BROMODICHLOROMETHANE	6 UJ	7 U	6 U	6 U	7 U
BROMOFORM	6 UJ	7 U	6 U	6 U	7 U
BROMOMETHANE	6 UJ	7 U	6 U	6 U	7 U
CARBON DISULFIDE	6 UJ	7 U	6 U	6 U	7 U
CARBON TETRACHLORIDE	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ
CHLOROBENZENE	6 UJ	7 U	6 U	6 U	7 U
CHLORODIBROMOMETHANE	6 UJ	7 U	6 U	6 U	7 U
CHLOROETHANE	6 UJ	7 U	6 U	6 U	7 U
CHLOROFORM	6 UJ	7 U	6 U	6 U	7 U
CHLOROMETHANE	6 UJ	10 U	6 U	6 U	7 U
CIS-1,2-DICHLOROETHENE	6 UJ	7 U	6 U	6 U	7 U
CIS-1,3-DICHLOROPROPENE	6 UJ	7 U	6 U	6 U	7 U
CYCLOHEXANE	6 UJ	7 U	6 U	6 U	7 U
DICHLORODIFLUOROMETHANE	6 UJ	7 U	6 U	6 U	7 U
ETHYLBENZENE	6 UJ	7 U	6 U	6 U	7 U
ISOPROPYLBENZENE	6 UJ	7 U	6 U	6 U	7 U
M+P-XYLENES	13 UJ	13 U	12 U	12 U	14 U
METHYL ACETATE	6 UJ	7 U	6 U	6 U	7 U
METHYL CYCLOHEXANE	6 UJ	7 U	6 U	6 U	7 U
METHYL TERT-BUTYL ETHER	13 UJ	13 U	12 U	12 U	14 U
METHYLENE CHLORIDE	15 J	13 U	12 U	12 U	14 U

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sediments
full appendix results

order	009	010	011	012	013
site	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10D08	NCBC10D09	NCBC10W10-D10	NCBC10W10-D10	NCBC10W11-D11
nsample	SD1007D01	SD1008D01	SD1009D01	SD1009D01-D	SD1010D01
sample	SD1007D01	SD1008D01	SD1009D01	SD1009D01D	SD1010D01
sacode	NORMAL	NORMAL	ORIG	DUP	NORMAL
depth_rang	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
gis_date	20031218	20031218	20031218	20031218	20031218
sample_dat	12/18/03	12/18/03	12/18/03	12/18/03	12/18/03
validated	Y	Y	Y	Y	Y
cto_proj	288	288	288	288	288
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_009**	**c_010**	**c_011**	**c_012**	**c_013**
O-XYLENE	6 UJ	7 U	6 U	6 U	7 U
STYRENE	6 UJ	7 U	6 U	6 U	7 U
TETRACHLOROETHENE	6 UJ	7 U	6 U	6 U	7 U
TOLUENE	6 UJ	7 U	6 U	6 U	7 U
TOTAL 1,2-DICHLOROETHENE	13 UJ	13 U	12 U	12 U	14 U
TOTAL XYLENES	20 UJ	20 U	19 U	18 U	20 U
TRANS-1,2-DICHLOROETHENE	6 UJ	7 U	6 U	6 U	7 U
TRANS-1,3-DICHLOROPROPENE	6 UJ	7 U	6 U	6 U	7 U
TRICHLOROETHENE	6 UR	7 UR	6 UR	6 UR	7 UR
TRICHLOROFLUOROMETHANE	29 J	8	12	18	13
VINYL CHLORIDE	6 UJ	7 U	6 U	6 U	7 U
Semivolatile Organics (ug/kg)					
1,1-BIPHENYL	460 U	440 U	430 U	420 U	440 U
2,2'-OXYBIS(1-CHLOROPROPANE)	460 U	440 U	430 U	420 U	440 U
2,4,5-TRICHLOROPHENOL	460 U	440 U	430 U	420 U	440 U
2,4,6-TRICHLOROPHENOL	460 U	440 U	430 U	420 U	440 U
2,4-DICHLOROPHENOL	460 U	440 U	430 U	420 U	440 U
2,4-DIMETHYLPHENOL	460 U	440 U	430 U	420 U	440 U
2,4-DINITROPHENOL	460 UJ	440 UJ	430 UJ	420 UJ	440 UJ
2,4-DINITROTOLUENE	460 U	440 U	430 U	420 U	440 U
2,6-DINITROTOLUENE	460 U	440 U	430 U	420 U	440 U
2-CHLORONAPHTHALENE	460 U	440 U	430 U	420 U	440 U
2-CHLOROPHENOL	460 U	440 U	430 U	420 U	440 U
2-METHYLNAPHTHALENE	460 U	440 U	430 U	420 U	440 U
2-METHYLPHENOL	460 U	440 U	430 U	420 U	440 U
2-NITROANILINE	460 U	440 U	430 U	420 U	440 U
2-NITROPHENOL	460 U	440 U	430 U	420 U	440 U
3,3'-DICHLOROBENZIDINE	460 U	440 U	430 U	420 U	440 U
3-NITROANILINE	460 U	440 U	430 U	420 U	440 U
4,6-DINITRO-2-METHYLPHENOL	460 U	440 U	430 U	420 U	440 U
4-BROMOPHENYL PHENYL ETHER	460 U	440 U	430 U	420 U	440 U
4-CHLORO-3-METHYLPHENOL	460 U	440 U	430 U	420 U	440 U
4-CHLOROANILINE	460 U	440 U	430 U	420 U	440 U
4-CHLOROPHENYL PHENYL ETHER	460 U	440 U	430 U	420 U	440 U
4-METHYLPHENOL	460 U	440 U	430 U	420 U	440 U
4-NITROANILINE	460 U	440 U	430 U	420 U	440 U
4-NITROPHENOL	460 U	440 U	430 U	420 U	440 U
ACENAPHTHENE	460 U	440 U	430 U	420 U	440 U
ACENAPHTHYLENE	460 U	440 U	430 U	420 U	440 U
ACETOPHENONE	460 U	440 U	430 U	420 U	440 U
ANTHRACENE	460 U	440 U	430 U	420 U	440 U
ATRAZINE	460 U	440 U	430 U	420 U	440 U
BENZALDEHYDE	460 UJ	440 UJ	430 UJ	420 UJ	440 UJ

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CTO 288
sediments
full appendix results

order	009	010	011	012	013
site	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10D08	NCBC10D09	NCBC10W10-D10	NCBC10W10-D10	NCBC10W11-D11
nsample	SD1007D01	SD1008D01	SD1009D01	SD1009D01-D	SD1010D01
sample	SD1007D01	SD1008D01	SD1009D01	SD1009D01D	SD1010D01
sacode	NORMAL	NORMAL	ORIG	DUP	NORMAL
depth_rang	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
gis_date	20031218	20031218	20031218	20031218	20031218
sample_dat	12/18/03	12/18/03	12/18/03	12/18/03	12/18/03
validated	Y	Y	Y	Y	Y
cto_proj	288	288	288	288	288
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_009**	**c_010**	**c_011**	**c_012**	**c_013**
BENZO(A)ANTHRACENE	460 U	440 U	430 U	420 U	440 U
BENZO(A)PYRENE	460 U	440 U	430 U	420 U	440 U
BENZO(B)FLUORANTHENE	540 U	440 U	430 U	420 U	440 U
BENZO(G,H,I)PERYLENE	460 U	440 U	430 U	420 U	440 U
BENZO(K)FLUORANTHENE	540 U	440 U	430 U	420 U	440 U
BIS(2-CHLOROETHOXY)METHANE	460 U	440 U	430 U	420 U	440 U
BIS(2-CHLOROETHYL)ETHER	460 U	440 U	430 U	420 U	440 U
BIS(2-ETHYLHEXYL)PHTHALATE	460 U	440 U	430 U	420 U	440 U
BUTYL BENZYL PHTHALATE	460 U	440 U	430 U	420 U	440 U
CAPROLACTAM	460 U	440 U	430 U	420 U	440 U
CARBAZOLE	460 U	440 U	430 U	420 U	440 U
CHRYSENE	460 U	440 U	430 U	420 U	440 U
DI-N-BUTYL PHTHALATE	300 J	440 U	280 J	270 J	310 J
DI-N-OCTYL PHTHALATE	460 U	440 U	430 U	420 U	440 U
DIBENZO(A,H)ANTHRACENE	460 U	440 U	430 U	420 U	440 U
DIBENZOFURAN	460 U	440 U	430 U	420 U	440 U
DIETHYL PHTHALATE	460 UJ	44 J	430 UJ	420 UJ	440 UJ
DIMETHYL PHTHALATE	460 U	440 U	430 U	420 U	440 U
FLUORANTHENE	460 U	440 U	430 U	420 U	440 U
FLUORENE	460 U	440 U	430 U	420 U	440 U
HEXACHLOROBENZENE	460 U	440 U	430 U	420 U	440 U
HEXACHLOROBUTADIENE	460 U	440 U	430 U	420 U	440 U
HEXACHLOROCYCLOPENTADIENE	460 U	440 U	430 U	420 U	440 U
HEXACHLOROETHANE	460 U	440 U	430 U	420 U	440 U
INDENO(1,2,3-CD)PYRENE	460 U	440 U	430 U	420 U	440 U
ISOPHORONE	460 U	440 U	430 U	420 U	440 U
N-NITROSO-DI-N-PROPYLAMINE	460 U	440 U	430 U	420 U	440 U
N-NITROSODIPHENYLAMINE	460 U	440 U	430 U	420 U	440 U
NAPHTHALENE	460 U	440 U	430 U	420 U	440 U
NITROBENZENE	460 U	440 U	430 U	420 U	440 U
PENTACHLOROPHENOL	460 U	440 U	430 U	420 U	440 U
PHENANTHRENE	460 U	440 U	430 U	420 U	440 U
PHENOL	460 U	440 U	430 U	420 U	440 U
PYRENE	460 U	440 U	430 U	420 U	440 U
Pesticides/PCBs (ug/kg)					
4,4'-DDD	2.4 U	2.2 U	2.2 U	2.2 U	2.2 U
4,4'-DDE	2.4 U	2.2 U	2.2 U	2.2 U	2.2 U
4,4'-DDT	2.4 U	2.2 U	2.2 U	2.2 U	2.2 U
ALDRIN	2.4 U	2.2 U	2.2 U	2.2 U	2.2 U
ALPHA-BHC	2.4 U	2.2 U	2.2 U	2.2 U	2.2 U
ALPHA-CHLORDANE	2.4 U	2.2 U	2.2 U	2.2 U	2.2 U
AROCLOR-1016	24 UJ	22 U	22 U	22 U	22 U
AROCLOR-1221	24 UJ	22 U	22 U	22 U	22 U

from _10sdsam.dbf
from _10sdres.dbf
from _10sdres.xls
from q:\sql_server\gulfport\upload

CTO 288
sediments
full appendix results

order	009	010	011	012	013
site	00010	00010	00010	00010	00010
aoc	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH	PCB IN DRAIN DITCH
location	NCBC10D08	NCBC10D09	NCBC10W10-D10	NCBC10W10-D10	NCBC10W11-D11
nsample	SD1007D01	SD1008D01	SD1009D01	SD1009D01-D	SD1010D01
sample	SD1007D01	SD1008D01	SD1009D01	SD1009D01D	SD1010D01
sacode	NORMAL	NORMAL	ORIG	DUP	NORMAL
depth_rang	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
gis_date	20031218	20031218	20031218	20031218	20031218
sample_dat	12/18/03	12/18/03	12/18/03	12/18/03	12/18/03
validated	Y	Y	Y	Y	Y
cto_proj	288	288	288	288	288
proj_manag	FISHER,R	FISHER,R	FISHER,R	FISHER,R	FISHER,R
sort	**c_009**	**c_010**	**c_011**	**c_012**	**c_013**
AROCLOR-1232	24 UJ	22 U	22 U	22 U	22 U
AROCLOR-1242	24 UJ	22 U	22 U	22 U	22 U
AROCLOR-1248	24 UJ	22 U	22 U	22 U	22 U
AROCLOR-1254	24 UJ	22 U	22 U	22 U	22 U
AROCLOR-1260	81 J	22 U	22 U	22 U	22 U
BETA-BHC	2.4 U	2.2 U	2.2 U	2.2 U	2.2 U
DELTA-BHC	2.4 U	2.2 U	2.2 UJ	2.4 J	2.2 U
DIELDRIN	2.4 U	2.2 U	2.2 U	2.2 U	2.2 U
ENDOSULFAN I	2.4 U	2.2 U	2.2 U	2.2 U	2.2 U
ENDOSULFAN II	2.4 U	2.2 U	2.2 U	2.2 U	2.2 U
ENDOSULFAN SULFATE	2.4 U	2.2 U	2.2 U	2.2 U	2.2 U
ENDRIN	2.4 U	2.2 U	2.2 U	2.2 U	2.2 U
ENDRIN ALDEHYDE	2.4 U	2.2 U	2.2 U	2.2 U	2.2 U
ENDRIN KETONE	2.4 U	2.2 U	2.2 U	2.2 U	2.2 U
GAMMA-BHC (LINDANE)	2.4 U	2.2 U	2.2 U	2.2 U	2.2 U
GAMMA-CHLORDANE	2.4 U	2.2 U	2.2 U	2.2 U	2.2 U
HEPTACHLOR	2.4 U	2.2 U	2.2 U	2.2 U	2.2 U
HEPTACHLOR EPOXIDE	2.4 U	2.2 U	2.2 U	2.2 U	2.2 U
METHOXYCHLOR	2.4 U	2.2 U	2.2 U	2.2 U	2.2 U
TOXAPHENE	2.4 U	2.2 U	2.2 U	2.2 U	2.2 U

from _10sdsam.dbf
from _10sdres.dbf
from _10sdres.xls
from q:\sql_server\gulfport\upload

APPENDIX C

BASELINE SCEM WORKSHEET

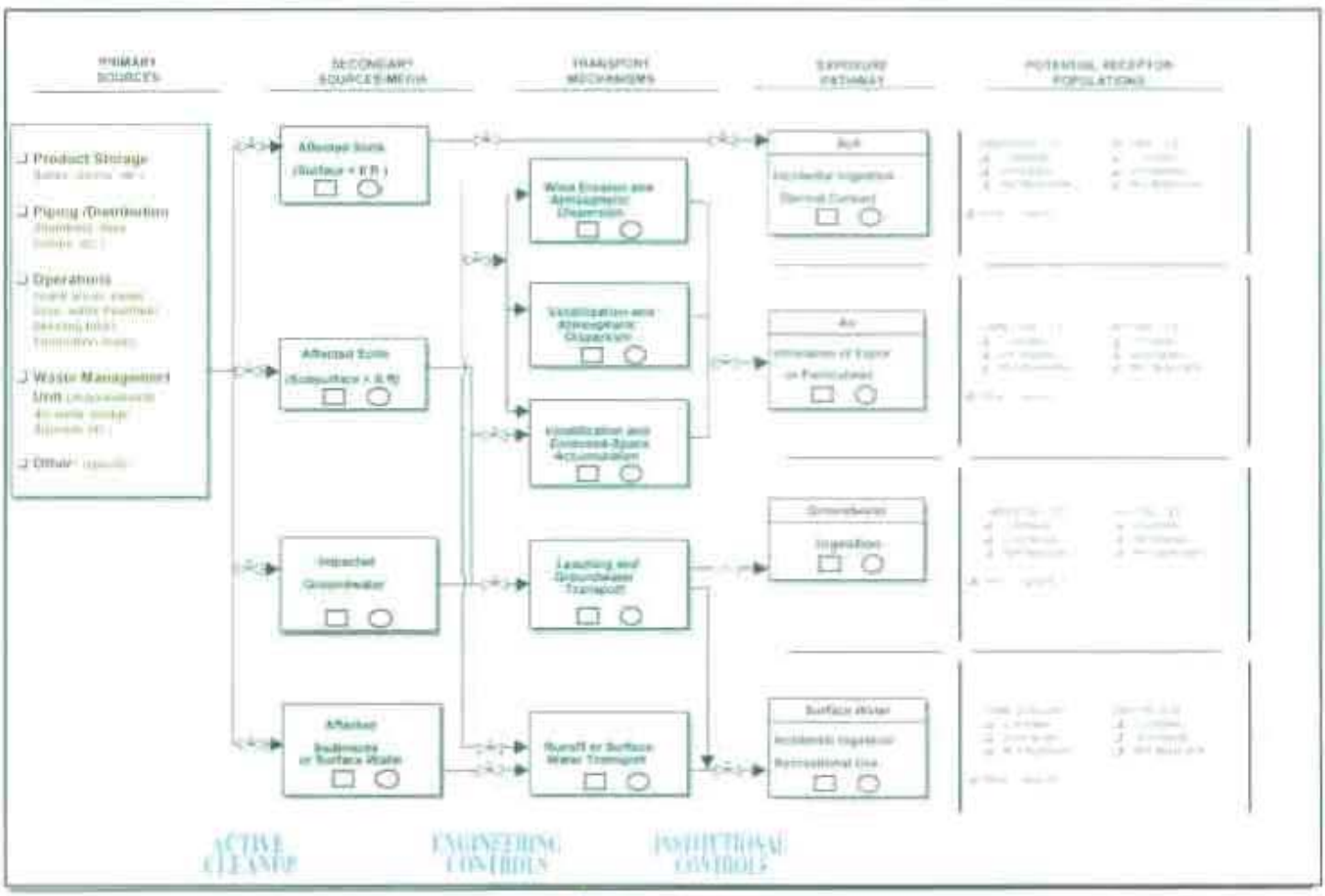
Worksheet

Baseline Site Conceptual Exposure Model (SCEM)

Site Name
Site Location

Completed By
Revision Date

☐ Draft
☐ Final



→ = Potential pathway

APPENDIX D

95-PERCENT UCL CALCULATIONS AND TIER 2 RISK EVALUATION SUPPORT DATA

Interpolation calculations for the H-statistic:

s-value: 2.22

Rows	Values
14	2
15	2.5

n-value: 37

Columns	Values
8	31
9	51

Percentages		0%	30%	100%
	Values	31	37	51
0%	2	3.812	3.728	3.533
43%	2.217	4.148	[illegible]	3.881
100%	2.5	4.588	4.480	4.228

Final interpolated H-statistic value shaded in Red
n values shaded in green
s values shaded in yellow
Corresponding H-statistic table value shaded in blue
Intermediate H-statistic values shaded in gray

		Column #	1	2	3	4	5	6	7	8	9	10
		n value	3	5	7	10	12	15	21	31	51	101
Row #	s value											
1	0.1		2.75	2.035	1.886	1.802	1.775	1.749	1.722	1.701	1.684	1.67
2	0.2		3.295	2.198	1.992	1.881	1.843	1.809	1.771	1.742	1.718	1.697
3	0.3		4.109	2.402	2.125	1.977	1.927	1.882	1.833	1.793	1.761	1.733
4	0.4		5.22	2.631	2.282	2.089	2.026	1.968	1.905	1.856	1.813	1.777
5	0.5		6.495	2.947	2.465	2.22	2.141	2.068	1.989	1.928	1.876	1.83
6	0.6		7.807	3.287	2.673	2.368	2.271	2.181	2.085	2.01	1.946	1.891
7	0.7		9.12	3.662	2.904	2.532	2.414	2.306	2.191	2.102	2.025	1.96
8	0.8		10.43	4.062	3.155	2.71	2.57	2.443	2.307	2.202	2.112	2.035
9	0.9		11.74	4.478	3.402	2.902	2.738	2.589	2.432	2.31	2.206	2.117
10	1		13.05	4.905	3.698	3.103	2.915	2.744	2.564	2.423	2.306	2.205
11	1.25		16.33	6.001	4.426	3.639	3.389	3.163	2.923	2.737	2.58	2.447
12	1.5		19.6	7.12	5.184	4.207	3.896	3.612	3.311	3.077	2.881	2.713
13	1.75		22.87	8.25	5.96	4.795	4.422	4.081	3.719	3.437	3.2	2.997
14	2		26.14	9.387	6.747	5.396	4.962	4.564	4.141	3.812	3.533	3.295
15	2.5		32.69	11.67	8.339	6.621	6.067	5.557	5.013	4.588	4.228	3.92
16	3		39.23	13.97	9.945	7.864	7.191	6.57	5.907	5.388	4.947	4.569
17	3.5		45.77	16.27	11.56	9.118	8.326	7.596	6.815	6.201	5.681	5.233
18	4		52.31	18.58	13.18	10.38	9.469	8.63	7.731	7.024	6.424	5.908
19	4.5		58.85	20.88	14.8	11.64	10.62	9.669	8.652	7.854	7.174	6.59
20	5		65.39	23.19	16.43	12.91	11.77	10.71	9.579	8.688	7.929	7.277
21	6		78.47	27.81	19.68	15.45	14.08	12.81	11.44	10.36	9.449	8.661
22	7		91.55	32.43	22.94	18	16.39	14.9	13.31	12.05	10.98	10.05
23	8		104.6	37.06	26.2	20.55	18.71	17.01	15.18	13.74	12.51	11.45
24	9		117.7	41.68	29.46	23.1	21.03	19.11	17.05	15.43	14.05	12.85
25	10		130.8	46.31	32.73	25.66	23.35	21.22	18.93	17.13	15.59	14.26

Reference for the H-statistic table:
Gilbert, R. O., Statistical Methods for Environmental Pollution Monitoring, Van Nostrand Reinhold, New York, New York, 1987.

The purpose of this spreadsheet is to calculate the Lognormal 95% UCL-AM for a data set.

Do not use zero (0.00) for non-detects, rather use 1/2 of the SQL as a proxy concentration.	

Enter the data points in the green shaded cells below.
The yellow shaded areas are calculated values please do not overwrite.

Concentration (mg/kg)	Natural log (LN) of concentration
19	2.94
19	2.94
740	6.61
6000	8.70
5200	8.56
83000	11.33
19	2.94
19	2.94
18	2.89
19	2.94
19	2.94
18	2.89
19	2.94
19	2.94
11	2.40
1800	7.50
13	2.56
19	2.94
19	2.94
15	2.71
18	2.89
10	2.30
10	2.30
10	2.30
10	2.30
10	2.30
710	6.57
94	4.54
630	6.45
19	2.94
260	5.56
190	5.25
65	4.17
81	4.39
11	2.40
11	2.40
11	2.40

Site info:	NCBC Gulfport Site 10 Surface Soil and Sediment
Constituent:	Aroclor 1260 (Concentrations in ug/KG)

$$95\%\ UCL = e^{\left[X + (.5)(S^2) + \frac{(S)(H)}{\sqrt{n-1}}\right]}$$

95% UCL-AM =	**2,777.135**

Maximum detected:	**83000.000**

Determination and definition of varibles used in the above calculations.

n:	37
x:	3.974
s:	2.217
H:	4.054

n = number of samples
x = mean of the log transformed data
s = standard deviation of the transformed data
H = Land's H-statistic, based upon n and s

Reference for the 95% UCL-AM equation and methodology:
USEPA Supplemental Guidance to RAGS: Calculating the Concentration Term, 1992 (Publication 9285.7-081).

Analysis performed on **12/24/2004**

The purpose of this spreadsheet is to calculate the Lognormal 95% UCL-AM for a data set.

Do not use zero (0.00) for non-detects, rather use 1/2 of the SQL as a proxy concentration.

Enter the data points in the green shaded cells below.
The yellow shaded areas are calculated values please do not overwrite.

Concentration (mg/kg)	Natural log (LN) of concentration
19	**2.94**

Site info:	NCBC Gulfport Site 10 Surface Soil and Sediment
Constituent:	Aroclor 1260 (Concentrations in ug/KG)

Analysis performed on **12/24/2004**

The purpose of this spreadsheet is to calculate the Lognormal 95% UCL-AM for a data set.

Do not use zero (0.00) for non-detects, rather use 1/2 of the SQL as a proxy concentration.	

Enter the data points in the green shaded cells below.
The yellow shaded areas are calculated values please do not overwrite.

Concentration (mg/kg)	Natural log (LN) of concentration
19	**2.94**

Site info:	NCBC Gulfport Site 10 Surface Soil and Sediment
Constituent:	Aroclor 1260 (Concentrations in ug/KG)

Analysis performed on **12/24/2004**

Interpolation calculations for the H-statistic:

s-value:	0.83	Rows	Values
		8	0.8
		9	0.9
n-value:	10	Columns	Values
		4	10

Percentages		100%		
	Values	10	10	
0%	0.8	2.710		
33%	0.833	2.774		
100%	0.9	2.902		

Final interpolated H-statistic value shaded in Red
n values shaded in green
s values shaded in yellow
Corresponding H-statistic table value shaded in blue
Intermediate H-statistic values shaded in gray

		Column #	1	2	3	4	5	6	7	8	9	10
		n value	3	5	7	10	12	15	21	31	51	101
Row #	s value											
1	0.1		2.75	2.035	1.886	1.802	1.775	1.749	1.722	1.701	1.684	1.67
2	0.2		3.295	2.198	1.992	1.881	1.843	1.809	1.771	1.742	1.718	1.697
3	0.3		4.109	2.402	2.125	1.977	1.927	1.882	1.833	1.793	1.761	1.733
4	0.4		5.22	2.631	2.282	2.089	2.026	1.968	1.905	1.856	1.813	1.777
5	0.5		6.495	2.947	2.465	2.22	2.141	2.068	1.989	1.928	1.876	1.83
6	0.6		7.807	3.287	2.673	2.368	2.271	2.181	2.085	2.01	1.946	1.891
7	0.7		9.12	3.662	2.904	2.532	2.414	2.306	2.191	2.102	2.025	1.96
8	0.8		10.43	4.062	3.155	2.71	2.57	2.443	2.307	2.202	2.112	2.035
9	0.9		11.74	4.478	3.402	2.902	2.738	2.589	2.432	2.31	2.206	2.117
10	1		13.05	4.905	3.698	3.103	2.915	2.744	2.564	2.423	2.306	2.205
11	1.25		16.33	6.001	4.426	3.639	3.389	3.163	2.923	2.737	2.58	2.447
12	1.5		19.6	7.12	5.184	4.207	3.896	3.612	3.311	3.077	2.881	2.713
13	1.75		22.87	8.25	5.96	4.795	4.422	4.081	3.719	3.437	3.2	2.997
14	2		26.14	9.387	6.747	5.396	4.962	4.564	4.141	3.812	3.533	3.295
15	2.5		32.69	11.67	8.339	6.621	6.067	5.557	5.013	4.588	4.228	3.92
16	3		39.23	13.97	9.945	7.864	7.191	6.57	5.907	5.388	4.947	4.569
17	3.5		45.77	16.27	11.56	9.118	8.326	7.596	6.815	6.201	5.681	5.233
18	4		52.31	18.58	13.18	10.38	9.469	8.63	7.731	7.024	6.424	5.908
19	4.5		58.85	20.88	14.8	11.64	10.62	9.669	8.652	7.854	7.174	6.59
20	5		65.39	23.19	16.43	12.91	11.77	10.71	9.579	8.688	7.929	7.277
21	6		78.47	27.81	19.68	15.45	14.08	12.81	11.44	10.36	9.449	8.661
22	7		91.55	32.43	22.94	18	16.39	14.9	13.31	12.05	10.98	10.05
23	8		104.6	37.06	26.2	20.55	18.71	17.01	15.18	13.74	12.51	11.45
24	9		117.7	41.68	29.46	23.1	21.03	19.11	17.05	15.43	14.05	12.85
25	10		130.8	46.31	32.73	25.66	23.35	21.22	18.93	17.13	15.59	14.26

Reference for the H-statistic table:
Gilbert, R. O., Statistical Methods for Environmental Pollution Monitoring, Van Nostrand Reinhold, New York, New York, 1987.

The purpose of this spreadsheet is to calculate the Lognormal 95% UCL-AM for a data set.

Do not use zero (0.00) for non-detects, rather use 1/2 of the SQL as a proxy concentration.

Enter the data points in the green shaded cells below.
The yellow shaded areas are calculated values please do not overwrite.

Concentration (mg/kg)	Natural log (LN) of concentration
1.50	**0.41**
0.50	**-0.69**
0.21	**-1.56**
0.44	**-0.82**
0.45	**-0.80**
0.35	**-1.05**
2.10	**0.74**
1.80	**0.59**
1.70	**0.53**
1.40	**0.34**

Site info:	NCBC Gulfport Site 10 Surface Soil and Sediment
Constituent:	Arsenic

$$95\%\ UCL = e^{\left[X + (.5)(S^2) + \frac{(S)(H)}{\sqrt{n-1}}\right]}$$

95% UCL-AM =	**2.423**

Maximum detected:	**2.100**

Determination and definition of varibles used in the above calculations.

n:	10
x:	-0.232
s:	0.833
H:	2.774

n = number of samples
x = mean of the log transformed data
s = standard deviation of the transformed data
H = Land's H-statistic, based upon n and s

Reference for the 95% UCL-AM equation and methodology:
USEPA Supplemental Guidance to RAGS: Calculating the Concentration Term, 1992 (Publication 9285.7-081).

Analysis performed on **12/24/2004**

The purpose of this spreadsheet is to calculate the Lognormal 95% UCL-AM for a data set.

Do not use zero (0.00) for non-detects, rather use 1/2 of the SQL as a proxy concentration.

Enter the data points in the green shaded cells below.
The yellow shaded areas are calculated values please do not overwrite.

Concentration (mg/kg)	Natural log (LN) of concentration
1.50	0.41

Site info:	NCBC Gulfport Site 10 Surface Soil and Sediment
Constituent:	Arsenic

Analysis performed on **12/24/2004**

The purpose of this spreadsheet is to calculate the Loqnormal 95% UCL-AM for a data set.

Do not use zero (0.00) for non-detects, rather use 1/2 of the SQL as a proxy concentration.	

Enter the data points in the green shaded cells below.
The yellow shaded areas are calculated values please do not overwrite.

Concentration (mg/kg)	Natural log (LN) of concentration
1.50	0.41

Site info:	NCBC Gulfport Site 10 Surface Soil and Sediment
Constituent:	Arsenic

Interpolation calculations for the H-statistic:

s-value: 0.26

Rows	Values
2	0.2
3	0.3

n-value: 10

Columns	Values
4	10

Percentages		100%		
	Values	10	10	
0%	0.2	1.881		
61%	0.261	1.939		
100%	0.3	1.977		

Final interpolated H-statistic value shaded in Red
n values shaded in green
s values shaded in yellow
Corresponding H-statistic table value shaded in blue
Intermediate H-statistic values shaded in gray

		Column #	1	2	3	4	5	6	7	8	9	10
		n value	3	5	7	10	12	15	21	31	51	101
Row #	s value											
1	0.1		2.75	2.035	1.886	1.802	1.775	1.749	1.722	1.701	1.684	1.67
2	0.2		3.295	2.198	1.992	1.881	1.843	1.809	1.771	1.742	1.718	1.697
3	0.3		4.109	2.402	2.125	1.977	1.927	1.882	1.833	1.793	1.761	1.733
4	0.4		5.22	2.631	2.282	2.089	2.026	1.968	1.905	1.856	1.813	1.777
5	0.5		6.495	2.947	2.465	2.22	2.141	2.068	1.989	1.928	1.876	1.83
6	0.6		7.807	3.287	2.673	2.368	2.271	2.181	2.085	2.01	1.946	1.891
7	0.7		9.12	3.662	2.904	2.532	2.414	2.306	2.191	2.102	2.025	1.96
8	0.8		10.43	4.062	3.155	2.71	2.57	2.443	2.307	2.202	2.112	2.035
9	0.9		11.74	4.478	3.402	2.902	2.738	2.589	2.432	2.31	2.206	2.117
10	1		13.05	4.905	3.698	3.103	2.915	2.744	2.564	2.423	2.306	2.205
11	1.25		16.33	6.001	4.426	3.639	3.389	3.163	2.923	2.737	2.58	2.447
12	1.5		19.6	7.12	5.184	4.207	3.896	3.612	3.311	3.077	2.881	2.713
13	1.75		22.87	8.25	5.96	4.795	4.422	4.081	3.719	3.437	3.2	2.997
14	2		26.14	9.387	6.747	5.396	4.962	4.564	4.141	3.812	3.533	3.295
15	2.5		32.69	11.67	8.339	6.621	6.067	5.557	5.013	4.588	4.228	3.92
16	3		39.23	13.97	9.945	7.864	7.191	6.57	5.907	5.388	4.947	4.569
17	3.5		45.77	16.27	11.56	9.118	8.326	7.596	6.815	6.201	5.681	5.233
18	4		52.31	18.58	13.18	10.38	9.469	8.63	7.731	7.024	6.424	5.908
19	4.5		58.85	20.88	14.8	11.64	10.62	9.669	8.652	7.854	7.174	6.59
20	5		65.39	23.19	16.43	12.91	11.77	10.71	9.579	8.688	7.929	7.277
21	6		78.47	27.81	19.68	15.45	14.08	12.81	11.44	10.36	9.449	8.661
22	7		91.55	32.43	22.94	18	16.39	14.9	13.31	12.05	10.98	10.05
23	8		104.6	37.06	26.2	20.55	18.71	17.01	15.18	13.74	12.51	11.45
24	9		117.7	41.68	29.46	23.1	21.03	19.11	17.05	15.43	14.05	12.85
25	10		130.8	46.31	32.73	25.66	23.35	21.22	18.93	17.13	15.59	14.26

Reference for the H-statistic table:
Gilbert, R. O., Statistical Methods for Environmental Pollution Monitoring, Van Nostrand Reinhold, New York, New York, 1987.

The purpose of this spreadsheet is to calculate the Lognormal 95% UCL-AM for a data set.

Do not use zero (0.00) for non-detects, rather use 1/2 of the SQL as a proxy concentration.

Enter the data points in the green shaded cells below.
The yellow shaded areas are calculated values please do not overwrite.

Concentration (mg/kg)	Natural log (LN) of concentration
0.06	-2.86
0.03	-3.69
0.03	-3.69
0.03	-3.69
0.03	-3.69
0.03	-3.69
0.03	-3.69
0.03	-3.69
0.03	-3.69
0.03	-3.69

Site info:	NCBC Gulfport Site 10 Groundwater
Constituent:	Dieldrin (concentrations in ug/L)

$$95\%\ UCL = e^{\left[X + (.5)(S^2) + \frac{(S)(H)}{\sqrt{n-1}}\right]}$$

95% UCL-AM =	0.033

Maximum detected:	0.057

Determination and definition of varibles used in the above calculations.

n:	10
x:	-3.606
s:	0.261
H:	1.939

n = number of samples
x = mean of the log transformed data
s = standard deviation of the transformed data
H = Land's H-statistic, based upon n and s

Reference for the 95% UCL-AM equation and methodology:
USEPA Supplemental Guidance to RAGS: Calculating the Concentration Term, 1992 (Publication 9285.7-081).

Analysis performed on **12/24/2004**

The purpose of this spreadsheet is to calculate the Lognormal 95% UCL-AM for a data set.

Do not use zero (0.00) for non-detects, rather use 1/2 of the SQL as a proxy concentration.

Enter the data points in the green shaded cells below.
The yellow shaded areas are calculated values please do not overwrite.

Concentration (mg/kg)	Natural log (LN) of concentration
0.06	-2.86

Site info:	NCBC Gulfport Site 10 Groundwater
Constituent:	Dieldrin (concentrations in ug/L)

Analysis performed on **12/24/2004**

The purpose of this spreadsheet is to calculate the Loqnormal 95% UCL-AM for a data set.

Do not use zero (0.00) for non-detects, rather use 1/2 of the SQL as a proxy concentration.	

Enter the data points in the green shaded cells below.
The yellow shaded areas are calculated values please do not overwrite.

Concentration (mg/kg)	Natural log (LN) of concentration
0.06	**-2.86**

Site info:	NCBC Gulfport Site 10 Groundwater
Constituent:	Dieldrin (concentrations in ug/L)

Interpolation calculations for the H-statistic:

s-value: 1.01

Rows	Values
10	1
11	1.25

n-value: 31

Columns	Values
8	31

Percentages		100%		
	Values	31	31	
0%	1	2.423		
5%	1.012	2.438		
100%	1.25	2.737		

Final interpolated H-statistic value shaded in Red
n values shaded in green
s values shaded in yellow
Corresponding H-statistic table value shaded in blue
Intermediate H-statistic values shaded in gray

		Column #	1	2	3	4	5	6	7	8	9	10
		n value	3	5	7	10	12	15	21	31	51	101
Row #	s value											
1	0.1		2.75	2.035	1.886	1.802	1.775	1.749	1.722	1.701	1.684	1.67
2	0.2		3.295	2.198	1.992	1.881	1.843	1.809	1.771	1.742	1.718	1.697
3	0.3		4.109	2.402	2.125	1.977	1.927	1.882	1.833	1.793	1.761	1.733
4	0.4		5.22	2.631	2.282	2.089	2.026	1.968	1.905	1.856	1.813	1.777
5	0.5		6.495	2.947	2.465	2.22	2.141	2.068	1.989	1.928	1.876	1.83
6	0.6		7.807	3.287	2.673	2.368	2.271	2.181	2.085	2.01	1.946	1.891
7	0.7		9.12	3.662	2.904	2.532	2.414	2.306	2.191	2.102	2.025	1.96
8	0.8		10.43	4.062	3.155	2.71	2.57	2.443	2.307	2.202	2.112	2.035
9	0.9		11.74	4.478	3.402	2.902	2.738	2.589	2.432	2.31	2.206	2.117
10	1		13.05	4.905	3.698	3.103	2.915	2.744	2.564	2.423	2.306	2.205
11	1.25		16.33	6.001	4.426	3.639	3.389	3.163	2.923	2.737	2.58	2.447
12	1.5		19.6	7.12	5.184	4.207	3.896	3.612	3.311	3.077	2.881	2.713
13	1.75		22.87	8.25	5.96	4.795	4.422	4.081	3.719	3.437	3.2	2.997
14	2		26.14	9.387	6.747	5.396	4.962	4.564	4.141	3.812	3.533	3.295
15	2.5		32.69	11.67	8.339	6.621	6.067	5.557	5.013	4.588	4.228	3.92
16	3		39.23	13.97	9.945	7.864	7.191	6.57	5.907	5.388	4.947	4.569
17	3.5		45.77	16.27	11.56	9.118	8.326	7.596	6.815	6.201	5.681	5.233
18	4		52.31	18.58	13.18	10.38	9.469	8.63	7.731	7.024	6.424	5.908
19	4.5		58.85	20.88	14.8	11.64	10.62	9.669	8.652	7.854	7.174	6.59
20	5		65.39	23.19	16.43	12.91	11.77	10.71	9.579	8.688	7.929	7.277
21	6		78.47	27.81	19.68	15.45	14.08	12.81	11.44	10.36	9.449	8.661
22	7		91.55	32.43	22.94	18	16.39	14.9	13.31	12.05	10.98	10.05
23	8		104.6	37.06	26.2	20.55	18.71	17.01	15.18	13.74	12.51	11.45
24	9		117.7	41.68	29.46	23.1	21.03	19.11	17.05	15.43	14.05	12.85
25	10		130.8	46.31	32.73	25.66	23.35	21.22	18.93	17.13	15.59	14.26

Reference for the H-statistic table
Gilbert, R. O., Statistical Methods for Environmental Pollution Monitoring, Van Nostrand Reinhold, New York, New York, 1987.

The purpose of this spreadsheet is to calculate the Loqnormal 95% UCL-AM for a data set.

Do not use zero (0.00) for non-detects, rather use 1/2 of the SQL as a proxy concentration.

Enter the data points in the green shaded cells below.
The yellow shaded areas are calculated values please do not overwrite.

Concentration (mg/kg)	Natural log (LN) of concentration
1	0.00
1	0.00
1	0.00
26	3.26
18	2.89
1	0.00
1	0.00
1	0.00
1	0.00
1	0.00
1	0.00
1	0.00
1	0.00
1	0.00
1	0.00
46	3.83
1	0.00
1	0.00
1	0.00
1	0.00
1	0.00
1	0.00
1	0.00
3.4	1.22
1	0.00
1	0.00
1.1	0.10
1.2	0.18
1.1	0.10
1.1	0.10
1.1	0.10

Site info:	NCBC Gulfport Site 10 Surface Soil and Sediment
Constituent:	Dieldrin (concentrations in ug/Kg)

$$95\%\ UCL = e^{\left[X + (.5)(S^2) + \frac{(S)(H)}{\sqrt{n-1}}\right]}$$

95% UCL-AM =	3.828

Maximum detected:	46.000

Determination and definition of varibles used in the above calculations.

n:	31
x:	0.379
s:	1.012
H:	2.438

n = number of samples
x = mean of the log transformed data
s = standard deviation of the transformed data
H = Land's H-statistic, based upon n and s

Reference for the 95% UCL-AM equation and methodology:
USEPA Supplemental Guidance to RAGS: Calculating the Concentration Term, 1992 (Publication 9285.7-081).

Analysis performed on **12/24/2004**

The purpose of this spreadsheet is to calculate the Lognormal 95% UCL-AM for a data set.

Do not use zero (0.00) for non-detects, rather use 1/2 of the SQL as a proxy concentration.

Enter the data points in the green shaded cells below.
The yellow shaded areas are calculated values please do not overwrite.

Concentration (mg/kg)	Natural log (LN) of concentration
1	0.00

Site info:	NCBC Gulfport Site 10 Surface Soil and Sediment
Constituent:	Dieldrin (concentrations in ug/Kg)

Analysis performed on 12/24/2004

The purpose of this spreadsheet is to calculate the Loqnormal 95% UCL-AM for a data set.

Do not use zero (0.00) for non-detects, rather use 1/2 of the SQL as a proxy concentration.	

Enter the data points in the green shaded cells below.
The yellow shaded areas are calculated values please do not overwrite.

Concentration (mg/kg)	Natural log (LN) of concentration
1	**0.00**

Site info:	NCBC Gulfport Site 10 Surface Soil and Sediment
Constituent:	Dieldrin (concentrations in ug/Kg)

APPENDIX E

USEPA AND MDEQ DECISION ON SITE 10

To: Jason Brown

From: Robert Fisher

CC: file

Date: December 13, 2004

Re: EPA(TOSCA) and MDEQ Decision on Site 10

On 09 Jul 02, with receipt of the post-removal/confirmation data indicating PCB in the soil/sediment at Site 10 above the TOSCA notification level of 50 ppm, Tetra Tech NUS, Inc. contacted Region IV EPA and MDEQ. The draft Confirmation Report was forwarded to Craig Benedikt (EPA) and Bob Merrill (MDEQ), and a phone conference was scheduled for 15 Jul 02.

During the meeting on 15 Jul 02, Craig Benedikt stated that, based on the report, TOSCA rules would not require any further action at this site – if as the Report states, the wastes were pre-1978. We discussed the types of polychlorinated phenols reported at the site and the report from Mississippi Power stating that all of these types of transformers had been replaced by the mid-1970s.

Mr. Benedikt recognized that MDEQ had lower action levels, is the lead agency on the other sites at NCBC Gulfport, and would therefore be better suited to continue in that role.

Mr. Benedikt also discussed the "Self Directed" option, but Mr. Merrill preferred to maintain a stronger role in the project. Both Mr. Merrill and Mr. Benedikt agreed that the next steps should include a brief RI/FS and limited actions in the future to limit potential exposure. Mr. Benedikt recommended a barrier of some type rather than a removal action, Mr. Merrill agreed.

MDEQ was provided with a final Confirmation Report in December 2002 and a courtesy copy was provided to Mr. Benedikt.

APPENDIX F

CALCULATIONS

CLIENT: NCBC GULFPORT		JOB NUMBER: 112GN1831 0000.PP0110100
SUBJECT: SITE 10 - PARADE FIELD DITCH VOLUME CALCULATION		
BASED ON:		DRAWING NUMBER:
BY: JLM Date: 12-6-04	CHECKED BY: Date: 1/17/05	APPROVED BY: DATE:

OBJECTIVE:

To calculate the volume of soil to be excavated under Alternative 3 (Surface Water Controls, Excavation, Surface Protection, Institutional Controls, and Monitoring) and Alternative 4 (Surface Water Controls, Excavation, Dewatering, Off-Site Treatment and Disposal of Excavated Soil) for the Feasibility Study for Site 10 - Parade Field Ditch at the Naval Construction Battalion Center in Gulfport, Mississippi.

APPROACH:

1. Evaluate the analytical data to determine the sample locations that exceed the Aroclor-1260 PRG of 1,000 µg/kg. The area of investigation for both alternatives will be the area around the samples that exceed the PRG.

2. For Alternative 3, assume an excavation depth of 9 inches. Calculate the excavation volume.

3. For Alternative 4, determine the excavation depth at each location. The excavation depth will extend to one half the distance between the sample that exceeds the Aroclor-1260 PRG and the sample that does not exceed the Aroclor-1260 PRG. Use Terramodel Computer Software to calculate the excavation volume.

CALCULATIONS

1. Determine the Area in Exceedence of PRG

From the analytical data presented in Attachment 1, it was determined that the following locations exceed the Aroclor-1260 PRG of 1,000 µg/kg:

Location	Depth (ft bgs)	Concentration (µg/kg)
NCBC10S04	1	6,000
NCBC10S05	2	5,200
NCBC10S06	2	83,000
NCBC10S06	8	19,000
NCBC10S16	5	1,800

Figure 1 (Page 3 of 6) shows the area around the samples listed above. The total area of investigation is as follows:

Perimeter Around Samples =	224	ft
Area Around Samples =	1,514	sf
=	168	sy

CLIENT: NCBC GULFPORT		JOB NUMBER: 112GN1831 0000.PP0110100
SUBJECT: SITE 10 - PARADE FIELD DITCH VOLUME CALCULATION		
BASED ON:		DRAWING NUMBER:
BY: JLM Date: 12-6-04	CHECKED BY: Date: 1/17/05	APPROVED BY: DATE:

2. Alternative 3

Under Alternative 3, it assumed that additional pavement will be placed between the area of investigation and the current walk way. Therefore, the excavation area will be different than that of Alternative 4. The volume of excavation under Alternative 3 is calculated by multiplying the area of excavation times 9 inches.

Area of Investigation =	1,514	sf
Additional Area for Pavement =	88	sf
Total Excavation Area =	1,602	sf
Excavation Volume =	1,202	cf
=	45	cy

3. Alternative 4

The depth of excavation under Alternative 4 will extend to one half the distance between the sample that exceeds the Aroclor-1260 PRG and the sample that does not exceed the Aroclor-1260 PRG.

Location	Depth (ft bgs)	Concentration (µg/kg)	Distance Between Results (ft)	Excavation Depth (ft bgs)
NCBC10S04	1	6,000	10	6
NCBC10S04	11	39 U		
NCBC10S05	2	5,200	9	6.5
NCBC10S05	11	40 U		
NCBC10S06	2	83,000	12	14
NCBC10S06	8	19,000		
NCBC10S06	20	38 J		
NCBC10S16	5	1,800	5	7.5
NCBC10S16	10	38 U		

The profile of the ditch at Site 10 as measured in the field is presented in Figure 2A (Page 4 of 6). This profile was entered into Terramodel as shown on Figure 2B (Page 4 of 6). The excavation depths at each sample location were then entered into Terramodel to compute the excavation volume as follows:

Volume of Excavation = 449 cy

Terramodel output is presented on Page 5 of 6. The excavation profile from Terramodel is presented in Figure 3 (Page 6 of 6).

DRAWN BY	DATE	
CHECKED BY	DATE	
SCALE AS NOTED		

ALTERNATIVE 4 - SURFACE WATER CONTROLS, EXCAVATION, DEWATERING, OFF-SITE TREATMENT AND DISPOSAL OF EXCAVATED SOIL
SITE 19 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT
NAVAL CONSTRUCTION BATTALION CENTER
GULFPORT, MISSISSIPPI

FIGURE 1

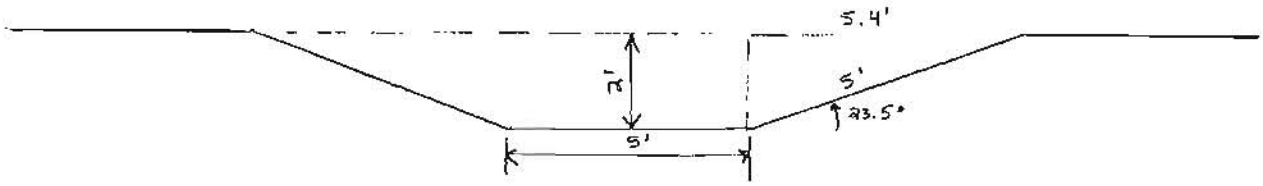


FIGURE 2A
DRAINAGE DITCH CROSS-SECTION
CHANNEL WIDTH = 5' + 2 (5.4') = 15.8' (ASSUME 16')

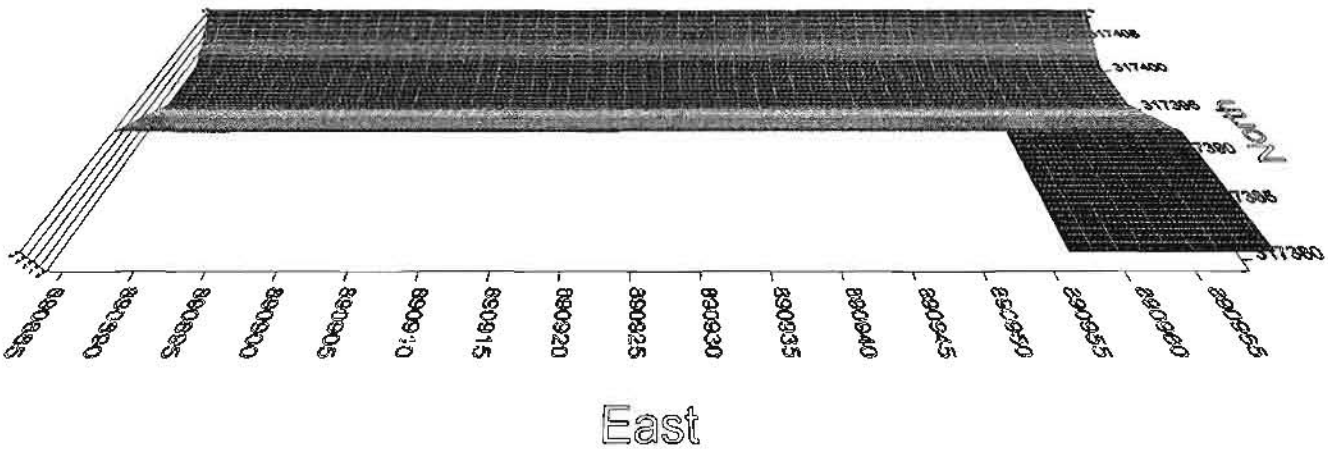


FIGURE 2B
DRAINAGE DITCH TERRAMODEL PROFILE

Spectra Precision Software, Inc.
5901 Peachtree-Dunwoody Rd., Suite A-300
Atlanta, GA 30328-5548
800-235-4972
Wed Dec 08 13:34:20 2004

PROJECT: ra\Terramodel Files\Gulfport\Site 10\Feasibility Study Alt 3-Alt 4.pro

DTM TO DTM VOLUME

Cut and Fill Volumes

Shrinkage/swell factors: Cut 1.0000 Fill 1.0000

Original DTM Layer Name	# of Points	Final DTM Layer Name	# of Points
EXISTING	11	ALTERNATIVE 4	27

Cut Volume (Cu. Yd.)	Cumulative Cut Volume	Fill Volume (Cu. Yd.)	Cumulative Fill Volume
449.0	449.0	0.0	0.0

Net Difference: 449.0 Cu. Yd. WASTE

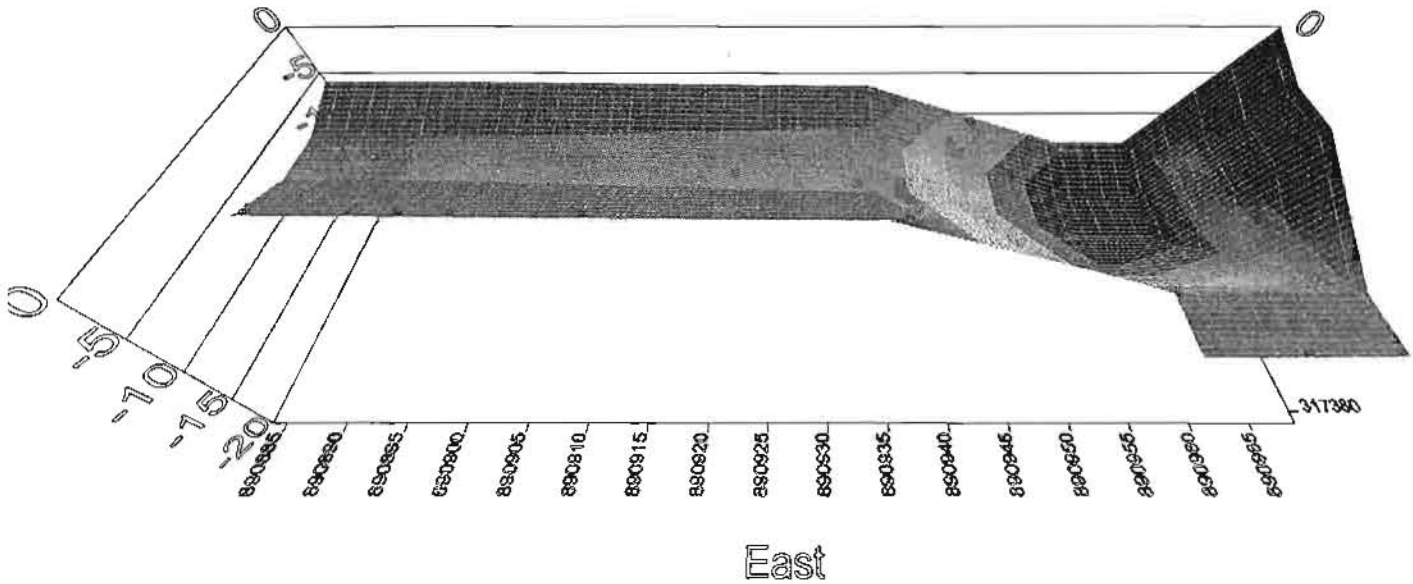


FIGURE 3
TERRAMODEL EXCAVATION PROFILE
ALTERNATIVE 4

ATTACHMENT 1

SOIL DATA
SITE 10 - PARADE FIELD DITCH
NCBC GULFPORT, MISSISSIPPI

site	matrix	location	nsample	sample_date	depth_ range	parameter	val_res	val_ qual	units	northing	easting
00010	SO	NCBC10S01	NCBC10S0105	1/12/2002 0:00	5 - 5	AROCLOR-1260	38	U	UG/KG	317432.77	890818.54
00010	SO	NCBC10S01	NCBC10S0110	1/12/2002 0:00	10 - 10	AROCLOR-1260	41	U	UG/KG	317432.77	890818.54
00010	SO	NCBC10S01	NCBC10S0123	1/12/2002 0:00	23 - 23	AROCLOR-1260	42	U	UG/KG	317432.77	890818.54
00010	SO	NCBC10S02	NCBC10S0205	1/12/2002 0:00	5 - 5	AROCLOR-1260	39	U	UG/KG	317434.09	890867.68
00010	SO	NCBC10S02	NCBC10S0210	1/12/2002 0:00	10 - 10	AROCLOR-1260	40	U	UG/KG	317434.09	890867.68
00010	SO	NCBC10S02	NCBC10S0223	1/12/2002 0:00	23 - 23	AROCLOR-1260	41	U	UG/KG	317434.09	890867.68
00010	SO	NCBC10S03	NCBC10S0301	1/11/2002 0:00	1 - 1	AROCLOR-1260	740		UG/KG	317400.79	890872.95
00010	SO	NCBC10S03	NCBC10S0313	1/11/2002 0:00	13 - 13	AROCLOR-1260	39	U	UG/KG	317400.79	890872.95
00010	SO	NCBC10S03	NCBC10S0313-AV0	1/11/2002 0:00	13 - 13	AROCLOR-1260	39	U	UG/KG	317400.79	890872.95
00010	SO	NCBC10S03	NCBC10S0313-D	1/11/2002 0:00	13 - 13	AROCLOR-1260	39	U	UG/KG	317400.79	890872.95
00010	SO	NCBC10S03	NCBC10S0318	1/11/2002 0:00	18 - 18	AROCLOR-1260	39	U	UG/KG	317400.79	890872.95
00010	SO	NCBC10S04	NCBC10S0401	1/11/2002 0:00	1 - 1	AROCLOR-1260	6000		UG/KG	317400.5	890893.93
00010	SO	NCBC10S04	NCBC10S0411	1/11/2002 0:00	11 - 11	AROCLOR-1260	39	U	UG/KG	317400.5	890893.93
00010	SO	NCBC10S04	NCBC10S0420	1/11/2002 0:00	20 - 20	AROCLOR-1260	43	U	UG/KG	317400.5	890893.93
00010	SO	NCBC10S05	NCBC10S0502	1/11/2002 0:00	2 - 2	AROCLOR-1260	5200		UG/KG	317398.43	890934.31
00010	SO	NCBC10S05	NCBC10S0511	1/11/2002 0:00	11 - 11	AROCLOR-1260	40	U	UG/KG	317398.43	890934.31
00010	SO	NCBC10S05	NCBC10S0520	1/11/2002 0:00	20 - 20	AROCLOR-1260	41	U	UG/KG	317398.43	890934.31
00010	SO	NCBC10S06	NCBC10S0602	1/11/2002 0:00	2 - 2	AROCLOR-1260	83000		UG/KG	317398.64	890954.15
00010	SO	NCBC10S06	NCBC10S0608	1/11/2002 0:00	8 - 8	AROCLOR-1260	19000		UG/KG	317398.64	890954.15
00010	SO	NCBC10S06	NCBC10S0620-AV0	1/11/2002 0:00	20 - 20	AROCLOR-1260	38	J	UG/KG	317398.64	890954.15
00010	SO	NCBC10S06	NCBC10S0620-D	1/11/2002 0:00	20 - 20	AROCLOR-1260	38	J	UG/KG	317398.64	890954.15
00010	SO	NCBC10S06	NCBC10S0620	1/11/2002 0:00	20 - 20	AROCLOR-1260	42	U	UG/KG	317398.64	890954.15
00010	SO	NCBC10S07	NCBC10S0705	1/10/2002 0:00	5 - 5	AROCLOR-1260	39	U	UG/KG	317406.02	890804.59
00010	SO	NCBC10S07	NCBC10S0710	1/10/2002 0:00	10 - 10	AROCLOR-1260	42	U	UG/KG	317406.02	890804.59
00010	SO	NCBC10S07	NCBC10S0723	1/10/2002 0:00	23 - 23	AROCLOR-1260	42	U	UG/KG	317406.02	890804.59
00010	SO	NCBC10S08	NCBC10S0805	1/10/2002 0:00	5 - 5	AROCLOR-1260	39	U	UG/KG	317408.34	890827.07
00010	SO	NCBC10S08	NCBC10S0810	1/10/2002 0:00	10 - 10	AROCLOR-1260	39	U	UG/KG	317408.34	890827.07
00010	SO	NCBC10S08	NCBC10S0823	1/10/2002 0:00	23 - 23	AROCLOR-1260	42	U	UG/KG	317408.34	890827.07
00010	SO	NCBC10S09	NCBC10S0905	1/10/2002 0:00	5 - 5	AROCLOR-1260	37	U	UG/KG	317406.39	890845.18
00010	SO	NCBC10S09	NCBC10S0910	1/10/2002 0:00	10 - 10	AROCLOR-1260	39	U	UG/KG	317406.39	890845.18
00010	SO	NCBC10S09	NCBC10S0910-AV0	1/10/2002 0:00	10 - 10	AROCLOR-1260	39.5	U	UG/KG	317406.39	890845.18
00010	SO	NCBC10S09	NCBC10S0910-D	1/10/2002 0:00	10 - 10	AROCLOR-1260	40	U	UG/KG	317406.39	890845.18
00010	SO	NCBC10S09	NCBC10S0923	1/10/2002 0:00	23 - 23	AROCLOR-1260	42	U	UG/KG	317406.39	890845.18
00010	SO	NCBC10S10	NCBC10S1005	1/9/2002 0:00	5 - 5	AROCLOR-1260	39	U	UG/KG	317409.06	890892.2
00010	SO	NCBC10S10	NCBC10S1010	1/9/2002 0:00	10 - 10	AROCLOR-1260	41	U	UG/KG	317409.06	890892.2
00010	SO	NCBC10S10	NCBC10S1023	1/9/2002 0:00	23 - 23	AROCLOR-1260	42	U	UG/KG	317409.06	890892.2
00010	SO	NCBC10S10	NCBC10S1023-AV0	1/9/2002 0:00	23 - 23	AROCLOR-1260	41.5	U	UG/KG	317409.06	890892.2
00010	SO	NCBC10S10	NCBC10S1023-D	1/9/2002 0:00	23 - 23	AROCLOR-1260	41	U	UG/KG	317409.06	890892.2
00010	SO	NCBC10S11	NCBC10S1105	1/9/2002 0:00	5 - 5	AROCLOR-1260	38	U	UG/KG	317408.17	890936.79
00010	SO	NCBC10S11	NCBC10S1110	1/9/2002 0:00	10 - 10	AROCLOR-1260	40	U	UG/KG	317408.17	890936.79
00010	SO	NCBC10S11	NCBC10S1123	1/9/2002 0:00	23 - 23	AROCLOR-1260	41	U	UG/KG	317408.17	890936.79
00010	SO	NCBC10S12	NCBC10S1205	1/9/2002 0:00	5 - 5	AROCLOR-1260	36	U	UG/KG	317382.47	890804.59
00010	SO	NCBC10S12	NCBC10S1210	1/9/2002 0:00	10 - 10	AROCLOR-1260	40	U	UG/KG	317382.47	890804.59
00010	SO	NCBC10S12	NCBC10S1223	1/9/2002 0:00	23 - 23	AROCLOR-1260	43	U	UG/KG	317382.47	890804.59
00010	SO	NCBC10S13	NCBC10S1305	1/9/2002 0:00	5 - 5	AROCLOR-1260	39	U	UG/KG	317382.5	890841.67
00010	SO	NCBC10S13	NCBC10S1310	1/9/2002 0:00	10 - 10	AROCLOR-1260	39	U	UG/KG	317382.5	890841.67
00010	SO	NCBC10S13	NCBC10S1323	1/9/2002 0:00	23 - 23	AROCLOR-1260	42	U	UG/KG	317382.5	890841.67

SOIL DATA
SITE 10 - PARADE FIELD DITCH
NCBC GULFPORT, MISSISSIPPI

site	matrix	location	nsample	sample_date	depth_ range	parameter	val_res	val_ qual	units	northing	easting
00010	SO	NCBC10S14	NCBC10S1405	1/9/2002 0:00	5 - 5	AROCLOR-1260	38	U	UG/KG	317383.63	890897.34
00010	SO	NCBC10S14	NCBC10S1405-AV(	1/9/2002 0:00	5 - 5	AROCLOR-1260	38	U	UG/KG	317383.63	890897.34
00010	SO	NCBC10S14	NCBC10S1405-D	1/9/2002 0:00	5 - 5	AROCLOR-1260	38	U	UG/KG	317383.63	890897.34
00010	SO	NCBC10S14	NCBC10S1410	1/9/2002 0:00	10 - 10	AROCLOR-1260	40	U	UG/KG	317383.63	890897.34
00010	SO	NCBC10S14	NCBC10S1420	1/9/2002 0:00	20 - 20	AROCLOR-1260	50	U	UG/KG	317383.63	890897.34
00010	SO	NCBC10S15	NCBC10S1510	1/8/2002 0:00	10 - 10	AROCLOR-1260	40	U	UG/KG	317385.05	890931.42
00010	SO	NCBC10S15	NCBC10S1519	1/8/2002 0:00	19 - 19	AROCLOR-1260	40	U	UG/KG	317385.05	890931.42
00010	SO	NCBC10S15	NCBC10S1505	1/8/2002 0:00	5 - 5	AROCLOR-1260	11	J	UG/KG	317385.05	890931.42
00010	SO	NCBC10S16	NCBC10S1610	1/8/2002 0:00	10 - 10	AROCLOR-1260	38	U	UG/KG	317384.05	890962.83
00010	SO	NCBC10S16	NCBC10S1605	1/8/2002 0:00	5 - 5	AROCLOR-1260	1800		UG/KG	317384.05	890962.83
00010	SO	NCBC10S16	NCBC10S1620	1/8/2002 0:00	20 - 20	AROCLOR-1260	41	U	UG/KG	317384.05	890962.83
00010	SO	NCBC10S17	NCBC10S1711	1/12/2002 0:00	11 - 11	AROCLOR-1260	40	U	UG/KG	317398.89	890976.88
00010	SO	NCBC10S17	NCBC10S1702	1/12/2002 0:00	2 - 2	AROCLOR-1260	13	J	UG/KG	317398.89	890976.88
00010	SO	NCBC10S17	NCBC10S1720	1/12/2002 0:00	20 - 20	AROCLOR-1260	46	U	UG/KG	317398.89	890976.88
00010	SO	NCBC10S18	NCBC10S1805	1/12/2002 0:00	5 - 5	AROCLOR-1260	38	U	UG/KG	317367.99	890874.43
00010	SO	NCBC10S18	NCBC10S1810	1/12/2002 0:00	10 - 10	AROCLOR-1260	41	U	UG/KG	317367.99	890874.43
00010	SO	NCBC10S18	NCBC10S1810-AV(	1/12/2002 0:00	10 - 10	AROCLOR-1260	41.5	U	UG/KG	317367.99	890874.43
00010	SO	NCBC10S18	NCBC10S1810-D	1/12/2002 0:00	10 - 10	AROCLOR-1260	42	U	UG/KG	317367.99	890874.43
00010	SO	NCBC10S18	NCBC10S1823	1/12/2002 0:00	23 - 23	AROCLOR-1260	42	U	UG/KG	317367.99	890874.43
00010	SO	NCBC10S19	NCBC10S1905	2/12/2002 0:00	5 - 5	AROCLOR-1260	39	U	UG/KG	317372.2684	890940.1134
00010	SO	NCBC10S20	NCBC10S2005	2/12/2002 0:00	5 - 5	AROCLOR-1260	15	J	UG/KG	317374.0928	890965.2287
00010	SO	NCBC10S21	NCBC10S2105	2/12/2002 0:00	5 - 5	AROCLOR-1260	37	U	UG/KG	317384.1104	890977.7104
00010	SO	NCBC10S24	DP1024S01	12/16/2003 0:00	6 - 7	AROCLOR-1260	20	U	UG/KG	317388.1809	890923.601
00010	SO	NCBC10S25	DP1025S01	12/16/2003 0:00	7 - 8	AROCLOR-1260	21	U	UG/KG	317413.1809	890934.601
00010	SO	NCBC10S26	DP1026S01	12/16/2003 0:00	18 - 19	AROCLOR-1260	14	J	UG/KG	317388.1809	890941.601
00010	SO	NCBC10S27	DP1027S01	12/16/2003 0:00	6 - 7	AROCLOR-1260	20	UJ	UG/KG	317388.1809	890950.601
00010	SO	NCBC10S28	DP1028S01	12/16/2003 0:00	6 - 7	AROCLOR-1260	21	U	UG/KG	317409.1809	890956.601
00010	SO	NCBC10S29	DP1029S01	12/16/2003 0:00	6 - 7	AROCLOR-1260	20	U	UG/KG	317424.1809	890932.601
00010	SO	NCBC10S29	DP1029S01-AVG	12/16/2003 0:00	6 - 7	AROCLOR-1260	20	U	UG/KG	317424.1809	890932.601
00010	SO	NCBC10S29	DP1029S01-D	12/16/2003 0:00	6 - 7	AROCLOR-1260	20	U	UG/KG	317424.1809	890932.601

CLIENT: NCBC GULFPORT			JOB NUMBER: 112GN1831 0000.PP0110100
SUBJECT: SITE 10 - PARADE FIELD DITCH MASS CALCULATION			
BASED ON:			DRAWING NUMBER:
BY: JJB Date: 12-24-04	CHECKED BY: JRW Date: 1-14-05		APPROVED BY: DATE:

OBJECTIVE:

To calculate the mass of PCBs that will be excavated under Alternative 4 (Surface Water Controls, Excavation, Dewatering, Off-Site Treatment and Disposal of Excavated Soil) for the Feasibility Study for Site 10 - Parade Field Ditch at the Naval Construction Battalion Center in Gulfport, Mississippi.

APPROACH:

1. Evaluate the analytical data to determine the sample locations that exceed the Aroclor-1260 PRG of 1,000 µg/kg.
2. Determine the average concentration of all the samples.
3. Determine the mass of PCBs assuming the type of soil to be excavated is a brown sand to sandy clay with a density of 155 lbm/cf.

CALCULATIONS

1. Sample Locations That Exceed the PRG

Location	Depth (ft bgs)	Concentration (µg/kg)
NCBC10S04	1	6,000
NCBC10S05	2	5,200
NCBC10S06	2	83,000
NCBC10S06	8	19,000
NCBC10S16	5	1,800

2. Determine the Average Aroclor-1260 Concentration

Average Concentration = 23,000 µg/kg

3. Determine the Mass of PCBs

Type of Soil = Brown Sand to Sandy Clay
Density = 115 lbm/cf

Soil Volume = 449 cy
= 12,123 cf

Mass of Soil = 1,394,145 lbm
= 632,384 kg

Mass of PCBs = 1.45E+10 mg
= 33.39 lbs

APPENDIX G

COST ESTIMATE

Alternative 2

Institutional Controls and Monitoring

CLIENT: NCBC GULFPORT		JOB NUMBER: 112GN1831 0000.PP0110100	
SUBJECT: SITE 10 - PARADE FIELD DITCH ALTERNATIVE 2			
BASED ON:		DRAWING NUMBER:	
BY: JLM Date: 12-8-04	CHECKED BY: JJB Date: 1/17/05	APPROVED BY:	DATE:

OBJECTIVE:

To provide support for the quantities used in the Naval Construction Battalion Center Gulfport Site 10 – Parade Field Ditch Cost Estimate for Alternative 2 of the Feasibility Study Report.

CALCULATIONS:

This alternative consists of restricting access to soil with concentrations of Aroclor 1260 greater than 1,000 mg/kg by expanding fencing around the site. The area of expansion can be found in Figure 10-1. The total length of fence required is as follows:

Length of Fence = 184 ft

Privacy slats would be placed in the fence similar to the existing fence.

Area of Privace Slats = 1,472 sf

Signs would be posted every 100 ft to warn against unauthorized digging activities.

Number of Signs = 2 ft

A total of four surface water and four sediment samples will be collected annually for a period of 30 years.

NAVAL CONSTRUCTION BATTALION CENTER
GULFPORT, MISSISSIPPI
FEASIBILITY STUDY
ALTERNATIVE 2: INSTITUTIONAL CONTROLS AND MONITORING
CAPITAL COST

Item	Quantity	Unit	Unit Cost Subcontract	Unit Cost Material	Unit Cost Labor	Unit Cost Equipment	Extended Cost Subcontract	Extended Cost Material	Extended Cost Labor	Extended Cost Equipment	Subtotal
1 PROJECT PLANNING											
1.1 Prepare Documents & Plans Including Permits	40	hours			$25.00		$0	$0	$1,000	$0	$1,000
2 INSTITUTIONAL CONTROLS											
2.1 Chain Link Fence	184	lf		$22.00	$4.97	$2.88	$0	$4,048	$914	$530	$5,492
2.2 Privacy Slats	1,472	sf		$1.07	$0.42		$0	$1,575	$618	$0	$2,193
2.3 Warning Signs	2	ea		$45.85	$17.27	$9.99	$0	$92	$35	$20	$146
Subtotal							0	$5,715	$2,567	$550	$8,832
Local Area Adjustments							100.0%	105.4%	86.4%	86.4%	
							$0	$6,023	$2,218	$475	$8,717
Overhead on Labor Cost @ 30%									$665		$665
G & A on Labor Cost @ 10%									$222		$222
G & A on Material Cost @ 10%								$602			$602
G & A on Subcontract Cost @ 10%							$0				$0
G & A on Equipment Cost @ 10%										$48	$48
Total Direct Cost							$0	$6,626	$3,105	$523	$10,254
Indirects on Total Direct Cost @ 35%											$3,589
Profit on Total Direct Cost @ 10%											$1,025
Subtotal											$14,868
Health & Safety Monitoring @ 1%											$149
Total Field Cost											$15,016
Contingency on Total Field Costs @ 20%											$3,003
Engineering on Total Field Cost @ 5%											$751
TOTAL COST											**$18,771**

NAVAL CONSTRUCTION BATTALION CENTER
GULFPORT, MISSISSIPPI
FEASIBILITY STUDY
ALTERNATIVE 2: INSTITUTIONAL CONTROLS AND MONITORING
ANNUAL COST

Item	Item Cost Years 1 - 30	Item Cost Every 5 Years	Notes
Sampling	$400		Collect surface water and sediment samples.
Analysis	$1,500		Analyze four surface water, four sediment, and two QA/QC samples for PCBs.
Report	$2,000		Obtain lab, prepare sampling plan, document sampling events and results.
Site Review		$15,000	Review of documents and data evaluation/recommendations.
TOTALS	**$3,900**	**$15,000**	

NAVAL CONSTRUCTION BATTALION CENTER
GULFPORT, MISSISSIPPI
FEASIBILITY STUDY
ALTERNATIVE 2: INSTITUTIONAL CONTROLS AND MONITORING
PRESENT WORTH ANALYSIS

Year	Capital Cost	Annual Cost	Annual Discount Rate at 7%	Present Worth
0	$18,771		1.000	$18,771
1		$3,900	0.935	$3,647
2		$3,900	0.873	$3,405
3		$3,900	0.816	$3,182
4		$3,900	0.763	$2,976
5		$18,900	0.713	$13,476
6		$3,900	0.666	$2,597
7		$3,900	0.623	$2,430
8		$3,900	0.582	$2,270
9		$3,900	0.544	$2,122
10		$18,900	0.508	$9,601
11		$3,900	0.475	$1,853
12		$3,900	0.444	$1,732
13		$3,900	0.415	$1,619
14		$3,900	0.388	$1,513
15		$18,900	0.362	$6,842
16		$3,900	0.339	$1,322
17		$3,900	0.317	$1,236
18		$3,900	0.296	$1,154
19		$3,900	0.277	$1,080
20		$18,900	0.258	$4,876
21		$3,900	0.242	$944
22		$3,900	0.226	$881
23		$3,900	0.211	$823
24		$3,900	0.197	$768
25		$18,900	0.184	$3,478
26		$3,900	0.172	$671
27		$3,900	0.161	$628
28		$3,900	0.150	$585
29		$3,900	0.141	$550
30		$18,900	0.131	$2,476
			TOTAL PRESENT WORTH	**$99,506**

Alternative 3

Surface Water Controls, Excavation, Surface Protection, Institutional Controls, and Monitoring

CLIENT:	NCBC GULFPORT	JOB NUMBER:	112GN1831 0000.PP0110100
SUBJECT:	SITE 10 - PARADE FIELD DITCH ALTERNATIVE 3		
BASED ON:		DRAWING NUMBER:	
BY: JLM Date: 12-8-04	CHECKED BY: JJB Date: 1/17/05	APPROVED BY:	DATE:

OBJECTIVE:
To provide support for the quantities used in the Naval Construction Battalion Center Gulfport Site 10 – Parade Field Ditch Cost Estimate for Alternative 3 of the Feasibility Study Report.

CALCULATIONS:
This alternative consists of surface water controls, excavation of soil to a depth of 9 inches, off-site non-hazardous waste disposal, surface protection, and institutional controls and monitoring. A portion of the excavated area would be lined with 9 inches of concrete and/or rip rap while another portion of the excavated area would be paved.

A survey will be performed before construction begins and after construction is finished to record the site characteristics. The final area on the cost estimate page is twice the original area since two surveys will be performed.

Construction Survey = Area of Excavation + 20%
Areas of Excavation = 1,602 sf
= 1,922.4 sf
= 0.05 acres

The existing chain link fence will be removed and disposed to allow for clearing and excavation of the area.

Length of Fence to Remove = 82 ft

Brush located within the excavation area will be cleared. Refer to the Volume Calculation for the area of excavation.

Area of Brush to Clear = Area of Excavation
Area of Excavation = 1,602 sf
= 0.04 ac

Marine-grade PVC sheet piling will be placed around the excavation area. This will allow for dewatering of the excavation area.

Perimeter of Sheet Piling = 224 ft
Depth of Sheet Piling = 2 ft
Area of Sheet Piling = 448 sf

A backhoe-loader will be rented to excavate the soil. The volume of soil to excavate and dispose off-site was calculated in the Volume Calculation. It is assumed that excavation will take place in 1 day. An additional day of the backhoe was added to account for the demolition of the pedestrian bridge.

Volume of Soil to Excavate = 45 cy
Days to Excavate = 1 day
Additional Days for Demolition = 1 day

CLIENT:	NCBC GULFPORT	JOB NUMBER:	112GN1831 0000.PP0110100
SUBJECT:	SITE 10 - PARADE FIELD DITCH ALTERNATIVE 3		
BASED ON:		DRAWING NUMBER:	
BY: JLM Date: 12-8-04	CHECKED BY: JAB Date: 1/17/05	APPROVED BY:	DATE:

Waste Characterization Testing (1 per 1,000 cy) = 1 sample

The demolition of the pedestrian bridge will result in the following volume for transportation and disposal of nonhazardous waste:

Length of Bridge =	25	ft
Width of Bridge =	5	ft
Thickness of Wood =	0.25	ft
Volume of Bridge =	31	cf
=	2	cy

Riprap will be placed within the drainage channel to a depth of 9 inches. The area of riprap placement can be found on Figure 10-2.

Area of Riprap Placement =	1,360	sf
Volume of Riprap =	38	cy

Pavement will be placed as shown on Figure 10-2.

Area of Pavement =	242	sf
=	27	sy

The pedestrian bridge spanning the ditch will be replaced.

Length of Bridge =	25	ft
Width of Bridge =	5	ft
Area of Bridge =	125	sf

Signs would be posted every 100 ft to warn against unauthorized digging activities.

Number of Signs =	2	ft

A total of two surface water and two sediment samples will be collected annually for a period of 30 years.

NAVAL CONSTRUCTION BATTALION CENTER
GULFPORT, MISSISSIPPI
FEASIBILITY STUDY
ALTERNATIVE 3: SURFACE WATER CONTROLS, EXCAVATION, SURFACE PROTECTION, INSTITUTIONAL CONTROLS AND MONITORING
CAPITAL COST

	Item	Quantity	Unit	Unit Cost Subcontract	Unit Cost Material	Unit Cost Labor	Unit Cost Equipment	Extended Cost Subcontract	Extended Cost Material	Extended Cost Labor	Extended Cost Equipment	Subtotal
1	**PROJECT PLANNING**											
1.1	Prepare Documents & Plans Including Permits	40	hours			$25.00		$0	$0	$1,000	$0	$1,000
2	**MOBILIZATION/DEMOBILIZATION AND FIELD SUPPORT**											
2.1	Construction Survey	0.1	ac	$1,998.00				$200	$0	$0	$0	$200
2.2	Equipment Mobilization/Demobilization	2	ea			$141.00	$336.00	$0	$0	$282	$672	$954
3	**DECONTAMINATION**											
3.1	Decontamination Services	0.1	mo		$210.00	$1,800.00	$315.00	$0	$21	$180	$32	$233
3.2	Decon Water	250	gal		$0.20			$0	$50	$0	$0	$50
3.3	Decon Water Storage Tank, 550 gallon	0.1	mo				$300.00	$0	$0	$0	$30	$30
3.4	Disposal of Decon Waste (liquid & solid)	0.1	mo	$900.00				$90	$0	$0	$0	$90
5	**EXCAVATE CONTAMINATED SOIL**											
5.1	Fence Removal	82	lf			$1.51	$0.47	$0	$0	$124	$39	$162
5.2	Clearing Brush	0.04	ac			$179.00	$148.00	$0	$0	$7	$6	$13
5.3	Sheet Piling	448	sf		$2.04	$1.92	$2.13	$0	$914	$860	$954	$2,728
5.4	Trash Pump With Hose	1	day				$69.09	$0	$0	$0	$69	$69
5.5	Backhoe-Loader, 1-1/4 cy Capacity	2	day			$269.20	$189.99	$0	$0	$538	$380	$918
5.6	Laborer	2	day			$208.00		$0	$0	$416	$0	$416
6	**DISPOSAL**											
6.1	Waste Characterization Testing (PCB, TCLP Metals)	1	ea	$350.00	$5.00	$20.00	$10.00	$350	$5	$20	$10	$385
6.2	Off-Site Transportation & Disposal, Nonhazardous (Soil)	45	cy	$52.50				$2,363	$0	$0	$0	$2,363
6.3	Off-Site Transportation & Disposal, Nonhazardous (Bridge	2	cy	$52.50				$105	$0	$0	$0	$105
7	**SURFACE PROTECTION**											
7.1	Rip Rap	38	cy		$19.15	$8.25	$7.50	$0	$728	$314	$285	$1,326
7.2	Pavement (6" Stone, 2" Binder Course, 1" Surface Course	27	sy	$11.01				$297	$0	$0	$0	$297
8	**SITE RESTORATION**											
8.1	Pedestrian Bridge	125	sf		$38.85	$4.95	$1.92	$0	$4,856	$619	$240	$5,715
8.2	Warning Signs	2	ea		$45.85	$17.27	$9.99	$0	$92	$35	$20	$146
9	**MISCELLANEOUS**											
9.1	Construction Oversight (1p * 3 days)	3	day			$200.00		$0	$0	$600	$0	$600
9.2	Post-Construction Documents	40	hr			$25.00		$0	$0	$1,000	$0	$1,000
	Subtotal							3404.57	$6,666	$5,994	$2,736	$18,801
	Local Area Adjustments							100.0%	105.4%	86.4%	86.4%	
								$3,405	$7,026	$5,179	$2,364	$17,973
	Overhead on Labor Cost @ 30%									$1,554		$1,554
	G & A on Labor Cost @ 10%									$518		$518
	G & A on Material Cost @ 10%								$703			$703
	G & A on Subcontract Cost @ 10%							$340				$340
	G & A on Equipment Cost @ 10%										$236	$236
	Total Direct Cost							$3,745	$7,728	$7,251	$2,601	$21,324
	Indirects on Total Direct Cost @ 35%			(Total Direct Cost Minus Transportation and Disposal Costs)								$6,568
	Profit on Total Direct Cost @ 10%											$2,132
	Subtotal											$30,025

NAVAL CONSTRUCTION BATTALION CENTER
GULFPORT, MISSISSIPPI
FEASIBILITY STUDY
ALTERNATIVE 3: SURFACE WATER CONTROLS, EXCAVATION, SURFACE PROTECTION, INSTITUTIONAL CONTROLS AND MONITORING
CAPITAL COST

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
Health & Safety Monitoring @ 3%											$901
Total Field Cost											$30,926
Contingency on Total Field Costs @ 20%											$6,185
Engineering on Total Field Cost @ 5%			(Total Field Cost Minus Transportation and Disposal Costs)								$1,418
TOTAL COST											**$38,530**

NAVAL CONSTRUCTION BATTALION CENTER
GULFPORT, MISSISSIPPI
FEASIBILITY STUDY
ALTERNATIVE 3: SURFACE WATER CONTROLS, EXCAVATION, SURFACE PROTECTION, INSTITUTIONAL CONTROLS AND MONITORING
ANNUAL COST

Item	Item Cost Years 1 - 30	Item Cost Every 5 Years	Notes
Sampling	$200		Collect surface water and sediment samples.
Analysis/Soil	$900		Analyze two surface water, two sediment, and two QA/QC samples for PCBs.
Report	$2,000		Obtain lab, prepare sampling plan, document sampling events and results.
Site Review		$15,000	Review of documents and data evaluation/recommendations.
TOTALS	**$3,100**	**$15,000**	

NAVAL CONSTRUCTION BATTALION CENTER
GULFPORT, MISSISSIPPI
FEASIBILITY STUDY
ALTERNATIVE 3: SURFACE WATER CONTROLS, EXCAVATION, SURFACE PROTECTION, INSTITUTIONAL CONTROLS AND MONITORING
PRESENT WORTH ANALYSIS

Year	Capital Cost	Annual Cost	Annual Discount Rate at 7%	Present Worth
0	$38,530		1.000	$38,530
1		$3,100	0.935	$2,899
2		$3,100	0.873	$2,706
3		$3,100	0.816	$2,530
4		$3,100	0.763	$2,365
5		$18,100	0.713	$12,905
6		$3,100	0.666	$2,065
7		$3,100	0.623	$1,931
8		$3,100	0.582	$1,804
9		$3,100	0.544	$1,686
10		$18,100	0.508	$9,195
11		$3,100	0.475	$1,473
12		$3,100	0.444	$1,376
13		$3,100	0.415	$1,287
14		$3,100	0.388	$1,203
15		$18,100	0.362	$6,552
16		$3,100	0.339	$1,051
17		$3,100	0.317	$983
18		$3,100	0.296	$918
19		$3,100	0.277	$859
20		$18,100	0.258	$4,670
21		$3,100	0.242	$750
22		$3,100	0.226	$701
23		$3,100	0.211	$654
24		$3,100	0.197	$611
25		$18,100	0.184	$3,330
26		$3,100	0.172	$533
27		$3,100	0.161	$499
28		$3,100	0.150	$465
29		$3,100	0.141	$437
30		$18,100	0.131	$2,371
			TOTAL PRESENT WORTH	**$109,337**

Alternative 4

Surface Water Controls, Excavation, Dewatering, Off-site Treatment and Disposal of Excavated Soil

CLIENT:	NCBC GULFPORT	JOB NUMBER:	112GN1831 0000.PP0110100
SUBJECT:	SITE 10 - PARADE FIELD DITCH ALTERNATIVE 4		
BASED ON:		DRAWING NUMBER:	
BY: JLM Date: 12-8-04	CHECKED BY: JJB Date: 1/17/05	APPROVED BY:	DATE:

OBJECTIVE:
To provide support for the quantities used in the Naval Construction Battalion Center Gulfport Site 10 – Parade Field Ditch Cost Estimate for Alternative 4 of the Feasibility Study Report.

CALCULATIONS:
This alternative consists of surface water controls, excavation of soil, dewatering, and off-site treatment and disposal of excavated soil. Excavated areas will be backfilled with common fill, covered with topsoil, and revegetated.

A survey will be performed before construction begins and after construction is finished to record the site characteristics. The final area on the cost estimate page is twice the original area since two surveys will be performed.

Construction Survey = Area of Excavation + 20%
Areas of Excavation = 1,514 sf
= 1,816.8 sf
= 0.05 acres

The existing chain link fence will be removed and disposed to allow for clearing and excavation of the area.

Length of Fence to Remove = 82 ft

Brush located within the excavation area will be cleared. Refer to the Volume Calculation for the area of excavation.

Area of Brush to Clear = Area of Excavation
Area of Excavation = 1,514 sf
= 0.04 ac

Marine-grade PVC sheet piling will be placed around the perimeter of the excavation area. This will allow for dewatering of the excavation area.

Perimeter of Sheet Piling = 158 ft
Depth of Sheet Piling = 7.5 ft
Area of Sheet Piling = 1,185 sf

Perimeter of Sheet Piling = 30 ft
Depth of Sheet Piling = 15 ft
Area of Sheet Piling = 450 sf

Perimeter of Sheet Piling = 36 ft
Depth of Sheet Piling = 8.5 ft
Area of Sheet Piling = 306 sf

CLIENT: NCBC GULFPORT		JOB NUMBER: 112GN1831 0000.PP0110100	
SUBJECT: SITE 10 - PARADE FIELD DITCH ALTERNATIVE 4			
BASED ON:		DRAWING NUMBER:	
BY: JLM Date: 12-8-04	CHECKED BY: JJB Date: 1/17/05	APPROVED BY:	DATE:

Total Area of Sheet Piling = 1,941 sf

A hydraulic excavator will be rented to excavate the soil. The volume of soil to excavate and dispose off-site was calculated in the Volume Calculation.

Volume of Soil to Excavate = 449 cy

Assumed Volume of Hazardous Waste = 100 cy
Volume of Nonhazardous Waste = 349 cy

Collect waste characterization samples to determine the type of disposal (hazardous or nonhazardous). Collect verification samples from the sidewalls and floor of excavation. Assume five samples plus three quality control samples.

Waste Characterization Testing (1 per type of waste) = 2 samples
Verification Samples = 8 samples

The number of hauls needed to transport the hazardous waste to dipsoal was calculated by assuming a conversion of 1.5 ton/cy and that approximately 22 tons will consist of one haul.

Volume of Hazardous Waste = 100 cy
= 150 ton
Volume Per Haul = 22 ton
Number of Hauls = 7 haul

The demolition of the pedestrian bridge will result in the following volume for transportation and disposal of nonhazardous waste:

Length of Bridge = 25 ft
Width of Bridge = 5 ft
Thickness of Wood = 0.25 ft
Volume of Bridge = 31 cf
= 2 cy

Topsoil will be placed along the top 6 inches of the drainage channel.

Area of Excavation = 1,514 sf
Volume of Topsoil = Area of Excavation x 6 inches
= 757 cf
= 28 cy

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BY: JLM Date: 12-8-04	CHECKED BY: JJD Date: 1/17/05	APPROVED BY:	DATE:

Clean fill will be placed within the excavated drainage channel to a depth of 6 inches below pre-excavation

Volume of Excavation =	449	cy
Volume of Topsoil =	28	cy
Volume of Clean Fill =	421	cy

The area to fine grade and seed is equal to the excavation area plus 20% to account for staging areas.

Seed Area =	Excavation Area + 20%	
Areas of Excavation =	1,514	sf
Seed Area =	1,817	sf
=	202	sy

Time of Excavation

Total Excavation Volume =	449	cy

Assume 16 cy per truck.

Number of Truck Loads =	28	truckloads
Number of Truck Loads/Day =	16	truckloads/day
Number of Days =	2	days
Additional Days for Weather =	1	day
Additional Days for Demolition =	1	day
Total Nubmer of Days =	4	days

An additional day of the excavator was added to account for the demolition of the pedestrian bridge.

Time of Backfill

Volume of Clean Fill =	421	cy
Volume of Topsoil =	28	cy
Total Backfill Volume =	449	cy

CLIENT: NCBC GULFPORT			JOB NUMBER: 112GN1831 0000.PP0110100
SUBJECT: SITE 10 - PARADE FIELD DITCH ALTERNATIVE 4			
BASED ON:			DRAWING NUMBER:
BY: JLM Date: 12-8-04	CHECKED BY: JJB Date: 1/17/05		APPROVED BY: DATE:

Assume 16 cy per truck.

Number of Truck Loads =	28	truckloads
Number of Truck Loads/Day =	40	truckloads/day
Number of Days =	1	days
Additional Days for Weather =	1	days
Total Number of Days =	2	days

Approximate Construction Schedule

Activity	Days	
Mobilization	2	
Site Setup	2	
Excavate & Dispose	4	
Backfill and Seed	2	
Demobilization	2	
	12	Days or
	0.6	Months

Institutional controls and 5-year reviews will not be required.

NAVAL CONSTRUCTION BATTALION CENTER
GULFPORT, MISSISSIPPI
FEASIBILITY STUDY
ALTERNATIVE 4: SURFACE WATER CONTROLS, EXCAVATION, DEWATERING, OFF-SITE TRANSPORTATION AND DISPOSAL OF EXCAVATED SOIL
CAPITAL COST

	Item	Quantity	Unit	Unit Cost Subcontract	Unit Cost Material	Unit Cost Labor	Unit Cost Equipment	Extended Cost Subcontract	Extended Cost Material	Extended Cost Labor	Extended Cost Equipment	Subtotal
1	**PROJECT PLANNING**											
1.1	Prepare Documents & Plans Including Permits	100	hours			$25.00		$0	$0	$2,500	$0	$2,500
2	**MOBILIZATION/DEMOBILIZATION AND FIELD SUPPORT**											
2.1	Mobilization Field Support and Equipment, Utilities, Surve	1.0	ls	$1,699.80	$196.20	$282.00	$1,063.80	$1,700	$196	$282	$1,064	$3,242
3	**DECONTAMINATION**											
3.1	Equipment Decon Pad	1	ls		$5,800.00	$6,650.00	$700.00	$0	$5,800	$6,650	$700	$13,150
3.2	Decontamination Services	0.25	mo		$210.00	$1,800.00	$315.00	$0	$53	$450	$79	$581
3.3	Decon Water	250	gal		$0.20			$0	$50	$0	$0	$50
3.4	Decon Water Storage Tank, 6,000 gallon	0.25	mo				$635.00	$0	$0	$0	$159	$159
3.5	Clean Water Storage Tank, 4,000 gallon	0.25	mo				$570.00	$0	$0	$0	$143	$143
3.6	Disposal of Decon Waste (liquid & solid)	0.25	mo	$900.00				$225	$0	$0	$0	$225
4	**EXCAVATE CONTAMINATED SOIL**											
4.1	Fence Removal	82	lf			$1.51	$0.47	$0	$0	$124	$39	$162
4.2	Clearing Brush	0.04	ac			$179.00	$148.00	$0	$0	$7	$6	$13
4.3	Sheet Piling	1,941	sf		$2.04	$1.92	$2.13	$0	$3,960	$3,727	$4,134	$11,821
4.4	Trash Pump	3	day				$69.09	$0	$0	$0	$207	$207
4.5	Excavator, Crawler Mounted, 1 1/2 cy	3	day			$269.20	$554.64	$0	$0	$808	$1,664	$2,472
4.6	Laborer	3	day			$208.00		$0	$0	$624	$0	$624
5	**DISPOSAL**											
5.1	Waste Characterization Testing (PCB, TCLP Metals)	2	ea	$350.00	$5.00	$20.00	$10.00	$700	$10	$40	$20	$770
5.2	Verification Sampling (PCB)	8	ea	$175.00	$20.00	$50.00	$20.00	$1,400	$160	$400	$160	$2,120
5.3	Off-Site Transportation, Hazardous	7	hauls	$690.00				$4,830	$0	$0	$0	$4,830
5.4	Off-Site Disposal, Hazardous	100	cy	$220.50				$22,050	$0	$0	$0	$22,050
5.5	Off-Site Transportation & Disposal, Nonhazardous (Soil)	349	cy	$52.50				$18,323	$0	$0	$0	$18,323
5.6	Off-Site Transportation & Disposal, Nonhazardous (Bridge	2	cy	$52.50				$105	$0	$0	$0	$105
6	**SITE RESTORATION**											
6.1	Import Clean Backfill	421	cy		$7.15			$0	$3,010	$0	$0	$3,010
6.2	Excavator, Crawler Mounted, 1 1/2 cy	2	day			$269.20	$554.64	$0	$0	$538	$1,109	$1,648
6.3	Import Topsoil (6" Thick)	28	cy		$18.23			$0	$510	$0	$0	$510
6.4	Place/Grade Topsoil	28	cy			$1.87	$1.18	$0	$0	$52	$33	$85
6.5	Fine Grading & Seeding	202	sy		$0.34	$1.31	$0.21	$0	$69	$265	$42	$376
6.6	Pedestrian Bridge	125	sf		$38.85	$4.95	$1.92	$0	$4,856	$619	$240	$5,715
7	**MISCELLANEOUS**											
7.1	Construction Oversight (1 p * 12 days)	12	day			$200.00		$0	$0	$2,400	$0	$2,400
7.2	Post-Construction Documents	100	hr			$25.00		$0	$0	$2,500	$0	$2,500
	Subtotal							$49,332	$18,674	$21,985	$9,799	$99,790
	Local Area Adjustments							100.0%	105.4%	86.4%	86.4%	
								$49,332	$19,682	$18,995	$8,466	$96,476
	Overhead on Labor Cost @ 30%									$5,699		$5,699
	G & A on Labor Cost @ 10%									$1,900		$1,900
	G & A on Material Cost @ 10%								$1,968			$1,968
	G & A on Subcontract Cost @ 10%							$4,933				$4,933
	G & A on Equipment Cost @ 10%										$847	$847
	Total Direct Cost							$54,266	$21,650	$26,594	$9,313	$111,822
	Indirects on Total Direct Cost @ 35%			(Total Direct Cost Minus Transportation and Disposal Costs)								$23,238
	Profit on Total Direct Cost @ 10%											$11,182
	Subtotal											$146,242
	Health & Safety Monitoring @ 3%											$4,387

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CAPITAL COST

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
Total Field Cost											$150,630
Contingency on Total Field Costs @ 20%											$30,126
Engineering on Total Field Cost @ 5%			(Total Field Cost Minus Transportation and Disposal Costs)								$5,260
TOTAL COST											**$186,016**