

US Army Corps of Engineers

**Toxic and Hazardous
Materials Agency**

PRELIMINARY SITE INSPECTION REPORT FOR FORT STEWART MILITARY RESERVATION

APPENDICES

FINAL

September 1992

**Prepared For:
U.S. Army Corps of Engineers
Toxic and Hazardous Materials Agency
Aberdeen Proving Ground, MD**

Contract No. DAAA15-90-D-0001, Task 9

**Prepared By:
Advanced Sciences, Inc.
1250 Brass Mill Road
Belcamp, MD 21017**

APPENDIX A
SITE INSPECTION REPORT

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SITE INSPECTION REPORT

Basic Information

Facility Name: Fort Stewart

EPA ID# 37-26-1382-88

City Hinesville County Bryan State GA

Facility Commanding Officer

or Chief Executive Officer Major General Barry R. McCaffrey

Address: Commanding General Headquarters
24th Infantry Division (M)
Fort Stewart, GA 31314-5000

Phone # (912) 767 - 1110

Facility Environmental

Officer or Coordinator Thomas Houston

Address: AFZP-DEV
24th Infantry Division (M)
Fort Stewart, GA 31314-5000

Phone # (912) 767 - 2010

Facility Environmental

Command or Agency Contact LTC Bungard, Directorate of Engineering and Housing

Address: AFZP-DE
24th Infantry Division (M)
Fort Stewart, GA 31314-5000

Phone # (912) 767 - 8356

Facility Major Command or

Headquarters Contact

Address: _____

Phone # () -

Facility Primary Mission or Purpose:

The primary mission of Fort Stewart is to train and maintain a mechanized division.

Secondary Mission or Purpose:

Provide training facilities for U.S. Army Reserve and Army National Guard units.

Hazardous Waste Types Generated
by Facility Operations:

See Appendix E.

Other Hazardous Substances
Present on Facility:

See Appendix E.

CERCLA 103C

Submitted? (Date) _____

RCRA PART A

Submitted? (Date) _____

RCRA PART B

Submitted? (Date) 5/15/85
ISSUED 8/17/87

Additional Hazardous Waste Data (check where applicable):

☒ Generator

☐ Small Quantity Generator

☒ Interim Status

☐ TSD Facility

☐ Corrective Action Order

☐ Violations

Other Permits: See Attachment

RCRA Corrective Actions:

CERCLA Remedial Actions:

None

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<u>X</u>	Urban	<u>X</u>	Suburban	<u>X</u>	Agricultural	<u>X</u>	Recreational
	Industrial	<u>X</u>	Commercial	<u>X</u>	Residential		Institutional

Name: Floridian Aquifer

Number of Connections: 31 (9 in use, 20 unused, 2 on standby)

Source Type: Groundwater X Surface Water

Intake, _____ Well, or _____ Well Field

Distance (feet) from Nearest Facility Boundary: _____

Land Uses With 4-Miles of Facility Boundary: Irrigation of Crop, Livestock

Intake, X Well, or _____ Well Field

Distance (feet) from Nearest Facility Boundary: _____

All Municipal Systems Serving Groundwater Within 4 miles or Surface Water Within 15 miles of Facility Boundary:

Name: Cities of Pembroke, Richmond Hills, Hinesville, Glennville, and Daisy

Number of Connections: _____

Source Type: Groundwater X Surface Water

1 mile = 5280'
1609 meters
1760 yds

Intake, ☒ Well, or Well Field

Distance (feet) from Nearest Facility Boundary: 4640, 4640, 1320, 1760, 7040 respectively

Name: _____

Number of Connections: _____

Source Type: Groundwater _____ Surface Water _____

Intake	Well, or	Well Field
--------	----------	------------

Distance (feet) from Nearest Facility Boundary: _____

Number of Private Potable Groundwater Wells
Within 4 miles of Facility Boundary:

Geologic and Hydrogeologic Information

Local Bedrock Geophysical Features:

_____ Karst _____ Fractures _____ Solution Pits _____ Faults

Predominant Local Unsaturated Zone Soil Type:

_____ Sands _____ Silts _____ Clays

Local Average Depth (feet) to Water Table: 2-10

Local Aquifers in Descending Order:

Water Table Aquifer - Name Surficial
Depth (feet) Below Land Surface 2-10
Thickness (feet) 140

Aquifer - Name Upper Floridian
Depth (feet) Below Land Surface _____
Thickness (feet) 200-240

Aquifer - Name Lower Floridian
Depth (feet) Below Land Surface 450
Thickness (feet) 400

Aquifer - Name _____
Depth (feet) Below Land Surface _____
Thickness (feet) _____

Local Geologic Formations in Descending Order:

Unit Name Surficial Sediments
Depth (feet) Below Land Surface zero
Thickness (feet) 15

Unit Name Pleistocene
Depth (feet) Below Land Surface 15
Thickness (feet) 30

Unit Name Pliocene
Depth (feet) Below Land Surface _____
Thickness (feet) _____

Unit Name Upper Miocene
Depth (feet) Below Land Surface _____
Thickness (feet) _____

Source: Huddleton, 1989
Clark, Hacke & Peck, 1990

Distance (feet) to Private Potable Groundwater Well
Closest to Facility Boundary: _____

Number of Houses Served by Private Potable Groundwater
Wells Within 4 miles of Facility Boundary: _____

Estimate Total Population Served by Groundwater
Within 4 miles of Facility Boundary: _____

Estimate Total Population Served by Surface Water
Within 15 miles of Facility Boundary: None

Sensitive Environments on Facility:

☒ Wetlands	☐ Critical Habitat or Area
☒ Endangered or Threatened Species	☐ Fisheries
☒ Commerical, Subsistance, or Recreational Fishing	☐ National Monument or Park

Sensitive Environments Within 1-mile of Facility Boundary:

☒ Wetlands	☐ Critical Habitat or Area
☒ Endangered or Threatened Species	☐ Fisheries
☒ Commerical, Subsistance, or Recreational Fishing	☐ National Monument or Park

Sensitive Environments from 1 mile to 15 miles of Facility Boundary:

☒ Wetlands	☒ Critical Habitat or Area
☒ Endangered or Threatened Species	☒ Fisheries
☒ Commerical, Subsistance, or Recreational Fishing	☒ National Monument or Park

Facility on: _____ 10-year ☒ 100-year _____ 500-year Floodplain

Distance (feet) to Nearest Off-Facility Residence: _____

Number of Workers Living on Facility: 1

Number of Other Residents on Facility: 16599

Number of Workers Working on Facility: military 16 699 / CIVILIAN 3746 / TRAINING 3582 = 24,027

Describe the Facility Access Controls:

Water Use Survey for Individual Residences

Name and address of resident(s)

() _____

Check water source(s) used by resident(s)

1. Drilled well _____ depth (feet) _____ water level (feet) _____
2. Dug well _____ depth (feet) _____ water level (feet) _____
3. Spring _____ Artesian _____ Gravity _____
4. Surface Water _____
5. Public Supply _____
6. Other _____

Check water use(s) and specify water source of each

Drinking _____ Number of users _____ Source _____
Household _____ Number of users _____ Source _____
Irrigation _____ acres _____ crop _____ Source _____
Other _____

Any problems with water? _____

How long have sources been in use? _____

Any monitoring wells on property? _____

Prepared by _____ Date _____

Comments: _____

 Potential Hazardous Waste Site Preliminary Assessment Form	Identification	
	State: GA	CERCLIS Number: GA 9210020872
	CERCLIS Discovery Date: July 1, 1980	

1. General Site Information

Name: Fort Stewart military Reservation		Street Address:			
City: Hinesville	State: GA	Zip Code: 31314-5000	County: Liberty	Co. Code:	Cong. Dist:
Latitude: 31° 51' N. - "	Longitude: 81° 36' W. - "	Approximate Area of Site: 279,270 Acres ____ Square Ft		Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)	

2. Owner/Operator Information

Owner: U.S. Army Forces Command			Operator:		
Street Address: Fort Gillem			Street Address:		
City: Forest Park			City:		
State: GA	Zip Code: 30305-6000	Telephone: (404)	State:	Zip Code:	Telephone: ()
Type of Ownership: ☐ Private ☐ County ☒ Federal Agency ☐ Municipal Name U.S. Army ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian			How Initially Identified: ☐ Citizen Complaint ☐ Federal Program ☐ PA Petition ☐ Incidental ☐ State/Local Program ☐ Not Specified ☐ RCRA/CERCLA Notification ☐ Other _____		

3. Site Evaluator Information

Name of Evaluator: John D. McGowan	Agency/Organization: Advanced Sciences, Inc.	Date Prepared: October 30, 1991
Street Address: 165 Mitchell Road		City: Oak Ridge State: TN
Name of EPA or State Agency Contact: J.C. Meredith		Street Address:
City: Atlanta	State: GA	Telephone: (404) 347-3016

4. Site Disposition (for EPA use only)

Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____	CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other _____ Date: _____	Signature: Name (typed): Position:
--	--	--

**Potential Hazardous Waste Site
Preliminary Assessment Form - Page 2 of 4**

CERCLIS Number:

GA 9210020872

5. General Site Characteristics

Predominant Land Uses Within 1 Mile of Site (check all that apply): ☒ Industrial ☒ Commercial ☒ Residential ☒ Forest/Fields ☒ Agriculture ☐ Mining ☐ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility ☐ Other _____	Site Setting: ☒ Urban ☒ Suburban ☒ Rural	Years of Operation: Beginning Year <u>1940</u> Ending Year <u>Present</u> ☐ Unknown
Type of Site Operations (check all that apply): ☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals (e.g., pesticides, fertilizers) ☐ Miscellaneous Chemical Products (e.g., adhesives, explosives, ink) ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals ☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☒ RCRA ☒ Treatment, Storage, or Disposal ☒ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non- or Late Filer"		Waste Generated: ☒ Onsite ☐ Offsite ☐ Onsite and Offsite Waste Deposition Authorized By: ☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown Waste Accessible to the Public: ☐ Yes ☒ No Distance to Nearest Dwelling, School, or Workplace: _____ Feet

6. Waste Characteristics Information

Source Type:	Source Waste Quantity:	Tier[*]:	General Types of Waste (check all that apply)
(check all that apply)	(include units)		
☒ Landfill	_____	A	☒ Metals
☐ Surface Impoundment	_____	_____	☒ Organics
☒ Drums	_____	_____	☒ Inorganics
☒ Tanks and Non-Drum Containers	_____	_____	☒ Solvents
☐ Chemical Waste Pile	_____	_____	☒ Paints/Pigments
☐ Scrap Metal or Junk Pile	_____	_____	☒ Laboratory/Hospital Waste
☐ Tailings Pile	_____	_____	☐ Radioactive Waste
☒ Trash Pile (open dump)	_____	_____	☒ Construction/Demolition Waste
☐ Land Treatment	_____	_____	
☐ Contaminated Ground Water Plume (unidentified source)	_____	_____	
☐ Contaminated Surface Water/Sediment (unidentified source)	_____	_____	
☒ Contaminated Soil	_____	_____	
☐ Other _____	_____	_____	
☐ No Sources	_____	_____	
			Physical State of Waste as Deposited (check all that apply):
			☒ Solid ☒ Sludge ☐ Powder
			☐ Liquid ☐ Gas
 [*] C = Constituent, W = Wastestream, V = Volume, A = Area			

Potential Hazardous Waste Site Preliminary Assessment Form - Page 3 of 4		CERCLIS Number: GA 9210020872																								
7. Ground Water Pathway																										
Is Ground Water Used for Drinking Water Within 4 Miles: ☒ Yes ☐ No Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☒ Private ☐ None	Is There a Suspected Release to Ground Water: ☒ Yes ☐ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - ¼ Mile _____ > ¼ - ½ Mile _____ > ½ - 1 Mile _____ > 1 - 2 Miles _____ > 2 - 3 Miles _____ > 3 - 4 Miles _____ Total Within 4 Miles _____																								
Depth to Shallowest Aquifer: _____ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area: ☐ Underlies Site ☐ > 0 - 4 Miles ☐ None Within 4 Miles																									
8. Surface Water Pathway																										
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☒ Stream ☒ River ☐ Pond ☐ Lake ☐ Bay ☐ Ocean ☐ Other _____	Shortest Overland Distance From Any Source to Surface Water: _____ Feet _____ Miles																									
Is There a Suspected Release to Surface Water: ☐ Yes ☐ No	Site is Located in: ☐ Annual - 10 yr Floodplain ☒ > 10 yr - 100 yr Floodplain ☐ > 100 yr - 500 yr Floodplain ☐ > 500 yr Floodplain																									
Drinking Water Intakes Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes ☐ No If Yes, Enter Population Served by Primary Target Intakes: _____ People	List All Secondary Target Drinking Water Intakes: <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Name</th> <th style="text-align: left; border-bottom: 1px solid black;">Water Body</th> <th style="text-align: left; border-bottom: 1px solid black;">Flow (cfs)</th> <th style="text-align: left; border-bottom: 1px solid black;">Population Served</th> </tr> </thead> <tbody> <tr><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr> <td colspan="3" style="text-align: right;">Total within 15 Miles</td> <td>_____</td> </tr> </tbody> </table>		Name	Water Body	Flow (cfs)	Population Served	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	Total within 15 Miles			_____
Name	Water Body	Flow (cfs)	Population Served																							
_____	_____	_____	_____																							
_____	_____	_____	_____																							
_____	_____	_____	_____																							
_____	_____	_____	_____																							
Total within 15 Miles			_____																							
Fisheries Located Along the Surface Water Migration Path: ☐ Yes ☐ No Have Primary Target Fisheries Been Identified: ☐ Yes ☐ No	List All Secondary Target Fisheries: <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Water Body/Fishery Name</th> <th style="text-align: left; border-bottom: 1px solid black;">Flow (cfs)</th> </tr> </thead> <tbody> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> </tbody> </table>		Water Body/Fishery Name	Flow (cfs)	_____	_____	_____	_____	_____	_____	_____	_____														
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_____	_____																									
_____	_____																									



Potential Hazardous Waste Site
Preliminary Assessment Form - Page 4 of 4

CERCLIS Number:

GA 9210020872

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

- ☒ Yes
☐ No

Have Primary Target Wetlands Been Identified:

- ☐ Yes
☐ No

List Secondary Target Wetlands:

Water Body Flow (cfs) Frontage Miles

Other Sensitive Environments Located Along the Surface Water Migration Path:

- ☐ Yes
☐ No

Have Primary Target Sensitive Environments Been Identified:

- ☐ Yes
☐ No

List Secondary Target Sensitive Environments:

Water Body Flow (cfs) Sensitive Environment Type

9. Soil Exposure Pathway

Are People Occupying Residences or
Attending School or Daycare on or Within 200
Feet of Areas of Known or Suspected
Contamination:

- ☐ Yes
☒ No

If Yes, Enter Total Resident Population:

_____ People

Number of Workers Onsite:

- ☐ None
☐ 1 - 100
☐ 101 - 1,000
☒ > 1,000

Have Terrestrial Sensitive Environments Been Identified on
or Within 200 Feet of Areas of Known or Suspected
Contamination:

- ☒ Yes
☐ No

If Yes, List Each Terrestrial Sensitive Environment:

10. Air Pathway

Is There a Suspected Release to Air:

- ☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____
0 - ¼ Mile _____
> ¼ - ½ Mile _____
> ½ - 1 Mile _____
> 1 - 2 Miles _____
> 2 - 3 Miles _____
> 3 - 4 Miles _____
Total Within 4 Miles _____

Wetlands Located Within 4 Miles of the Site:

- ☒ Yes
☐ No

Other Sensitive Environments Located Within 4 Miles of the Site:

- ☒ Yes
☐ No

List All Sensitive Environments Within ½ Mile of the Site:

Distance Sensitive Environment Type/Wetlands Area (acres)

Onsite _____
0 - ¼ Mile _____
> ¼ - ½ Mile _____

APPENDIX B
PERMITS ISSUED TO FORT STEWART

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State of Georgia
Department of Natural Resources
ENVIRONMENTAL PROTECTION DIVISION

LAND APPLICATION SYSTEM PERMIT

Permit No. GA 03-624

In accordance with the provisions of the Georgia Water Quality Control Act (Georgia Laws 1964, p. 416, as amended), and the Rules and Regulations promulgated pursuant thereto, this permit is issued to the following:

UNITED STATES DEPARTMENT OF THE ARMY
Directorate of Engineering and Housing
Fort Stewart, Georgia 31314

is authorized to operate the land application system located at

Camp Oliver, Evans County

This permit is conditioned upon the permittee complying with the effluent limitations, monitoring requirements and other conditions set forth in the permit; with the statements and supporting data submitted with the application dated July 30, 1990; and with the approved plan of operation and management, all of which are filed with the Environmental Protection Division of the Department of Natural Resources.

This permit is effective on the date signed by the Director of the Environmental Protection Division and is subject to revocation on evidence of noncompliance with any of the provisions of the Georgia Water Quality Control Act or any of the Rules and Regulations promulgated pursuant thereto; or with any presentation made in the above mentioned application or the statements and supporting data entered therein or attached thereto; or with any conditions of this permit.

This permit shall expire at midnight. August 31, 1995.

Signed this 25th. date of October, 1990.



Lonnie C. Barnett

Director
Environmental Protection Division

Permit Conditions

1. The system shall be operated at maximum efficiency at all times. The average daily flow to the wastewater treatment facility shall not exceed 0.070 MGD. The following effluent standards for the discharge to the land application system apply:
 - (A) Biochemical Oxygen Demand (5-Day): The monthly average shall not exceed 50 mg/l.
 - (B) Suspended Solids: The monthly average shall not exceed 90 mg/l.
 - (C) Fecal Coliform Bacteria: The monthly geometric mean shall not exceed 200 per 100 ml.
2. Quarterly operating reports shall be submitted to the Environmental Protection Division by the responsible Class III Operator. The operating reports shall be submitted no later than the 15th day of the month following the reporting period to:

Georgia Environmental Protection Division
Industrial Wastewater Program
205 Butler Street, S.E.
Suite 1070, Floyd Towers East
Atlanta, Georgia 30334

This operation report should contain the analytical results of samples taken at the treatment facility, the groundwater monitoring wells, and/or the surface streams as specified in the approved "Plan of Operation and Management." These sampling requirements may be revised if approved by the Division.

All analysis shall be made in accordance with the latest edition of Standard Methods for the Examination of Water and Wastes, Methods for Chemical Analysis of Water and Wastes, or other required methods.

3. The wastewater and disposal system must be maintained as a no-discharge system; therefore, additional land for spraying must be utilized if the application rate cannot satisfactorily be handled by the currently approved spray field.
4. Certification Requirements (Operation)

The permittee shall insure that the person in responsible charge of this wastewater treatment plant is a Certified Operator in accordance with the Georgia Certification of Water and Wastewater Plant Operators Act, as amended, and the Rules promulgated thereunder and holds a classification consistent with the plant classification specified by Subparagraph 391-3-6-.12 of the Rules and Regulations for Water Quality Control.

5. Certification Requirements (Laboratory)

The permittee shall insure that the person in responsible charge of the laboratory that is completing the laboratory analysis for this wastewater treatment plant is a certified Laboratory Analyst in accordance with the Georgia Certification of Water and Wastewater Plant Operators Act, as amended, and the Rules promulgated thereunder.

6. Land Application System Monitoring Requirements

(A) Preapplication Treatment Monitoring Requirements

Discharge to Sprayfields

<u>Parameter</u>	<u>Frequency</u>
Flow	Daily*
Biochemical Oxygen Demand (5-Day)**	One/Month
Suspended Solids**	One/Month
pH	One/Month
Fecal Coliform Bacteria	One/Quarter
NO ₃ -N	One/Quarter

* Continuous recording measurements required.

** Influent to wastewater treatment pond must also be monitored on same frequency.

(B) Groundwater monitoring and wells may be required upon written notification by the Division.

(C) Soil Monitoring

<u>Parameter</u>	<u>Frequency</u>
pH	One/Year
Cation Exchange Capacity	If pH changes by one unit
Percent Base Saturation	If pH changes by one unit
Phosphorus Adsorption	If pH changes by one unit

7. Groundwater

Groundwater leaving the land application system boundaries must meet primary maximum contaminant levels for drinking water. If groundwater samples indicate contamination, the permittee will be required, upon written notification by the Division, to develop a plan which will insure that the primary maximum contaminant levels for drinking water are not exceeded. The plan will be implemented by the permittee immediately upon Division approval.

Georgia Department of Natural Resources

205 Butler Street, S.E., Suite 1252, Atlanta, Georgia 30334
Joe D. Tanner, Commissioner
404/656-3500

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March 4, 1991

Mr. Thomas D. Houston, Chief
U. S. Department of the Army
Headquarters Fort Stewart
Environmental Office
Building 1139
Fort Stewart, Georgia 31314-5000

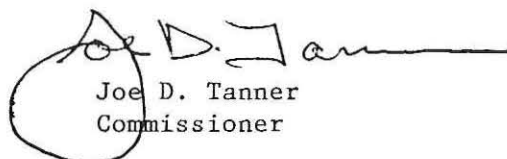
Re: NPDES Permit No. GA 0004308

Dear Mr. Houston:

Pursuant to the Georgia Water Quality Control Act, as amended, the Federal Clean Water Act, as amended, and the Rules and Regulations promulgated thereunder, we have issued the attached National Pollutant Discharge Elimination System (NPDES) permit for the specified wastewater treatment facility.

Please be advised that on and after the effective date indicated in the attached NPDES permit, the permittee must comply with all the terms, conditions and limitations of this permit.

Sincerely,


Joe D. Tanner
Commissioner

JDT:bk
Attachment

cc: Mr. John T. Marlar (w/attachment)
U. S. EPA, Region IV

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Georgia Water Quality Control Act (Georgia Laws 1964, p. 416, as amended), hereinafter called the "State Act," the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq.), hereinafter called the "Federal Act," and the Rules and Regulations promulgated pursuant to each of these Acts,

UNITED STATES DEPARTMENT OF THE ARMY
Headquarters Fort Stewart
Fort Stewart, Georgia 31314

is authorized to discharge from a facility located at

Fort Stewart, Liberty and Bryan Counties

to receiving waters Tributaries to the Canoochee River

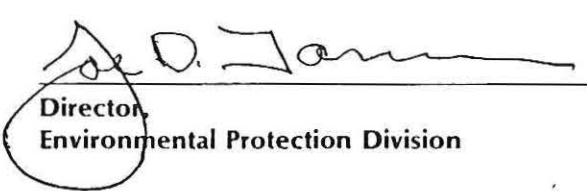
in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof.

This permit shall become effective on March 4, 1991.

This permit and the authorization to discharge shall expire at midnight, February 28, 1996.

Signed this 4th. day of March, 1991.




Director
Environmental Protection Division

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning effective date and lasting through February 28, 1996, the permittee is authorized to discharge from outfall(s) serial number(s) 001 - Evans Army Heliport Package Treatment Plant, Fort Stewart.

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>				<u>Monitoring Requirements</u>		
	Mass Based		Concentration Based		Measurement Frequency	Sample Type	Sample Location
	Daily Avg.	Daily Max.	Daily Avg.	Daily Max.			
Flow (MGD)	.035	.035	-	-	Daily	Flow Measuring Device	Effluent
Biochemical Oxygen Demand (mg/l)	-	-	20	30	Monthly	24-Hr.Composite	Effluent
Suspended Solids (mg/l)	-	-	30	45	Monthly	24-Hr.Composite	Effluent
Fecal Coliform Bacteria (number per 100 ml of sample)	-	-	200	400	Monthly	Grab	Effluent
Ammonia Nitrogen (mg/l)	-	-	5.0	7.5	Monthly	24-Hr.Composite	Effluent

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per month by a grab sample at the final effluent.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

2. During the period beginning effective date and lasting through February 28, 1996, the permittee is authorized to discharge from outfall(s) serial number(s) 002 - Tac-X Package Treatment Plant, Fort Stewart.

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>				<u>Monitoring Requirements</u>		
	Mass Based		Concentration Based		Measurement Frequency	Sample Type	Sample Location
	Daily Avg.	Daily Max.	Daily Avg.	Daily Max.			
Flow (MGD)	.035	.035	-	-	Daily	Flow Measuring Device	Effluent
Biochemical Oxygen Demand (mg/l)	-	-	20	35	Monthly	24-Hr.Composite	Effluent
Suspended Solids (mg/l)	-	-	30	45	Monthly	24-Hr.Composite	Effluent
Fecal Coliform Bacteria (number per 100 ml of sample)	-	-	200	400	Monthly	Grab	Effluent
Ammonia Nitrogen (mg/l)	-	-	5.0	7.5	Monthly	24-Hr.Composite	Effluent

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per month by a grab sample at the final effluent.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

3. During the period beginning effective date and lasting through February 28, 1996, the permittee is authorized to discharge from outfall(s) serial number(s) 003 - Industrial Waste Treatment.

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>				<u>Monitoring Requirements</u>		
	Mass Based		Concentration Based (mg/l)		Measurement	Sample	Sample
	Daily Avg.	Daily Max.	Daily Avg.	Daily Max.	Frequency	Type	Location
Flow (MGD)	1.5	1.5	-	-	Two/Month	Flow Measuring Device	Effluent
Biochemical Oxygen Demand	-	-	30	45	Two/Month	Grab	Effluent
Suspended Solids	-	-	30	45	Two/Month	Grab	Effluent
Phenols	-	-	.25	.50	Two/Month	Grab	Effluent
Oil & Grease	-	-	10	15	Two/Month	Grab	Effluent

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored twice per month by a grab sample of the final effluent.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

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B. SCHEDULE OF COMPLIANCE

1. The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

2. No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

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Note: EPD as used herein means the Environmental Protection Division of the Department of Natural Resources.

C. MONITORING AND REPORTING

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Reporting

Monitoring results obtained during the previous month shall be summarized for each month and reported on an Operation Monitoring Report (Form WQ 1.45). Forms other than Form WQ 1.45 may be used upon approval by EPD. These forms and any other required reports and information shall be completed, signed and certified by a principal executive officer or ranking elected official, or by a duly authorized representative of that person who has the authority to act for or on behalf of that person, and submitted to the Division, postmarked no later than the 15th day of the month following the reporting period. Signed copies of these and all other reports required herein shall be submitted to the following address:

Georgia Environmental Protection Division
Industrial Wastewater Program
205 Butler Street, S.E.
Suite 1070
Atlanta, Georgia 30334

All instances of noncompliance not reported under Part I. B. and C. and Part II. A shall be reported at the time the operation monitoring report is submitted.

3. Definitions

- a. The "daily average" discharge means the total discharge by weight during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summation of all the measured daily discharges by weight divided by the number of days sampled during the calendar month when the measurements were made.
- b. The "daily maximum" discharge means the total discharge by weight during any calendar day.

- c. The "daily average" concentration means the arithmetic average of all the daily determinations of concentration made during a calendar month. Daily determinations of concentration made using a composite sample shall be the concentration of the composite sample.
- d. The "daily maximum" concentration means the daily determination of concentration for any calendar day.
- e. For the purpose of this permit, a calendar day is defined as any consecutive 24-hour period.
- f. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.
- g. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

4. Test Procedures

Monitoring must be conducted according to test procedures approved pursuant to 40 CFR 136 unless other test procedures have been specified in this permit.

5. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

- a. The exact place, date, and time of sampling or measurements, and the person(s) performing the sampling or the measurements;
- b. The dates the analyses were performed, and the person(s) who performed the analyses;
- c. The analytical techniques or methods used; and
- d. The results of all required analyses.

6. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Operation Monitoring Report Form (WQ 1.45). Such increased monitoring frequency shall also be indicated. The Division may require by written notification more frequent monitoring or the monitoring of other pollutants not required in this permit.

7. Records Retention

The permittee shall retain records of all monitoring information, including all records of analyses performed, calibration and maintenance of instrumentation, recordings from continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Division at any time.

8. Penalties

The Federal Clean Water Act and the Georgia Water Quality Control Act provide that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit, makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine or by imprisonment, or by both. The Federal Clean Water Act and the Georgia Water Quality Control Act also provide procedures for imposing civil penalties which may be levied for violations of the Act, any permit condition or limitation established pursuant to the Act, or negligently or intentionally failing or refusing to comply with any final or emergency order of the Director of the Division.

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A. MANAGEMENT REQUIREMENTS

1. Change in Discharge

- a. Advance notice to the Division shall be given of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. Any anticipated facility expansions, production increases, or process modifications must be reported by submission of a new NPDES permit application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the Division of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.
- b. All existing manufacturing, commercial, mining, and silvicultural dischargers shall notify the Division as soon as it is known or there is reason to believe that any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant not limited in the permit, if that discharge will exceed (i) 100 µg/l, (ii) five times the maximum concentration reported for that pollutant in the permit application, or (iii) 200 µg/l for acrolein and acrylonitrile, 500 µg/l for 2,4 dinitrophenol and for 2-methyl-4-6-dinitrophenol, or 1 mg/l antimony.
- c. All existing manufacturing, commercial, mining, and silvicultural dischargers shall notify the Division as soon as it is known or there is reason to believe that any activity has occurred or will occur which would result in any discharge on a nonroutine or infrequent basis, of any toxic pollutant not limited in the permit, if that discharge will exceed (i) 500 µg/l, (ii) ten times the maximum concentration reported for that pollutant in the permit application, or (iii) 1 mg/l antimony.

2. Noncompliance Notification

If, for any reason, the permittee does not comply with, or will be unable to comply with any effluent limitation specified in this permit, the permittee shall provide the Division with an oral report within 24 hours from the time the permittee becomes aware of the circumstances followed by a written report within five (5) days of becoming aware of such condition. The written submission shall contain the following information:

- a. A description of the discharge and cause of noncompliance; and

- b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

3. Facilities Operation

The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

4. Adverse Impact

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

5. Bypassing

- a. If the permittee knows in advance of the need for a bypass, it shall submit prior notice to the Division at least 10 days (if possible) before the date of the bypass. The permittee shall submit notice of any unanticipated bypass with an oral report within 24 hours from the time the permittee becomes aware of the circumstances followed by a written report within five (5) days of becoming aware of such condition. The written submission shall contain the following information:
 - 1. A description of the discharge and cause of noncompliance; and
 - 2. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

- b. Any diversion from or bypass of facilities covered by this permit is prohibited, except (i) where unavoidable to prevent loss of life, personal injury, or severe property damage; (ii) there were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime (this condition is not satisfied if the permittee could have installed adequate back-up equipment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance); and (iii) the permittee submitted a notice as required above. The permittee shall operate the treatment works, including the treatment plant and total sewer system, to minimize discharge of the pollutants listed in Part I of this permit from combined sewer overflows or bypasses. Upon written notification by the Division, the permittee may be required to submit a plan and schedule for reducing bypasses, overflows, and infiltration in the system.

6. Sludge Disposal Requirements

Hazardous sludge shall be disposed of in accordance with the regulations and guidelines established by the Division pursuant to the Federal Clean Water Act (CWA) and the Resource Conservation and Recovery Act (RCRA). For land application of nonhazardous sludge, the permittee shall comply with any applicable criteria outlined in the Division's "Guidelines for Land Application of Municipal Sludges." Prior to disposal of sludge by land application, the permittee shall submit a proposal to the Division for approval in accordance with applicable criteria in the Division's "Guidelines for Land Application of Municipal Sludges." Upon evaluation of the permittee's proposal, the Division may require that more stringent control of this activity is required. Upon written notification, the permittee shall submit to the Division for approval, a detailed plan of operation for land application of sludge. Upon approval, the plan will become a part of the NPDES permit. Disposal of nonhazardous sludge by other means, such as landfilling, must be approved by the Division.

7. Sludge Monitoring Requirements

The permittee shall develop and implement procedures to insure adequate year-round sludge disposal. The permittee shall monitor the volume and concentration of solids removed from the plant. Records shall be maintained which document the quantity of solids removed from the plant. The ultimate disposal of solids shall be reported monthly (in the unit of lbs/day) to the Division with the Operation Monitoring Report Forms required under Part I (C)(2) of this permit.

8. Power Failures

Upon the reduction, loss, or failure of the primary source of power to said water pollution control facilities, the permittee shall use an alternative source of power if available to reduce or otherwise control production and/or all discharges in order to maintain compliance with the effluent limitations and prohibitions of this permit.

If such alternative power source is not in existence, and no date for its implementation appears in Part I, the permittee shall halt, reduce or otherwise control production and/or all discharges from wastewater control facilities upon the reduction, loss, or failure of the primary source of power to said wastewater control facilities.

B. RESPONSIBILITIES

1. Right of Entry

The permittee shall allow the Director of the Division, the Regional Administrator of EPA, and/or their authorized representatives, agents, or employees, upon the presentation of credentials:

- a. To enter upon the permittee's premises where a regulated activity or facility is located or conducted or where any records are required to be kept under the terms and conditions of this permit; and
- b. At reasonable times, to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and to sample any substance or parameters in any location.

2. Transfer of Ownership or Control

A permit may be transferred to another person by a permittee if:

- a. The permittee notifies the Director in writing of the proposed transfer at least thirty (30) days in advance of the proposed transfer;
- b. A written agreement containing a specific date for transfer of permit responsibility and coverage between the current and new permittee (including acknowledgement that the existing permittee is liable for violations up to that date, and that the new permittee is liable for violations from that date on) is submitted to the Director at least thirty (30) days in advance of the proposed transfer; and

- c. The Director, within thirty (30) days, does not notify the current permittee and the new permittee of the Division's intent to modify, revoke and reissue, or terminate the permit and to require that a new application be filed rather than agreeing to the transfer of the permit.

3. Availability of Reports

Except for data deemed to be confidential under O.C.G.A. § 12-5-26 or by the Regional Administrator of the EPA under the Code of Federal Regulations, Title 40, Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at an office of the Division. Effluent data, permit applications, permittee's names and addresses, and permits shall not be considered confidential.

4. Permit Modification

After written notice and opportunity for a hearing, this permit may be modified, suspended, revoked or reissued in whole or in part during its term for cause including, but not limited to, the following:

- a. Violation of any conditions of this permit;
- b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;
- c. A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge; or
- d. To comply with any applicable effluent limitation issued pursuant to the order the United States District Court for the District of Columbia issued on June 8, 1976, in Natural Resources Defense Council, Inc. et.al. v. Russell E. Train, 8 ERC 2120(D.D.C. 1976), if the effluent limitation so issued:
 - (1) is different in conditions or more stringent than any effluent limitation in the permit; or
 - (2) controls any pollutant not limited in the permit.

5. Toxic Pollutants and Best Available Technology Economically Achievable

The permittee shall comply with effluent standards or prohibitions established pursuant to Section 307(a) and Section 301(b)2 of the Federal Clean Water Act for pollutants, toxic and otherwise,

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which are present in the discharge within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

6. Civil and Criminal Liability

Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

7. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Federal Clean Water Act.

8. Water Quality Standards

Nothing in this permit shall be construed to preclude the modification of any condition of this permit when it is determined that the effluent limitations specified herein fail to achieve the applicable State water quality standards.

9. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

10. Expiration of Permit

Permittee shall not discharge after the expiration date. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit such information, forms, and fees as are required by the agency authorized to issue permits no later than 180 days prior to the expiration date.

11. Contested Hearings

Any person who is aggrieved or adversely affected by an action of the Director of the Division shall petition the Director for a hearing within thirty (30) days of notice of such action.

12. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

13. Best Management Practices

The permittee will implement best management practices to control the discharge of hazardous and/or toxic materials from ancillary manufacturing activities. Such activities include, but are not limited to, materials storage areas; in-plant transfer, process and material handling areas; loading and unloading operations; plant site runoff; and sludge and waste disposal areas.

14. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

15. Duty to Provide Information

- a. The permittee shall furnish to the Director of the Division, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish upon request copies of records required to be kept by this permit.
- b. When the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or any report to the Director, it shall promptly submit such facts and information.

16. Stormwater Runoff

In addition to the outfalls identified in Part I, Section A. of this permit, the permittee is authorized to discharge stormwater runoff from point sources at this facility provided that these discharges do not cause violations of State water quality standards in the receiving streams.

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

PART II

Page 16 of 17
Permit No. GA0004308

17. Upset Provisions

Provisions of 40 CFR 122.41(n)(1)-(4), regarding "Upset" shall be applicable to any civil, criminal, or administrative proceeding brought to enforce this permit.

PART III

A. PREVIOUS PERMITS

1. All previous State water quality permits issued to this facility, whether for construction or operation, are hereby revoked by the issuance of this permit. This action is taken to assure compliance with the Georgia Water Quality Control Act, as amended, and the Federal Clean Water Act, as amended. Receipt of the permit constitutes notice of such action. The conditions, requirements, terms and provisions of this permit authorizing discharge under the National Pollutant Discharge Elimination System govern discharges from this facility.

B. SPECIAL REQUIREMENTS

1. Certification Requirements

The permittee shall insure that the person in responsible charge of this wastewater treatment plant is a Certified Operator in accordance with the Georgia Certification of Water and Wastewater Plant Operators and Laboratory Analysts Act, as amended, and the Rules promulgated thereunder and holds a classification consistent with the plant classification specified by Subparagraph 391-3-6-.12 of the Rules and Regulations for Water Quality Control. Operators, other than the person in responsible charge, must obtain certification in Class III operator classification or higher within one year of obtaining employment as an operator of a public wastewater treatment plant.

The permittee shall insure that, when required, the person in responsible charge of the laboratory that is performing the laboratory analyses for this wastewater treatment plant is a certified Laboratory Analyst in accordance with the Georgia Certification of Water and Wastewater Treatment Plant Operators and Laboratory Analysts Act, as amended, and the Rules promulgated thereunder.

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C. BIOMONITORING AND TOXICITY REDUCTION REQUIREMENTS

The permittee may not discharge toxic wastes in concentrations or combinations which are harmful to humans, fish or aquatic life. The permittee shall ensure that the effluent being discharged does not kill 10% or more of the exposed test organisms in 96 hours or less, when the test solution contains volumes of effluent and stream water proportional to the plant design flow and the 7Q10 flow of the receiving stream.

1. If toxicity is suspected in the permittee's effluent, the Division may require the permittee to develop a program for whole effluent biomonitoring. The schedule will be as follows;
 - a. Within 90 days of Division notification, a study plan detailing the test methodology and test organisms shall be submitted for conducting forty-eight hour acute static renewal tests of the final effluent. If residual chlorine is present in the final effluent from treatment and/or disinfection processes, a prechlorinated or dechlorinated sample will also be tested.
 - b. Within 90 days of Division approval of the study plan, the permittee will conduct and submit the results of the forty-eight hour static renewal tests.
2. If toxicity is found in the permittee's effluent, the permittee shall, within 90 days of written notification by the Division, submit a Toxicity Reduction Evaluation (TRE) plan to the Division. The TRE plan shall detail the action the permittee will implement to eliminate toxicity. Within 270 days of Division approval of the TRE plan, the permittee shall complete implementation of the TRE plan and conduct follow-up biomonitoring of the effluent in accordance with the approved TRE plan. If toxicity is still indicated, the permittee shall continue the TRE plan. The TRE plan shall not be complete until the permittee has eliminated the toxicity in its effluent. On a case specific basis, chronic toxicity testing procedures may be required for the definitive determination that toxicity has been eliminated.
3. If toxicity is not indicated initially, or if there are substantial changes in the effluent composition, the permittee may be required to repeat the forty-eight hour static renewal test upon notification by the Division. On a case specific basis, chronic toxicity testing procedures may also be required.

Upon approval by the Division, all study plans and TRE plans will become part of the requirements of this permit.

ENVIRONMENTAL PROTECTION DIVISION
DEPARTMENT OF NATURAL RESOURCES
STATE OF GEORGIA

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PERMIT TO USE GROUNDWATER

PERMIT NUMBER	089-0003 (Renewal)	DATE: August 28, 1990
PERMITTEE'S NAME	Department of the Army - Fort Stewart	
PERMITTEE'S ADDRESS	Headquarters, 24th Infantry Division, AFZP-DEV, Ft. Stewart, Georgia 31314-5000	

In accordance with the Provisions of the Groundwater Use Act, (Ga. Laws 1972, p.976, et seq., as amended by Ga. Laws 1973, p.1273, et seq.) and the Rules and Regulations promulgated pursuant thereto, this Permit is issued to withdraw obtain, or utilize groundwater in the amount of 5,500,000(a) 4,500,000(b) gallons per day from 5 well(s) located at Fort Stewart, Georgia - Liberty County for the purpose of a consumptive use for central water supply.

This Permit is conditioned upon the permittee complying with the following: (a)Monthly Avg. Withdrawal Limit
(b)Annual Avg. Withdrawal Limit

STANDARD CONDITIONS

- (1) The provisions of the Groundwater Use Act, as amended, or any of the Rules and Regulations promulgated pursuant thereto;
- (2) The Permit shall not be transferred except with the approval of the Division;
- (3) The Groundwater Use Report shall be submitted SEMI-ANNUALLY, unless otherwise designated by the Division, starting sixty (60) days after the above date and every six (6) months thereafter;
- (4) The use of groundwater is limited to the quantities and purpose of the water herein specified.

SPECIAL CONDITIONS

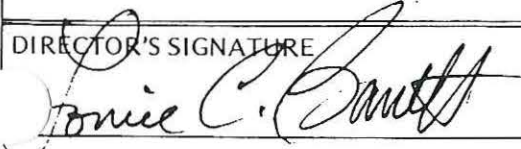
- (5) This Permit is valid for ground water withdrawal from the Floridan Aquifer. No other aquifer can be used without the approval of the Division.
- (6) The replacement of any permitted well must receive prior approval from the Division.

And the additional attached conditions, if any, which are hereby made a part of this Permit.

In accordance with the application dated 8-21-90 and in conformity with the statements and supporting data entered therein or attached thereto, all of which are filed with the Environmental Protection Division of the Department of Natural Resources and are hereby made part of this Permit

This Permit is effective from the date first above written and is subject to revocation on evidence of noncompliance with any of the provisions of the Groundwater Use Act, as amended, or any of the Rules and Regulations promulgated pursuant thereto; or with any representation made in the above mentioned application or the statements and supporting data entered therein or attached thereto; or with any condition of this permit.

Absent prior revocation in accordance with the above language, this Permit shall expire on the 28th day of August ~~xx~~ 2000.

DIRECTOR'S SIGNATURE 	DATE: August 28, 1990	Director Environmental Protection Division Department of Natural Resources
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ENVIRONMENTAL PROTECTION DIVISION
DEPARTMENT OF NATURAL RESOURCES
STATE OF GEORGIA

PERMIT TO USE GROUNDWATER

PERMIT NUMBER 089-0003 DATE: February 11, 1980
PERMITTEE'S NAME Department of the Army - Fort Stewart
PERMITTEE'S ADDRESS 24th Inf. Div. & Ft. Stewart - Fort Stewart, Ga. 31313 - Liberty County

In accordance with the Provisions of the Groundwater Use Act, (Ga. Laws 1972, p.976, et seq., as amended by Ga. Laws 1973, p.1273, et seq.) and the Rules and Regulations promulgated pursuant thereto, this Permit is issued to withdraw obtain, or utilize groundwater in the amount of 2,500,000 gallons per day from 4 well(s) located at Fort Stewart, Georgia - Liberty County for the purpose of Consumptive Use For Central Water Supply.

This Permit is conditioned upon the permittee complying with the following:

STANDARD CONDITIONS

- (1) The provisions of the Groundwater Use Act, as amended, or any of the Rules and Regulations promulgated pursuant thereto;
- (2) The Permit shall not be transferred except with the approval of the Division;
- (3) The Groundwater Use Report shall be submitted SEMI-ANNUALLY, unless otherwise designated by the Division, starting sixty (60) days after the above date and every six (6) months thereafter;
- (4) The use of groundwater is limited to the quantities and purpose of the water herein specified.

SPECIAL CONDITIONS

- 5) This permit is valid only for the groundwater withdrawal of 2,500,000 gpd from the Ocala limestone aquifer. No other aquifer can be used without the approval of the Division.
- 6) No replacement well(s) shall be constructed without prior approval of the Division.

And the additional attached conditions, if any, which are hereby made a part of this Permit.

In accordance with the application dated Nov. 5, 1979 and in conformity with the statements and supporting data entered therein or attached thereto, all of which are filed with the Environmental Protection Division of the Department of Natural Resources and are hereby made part of this Permit

This Permit is effective from the date first above written and is subject to revocation on evidence of noncompliance with any of the provisions of the Groundwater Use Act, as amended, or any of the Rules and Regulations promulgated pursuant thereto; or with any representation made in the above mentioned application or the statements and supporting data entered therein or attached thereto; or with any condition of this permit.

Absent prior revocation in accordance with the above language, this Permit shall expire on the 11th day of February 19 90.

DIRECTOR'S SIGNATURE



Director
Environmental Protection Division
Department of Natural Resources

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STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

PERMIT NO. 2089 J 1236

COUNTY LIBERTY



EFFECTIVE DATE
OF PERMIT:

DECEMBER 4, 1982

MODIFIED:

MARCH 7, 1986

PERMIT
TO OPERATE A
PUBLIC WATER SYSTEM

In compliance with the provisions of the GEORGIA SAFE DRINKING WATER ACT of 1977, OCGA 12-5-170 et. seq., and the RULES, CHAPTER 391-3-5, adopted pursuant to the ACT

UNITED STATES ARMY

is issued a PERMIT TO OPERATE A PUBLIC WATER SYSTEM named the

, A Community Water System

FORT STEWART - MAIN

and located at

FORT STEWART, GEORGIA

THIS PERMIT to operate the above public water system shall become effective on the date shown above and the permit shall expire at midnight, December 3, 1992 absent any prior revocation or modification.

THIS PERMIT is issued subject to the terms, conditions and schedules of compliance as follows:

1. THE PERMITTEE shall at all times operate the public water system in full compliance with the GEORGIA SAFE DRINKING WATER ACT of 1977, and the RULES, CHAPTER 391-3-5, adopted under the ACT. THE DIRECTOR may modify, suspend or revoke this permit as provided therein.

2. THIS PERMIT is transferrable only with a change of ownership. Any Transferee becomes the Permittee and assumes the responsibilities under this Permit. Such Transferee must notify the Division of the transfer in writing immediately.

3. THIS PERMIT is further subject to the terms, conditions and schedules of compliance specified on the attached pages.


DIRECTOR
ENVIRONMENTAL PROTECTION DIVISION

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Owner: United States Army

Effective: December 4, 1982

Modified: March 7, 1986

System: Fort Stewart-Main Water System

Permit No.: 2089 J 1236

PERMIT CONDITIONS

4. This permit is for the operation of five (5) wells as sources of water supply as indicated on your application. Any additional sources must have written approval from the Director before installation. Failure to comply will be considered a permit violation.

5. The permittee must continuously chlorinate all water distributed by the system to maintain a free chlorine residual of at least 0.5 parts per million in all parts of the distribution system.

6. The permittee shall collect and submit, or have collected and submitted to a state certified water supply laboratory, a minimum of twenty-two (22) drinking water samples per month for coliform density analysis on the date assigned during which the system provides water to the public. Date assigned to submit samples: third Tuesday.

Results of these analyses must be maintained by the permittee and reported to the Division in accordance with Section 391-3-5-.15 and .25 of the Rules. Results reported to the Division must be identified by the system ID number 308 922 181 and the results sent to the following address:

Environmental Protection Division
Ground Water Program
Floyd Towers East, Room 1066
205 Butler Street, S. E.
Atlanta, Georgia 30334

7. Operation records must be maintained by the permittee on or near the premises of the water system and available for inspection. A true and correct copy of these records must be sent, by the tenth day of the month following the month being reported, to the following address:

Environmental Protection Division
Southeast Regional Office
1200 Glynn Ave.
Brunswick, Georgia 31523

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Owner: United States Army

Effective: December 4, 1982

Modified: March 7, 1986

System: Fort Stewart-Main Water System

Permit No.: 2089 J 1236

PERMIT CONDITIONS

8. The permittee shall insure that the person in responsible charge of this public water system is a certified operator in accordance with the Georgia Certification of Water and Wastewater Treatment Plant Operators and Laboratory Analysts Act, as amended, and the Rules adopted thereunder, and holds a certification classification consistent with the public water system classification specified by Subparagraph 391-3-5-.48 of the Rules for Safe Drinking Water. A public water system whose only source of water supply is groundwater and serves a population of less than 1000 is only required to have a trained operator.

9. The permittee shall insure that any person employed by the water system as a laboratory analyst, is a certified laboratory analyst in accordance with the Georgia Certification of Water and Wastewater Treatment Plant Operators and Laboratory Analysts Act, as amended, and the Rules adopted thereunder. A public water system whose only source of water supply is groundwater and serves a population of less than 1000 is not required to have a certified laboratory analyst.

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

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PERMIT NO. CG1790024

COUNTY Liberty



EFFECTIVE DATE
OF PERMIT:

May 28, 1991

PERMIT
TO OPERATE A
PUBLIC WATER SYSTEM

In compliance with the provisions of the GEORGIA SAFE DRINKING WATER ACT of 1977, OCGA 12-5-170 et. seq., and the RULES, CHAPTER 391-3-5, adopted pursuant to the ACT

United States Army

is issued a PERMIT TO OPERATE A PUBLIC WATER SYSTEM named the

Fort Stewart Main Water System^A Community Water System

and located at

Fort Stewart, Georgia

THIS PERMIT to operate the above public water system shall become effective on the date shown above and the permit shall expire at midnight, May 27, 2001 absent any prior revocation or modification.

THIS PERMIT is issued subject to the terms, conditions and schedules of compliance as follows:

1. THE PERMITTEE shall at all times operate the public water system in full compliance with the GEORGIA SAFE DRINKING WATER ACT of 1977, and the RULES, CHAPTER 391-3-5, adopted under the ACT. THE DIRECTOR may modify, suspend or revoke this permit as provided therein.
2. THIS PERMIT is transferrable only with a change of ownership. Any Transferee becomes the Permittee and assumes the responsibilities under this Permit. Such Transferee must notify the Division of the transfer in writing immediately.
3. THIS PERMIT is further subject to the terms, conditions and schedules of compliance specified on the attached pages.


DIRECTOR
ENVIRONMENTAL PROTECTION DIVISION

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STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

OWNER: United States Army

EFFECTIVE DATE: May 28, 1991

SYSTEM: Fort Stewart Main Water System

PERMIT NO.: CG1790024

PERMIT CONDITIONS

4. This Permit is for the operation of five (5) well(s) as source(s) of water supply as indicated on your application. Any additional sources must have written approval from the Director before use.

5. The permittee must provide continuous disinfection by chlorinating all water distributed by the system to maintain a detectable residual of free chlorine in the recommended amount of 0.2 milligrams per liter in all parts of the distribution system, or as specified in Section 391-3-5-.14, as amended, of the Rules for Safe Drinking Water.

6. The permittee shall analyze or have analyzed by an EPD certified water supply laboratory a minimum of twenty (20) drinking water samples(s) per month for coliform organisms.

Summaries of these coliform analyses must be maintained by the permittee and reported to the Division as specified in Section 391-3-5-.15 and .30 of the Rules. Results reported to the Division must be identified by the system ID number 1790024 and the results sent, by the tenth day of the month following the month being reported, to the following address:

Environmental Protection Division
Drinking Water Program
Floyd Towers East, Suite 1066
205 Butler Street, SE
Atlanta, Georgia 30334

7. Operation records must be maintained by the permittee on the premises of the water system and be available for inspection. A true and correct copy of the operation records must be sent, by the tenth day of the month following the month being reported, to the following address:

Environmental Protection Division
Southeast Georgia Regional Office
1 Conservation Way
Brunswick, Georgia 31523-8602

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

OWNER: United States Army

EFFECTIVE DATE: May 28, 1991

SYSTEM: Fort Stewart Main Water System

PERMIT NO.: CG1790024

PERMIT CONDITIONS

8. The permittee shall insure that the person in responsible charge of this public water system is certified as specified in the Georgia Certification of Water and Wastewater Treatment Plant Operators and Laboratory Analysts Act, as amended, and the Rules adopted thereunder. The certification classification must be consistent with the public water system classification as specified in Section 391-3-5-.39 of the Rules for Safe Drinking Water.

9. Drinking water distributed by the permittee shall not contain any impurity which will cause offense to the sense of sight, taste or smell and shall not be excessively corrosive as to cause degradation of the water quality or deterioration of the distribution system, as specified in Section 391-3-5-.19 and .26 of the Rules for Safe Drinking Water.

11. The permittee is required to have a water conservation and cross-connection control plan on file with the Division.

ENVIRONMENTAL PROTECTION DIVISION
DEPARTMENT OF NATURAL RESOURCES
STATE OF GEORGIA

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PERMIT
SOLID WASTE HANDLING

Permit Number: 089-010D(SL) Date: August 23, 1982

Permittee: Name Department of the Army
 HQ 24th Infantry Division & Fort Stewart
Address ATTN: AFZP-FE (DFAE, Dale Kiefer)

Fort Stewart, Georgia 31313

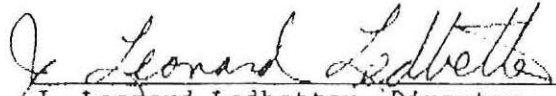
In accordance with the provisions of the Georgia Solid Waste Management Act, Ga. Laws, pp. 1002 et. seq., as amended, and the Rules promulgated pursuant thereto, this permit is issued for the following operation:

Liberty County, Department of the Army, Disposal Site (Sanitary Landfill)
Cantonment Area, Fort Stewart, Hinesville; located east of SR 144 north of
main post area.

This permit is conditioned upon the permittee complying with the attached conditions of operation, which are hereby made a part of this permit.

All statements and supporting data submitted to the Environmental Protection Division of the Department of Natural Resources have been evaluated, considered and relied upon in the issuance of this permit.

Unless appealed, this permit is final and effective thirty (30) days after the date shown above, and is subject to modification or revocation on evidence of noncompliance with any of the provisions of the Georgia Solid Waste Management Act, as amended, or any of the Rules promulgated pursuant thereto; or with any representation made in the above mentioned application or the statements and supporting data entered therein or attached thereto; or with any condition of this permit.


J. Leonard Ledbetter, Director
Environmental Protection Division
Department of Natural Resources

Permit No: 089-010D(SL)

Issued To: Department of the Army, Fort Stewart

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Conditions for Sanitary Landfill Operation:

1. The disposal site shall be under the supervision of a responsible individual, at the disposal site, at all times during operation.
2. Solid waste unloading shall be restricted to the working face of the operation in such a manner that waste may be easily incorporated into the sanitary landfill with available equipment.
3. Solid waste shall be spread in uniform layers and compacted to its smallest practical volume before covering with earth.
4. A uniform compacter layer of clean earth cover at least six (6) inches in depth shall be placed over all exposed solid waste by the end of each day's operation, or more frequently as may be determined by the Division. In no case may solid waste be left uncovered for more than 24 hours.
5. A uniform compacted layer of clean earth cover not less than one (1) foot in depth shall be placed over each portion of any intermediate lift following completion of that lift.
6. A uniform compacted layer of clean earth cover not less than two (2) feet in depth shall be placed over the final lift not later than one month following placement of solid waste within that lift.
7. All-weather access roads shall be provided to the disposal site and provisions shall be made for prompt equipment repair or replacement when needed.
8. Access to the sanitary landfill shall be limited to authorized entrances which shall be closed when the site is not in operation.
9. The disposal site shall be graded and drained to minimize runoff onto the sanitary landfill, to prevent erosion and to drain water from the surface of the sanitary landfill.
10. Scattering of wastes by wind shall be controlled by fencing or other barriers and the entire site shall be policed daily.
11. Hazardous wastes shall not be disposed of at this site.
12. Suitable measures to control fires that may start shall be provided. Stockpiled soil is considered to be the most satisfactory fire fighting material.
13. An area method of landfiling shall be used.
14. Adequate surface drainage shall be provided.

Georgia Department of Natural Resources

205 Butler Street, S.E., Suite 1252, Atlanta, Georgia 30334

J. Leonard Ledbetter, Commissioner
404/656-3500

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September 1, 1989

Lieutenant Colonel Bernard A. Fontaine, GAARNG
Department of Defense, Military Division
Office of the Adjutant General
Post Office Box 17965
Atlanta, Georgia 30316-0965

FILE COPY

RE: GA. National Guard Training Center
NPDES Permit No. GA0027685
Liberty County

Dear Lt. Colonel Fontaine:

Pursuant to the Georgia Water Quality Control Act, as amended, the Federal Water Pollution Control Act, as amended, and the Rules and Regulations promulgated thereunder, we have issued the attached National Pollutant Discharge Elimination System (NPDES) permit for the specified wastewater treatment facility.

Please be advised that on and after the effective date indicated in the attached NPDES permit, the permittee must comply with all the terms, conditions and limitations of this permit.

Sincerely,


J. Leonard Ledbetter
Commissioner

JLL:bk
Attachment

cc: Mr. John T. Marlar (w/attachment)
U. S. EPA, Region IV

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STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Georgia Water Quality Control Act (Georgia Laws 1964, p. 416, as amended), hereinafter called the "State Act," the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq.), hereinafter called the "Federal Act," and the Rules and Regulations promulgated pursuant to each of these Acts,

GEORGIA DEPARTMENT OF DEFENSE, MILITARY DIVISION
Office of the Adjutant General
P. O. Box 17965
Atlanta, Georgia 30316-0965

is authorized to discharge from a facility located at

National Guard Training Center - Fort Stewart
Troupe Avenue and E. 16th Street
Liberty County

to receiving waters

Medway River in the Ogeechee River Basin

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof.

This permit shall become effective on September 1, 1989.

This permit and the authorization to discharge shall expire at midnight, August 31, 1994.

Signed this 1st day of September, 1989.



Leonard Ledbetter
Director,
Environmental Protection Division

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

PART I

Page 2 of 17
Permit No. GA0027685

PART I

Note: EPD or Division as used herein means the Environmental Protection Division of the Department of Natural Resources.

A. SPECIAL CONDITIONS

1. MONITORING

The concentration of pollutants in the discharge will be limited as indicated by the table(s) labeled "Effluent Limitations and Monitoring Requirements".

- a. The monthly average, other than for Fecal Coliform Bacteria, is the arithmetic mean of values for samples collected in a period of 30 consecutive days.
- b. The daily maximum is the value for samples collected for the respective time period in (f) and (g) below.
- c. Fecal Coliform Bacteria will be reported as the geometric mean of the values for the samples collected for the respective time periods in (a) and (b) above.
- d. Chemical Oxygen Demand (COD) or Total Organic Carbon (TOC) may be substituted for Biochemical Oxygen Demand (BOD) when a long term BOD:COD or BOD:TOC correlation has been demonstrated.
- e. BOD₅ samples for treatment plant effluents shall be collected upstream from point of disinfection.
- f. A composite sample shall consist of samples collected at 2 hour intervals for a period of at least 8 hours, and composited according to flow.
- g. The permittee shall have a primary flow measuring device, installed in accordance with accepted engineering practice. For flow, continuous recording measurements are required.

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning effective date and lasting through March 31, 1990, the permittee is authorized to discharge from outfall(s) serial number(s) 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 40A, and 41 (Vehicle Wash Racks and Parts Wash Racks).

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>				<u>Monitoring Requirements</u>		
	Mass Based		Concentration Based		Measurement Frequency	Sample Type	Sample Location
	Daily Avg.	Daily Max.	Daily Avg.	Daily Max.			
Flow	-	-	-	-	-	-	-
Oil and Grease	-	-	10 mg/l	15 mg/l	One/Quarter	Grab	Effluent
Total Suspended Solids	-	-	25 mg/l	40 mg/l	One/Quarter	Grab	Effluent

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored on the final effluent once per quarter.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

2. During the period beginning effective date and lasting through the permittee is authorized to discharge from outfall(s) serial number(s) 43 (Tactical Vehicle Wash Facility).

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>				<u>Monitoring Requirements</u>		
	Mass Based		Concentration Based		Measurement Frequency	Sample Type	Sample Location
	Daily Avg.	Daily Max.	Daily Avg.	Daily Max.			
Flow	-	-	-	-	Daily	Continuous Recording	Effluent
Oil and Grease	-	-	10 mg/l	15 mg/l	One/Month	Grab	Effluent
Total Suspended Solids	-	-	25 mg/l	40 mg/l	One/Month	Grab	Effluent

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored on the final effluent once per month.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

PART I

Page 5 of 17
Permit No. GA0027685

B. SCHEDULE OF COMPLIANCE

1. The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:
 - a. All effluent limitations are effective immediately upon issuance of this permit.
 - b. The permittee shall eliminate all discharges from those outfalls listed on page 3 of this permit on or before March 31, 1990.
2. No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

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Note: EPD as used herein means the Environmental Protection Division of the Department of Natural Resources.

C. MONITORING AND REPORTING

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Reporting

Monitoring results obtained during the previous one month shall be summarized for each month and reported on an Operation Monitoring Report (Form WQ 1.45). Forms other than Form WQ 1.45 may be used upon approval by EPD. These forms and any other required reports and information shall be completed, signed and certified by a principal executive officer or ranking elected official, or by a duly authorized representative of that person who has the authority to act for or on behalf of that person, and submitted to the Division, postmarked no later than the 15th day of the month following the reporting period. Signed copies of these and all other reports required herein shall be submitted to the following address:

Georgia Environmental Protection Division
Industrial Wastewater Program
205 Butler Street, S.E.
Suite 1070, Floyd Towers East
Atlanta, Georgia 30334

All instances of noncompliance not reported under Part I. B. and C. and Part II. A shall be reported at the time the operation monitoring report is submitted.

3. Definitions

- a. The "daily average" discharge means the total discharge by weight during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summation of all the measured daily discharges by weight divided by the number of days sampled during the calendar month when the measurements were made.
- b. The "daily maximum" discharge means the total discharge by weight during any calendar day.

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- c. The "daily average" concentration means the arithmetic average of all the daily determinations of concentration made during a calendar month. Daily determinations of concentration made using a composite sample shall be the concentration of the composite sample.
- d. The "daily maximum" concentration means the daily determination of concentration for any calendar day.
- e. For the purpose of this permit, a calendar day is defined as any consecutive 24-hour period.
- f. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.
- g. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

4. Test Procedures

Monitoring must be conducted according to test procedures approved pursuant to 40 CFR 136 unless other test procedures have been specified in this permit.

5. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

- a. The exact place, date, and time of sampling or measurements, and the person(s) performing the sampling or the measurements;
- b. The dates the analyses were performed, and the person(s) who performed the analyses;
- c. The analytical techniques or methods used; and
- d. The results of all required analyses.

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6. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Operation Monitoring Report Form (WQ 1.45). Such increased monitoring frequency shall also be indicated. The Division may require by written notification more frequent monitoring or the monitoring of other pollutants not required in this permit.

7. Records Retention

The permittee shall retain records of all monitoring information, including all records of analyses performed, calibration and maintenance of instrumentation, recordings from continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Division at any time.

8. Penalties

The Federal Clean Water Act and the Georgia Water Quality Control Act provide that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit, makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine or by imprisonment, or by both. The Federal Clean Water Act and the Georgia Water Quality Control Act also provide procedures for imposing civil penalties which may be levied for violations of the Act, any permit condition or limitation established pursuant to the Act, or negligently or intentionally failing or refusing to comply with any final or emergency order of the Director of the Division.

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A. MANAGEMENT REQUIREMENTS

1. Change in Discharge

- a. Advance notice to the Division shall be given of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. Any anticipated facility expansions, production increases, or process modifications must be reported by submission of a new NPDES permit application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the Division of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.
- b. All existing manufacturing, commercial, mining, and silvicultural dischargers shall notify the Division as soon as it is known or there is reason to believe that any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant not limited in the permit, if that discharge will exceed (i) 100 µg/l, (ii) five times the maximum concentration reported for that pollutant in the permit application, or (iii) 200 µg/l for acrolein and acrylonitrile, 500 µg/l for 2,4 dinitrophenol and for 2-methyl-4-6-dinitrophenol, or 1 mg/l antimony.
- c. All existing manufacturing, commercial, mining, and silvicultural dischargers shall notify the Division as soon as it is known or there is reason to believe that any activity has occurred or will occur which would result in any discharge on a nonroutine or infrequent basis, of any toxic pollutant not limited in the permit, if that discharge will exceed (i) 500 µg/l, (ii) ten times the maximum concentration reported for that pollutant in the permit application, or (iii) 1 mg/l antimony.

2. Noncompliance Notification

If, for any reason, the permittee does not comply with, or will be unable to comply with any effluent limitation specified in this permit, the permittee shall provide the Division with an oral report within 24 hours from the time the permittee becomes aware of the circumstances followed by a written report within five (5) days of becoming aware of such condition. The written submission shall contain the following information:

- a. A description of the discharge and cause of noncompliance; and

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- b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

3. Facilities Operation

The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

4. Adverse Impact

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

5. Bypassing

- a. If the permittee knows in advance of the need for a bypass, it shall submit prior notice to the Division at least 10 days (if possible) before the date of the bypass. The permittee shall submit notice of any unanticipated bypass with an oral report within 24 hours from the time the permittee becomes aware of the circumstances followed by a written report within five (5) days of becoming aware of such condition. The written submission shall contain the following information:

- 1. A description of the discharge and cause of noncompliance; and
- 2. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

- b. Any diversion from or bypass of facilities covered by this permit is prohibited, except (i) where unavoidable to prevent loss of life, personal injury, or severe property damage; (ii) there were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime (this condition is not satisfied if the permittee could have installed adequate back-up equipment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance); and (iii) the permittee submitted a notice as required above. The permittee shall operate the treatment works, including the treatment plant and total sewer system, to minimize discharge of the pollutants listed in Part I of this permit from combined sewer overflows or bypasses. Upon written notification by the Division, the permittee may be required to submit a plan and schedule for reducing bypasses, overflows, and infiltration in the system.

6. Sludge Disposal Requirements

Hazardous sludge shall be disposed of in accordance with the regulations and guidelines established by the Division pursuant to the Federal Clean Water Act (CWA) and the Resource Conservation and Recovery Act (RCRA). For land application of nonhazardous sludge, the permittee shall comply with any applicable criteria outlined in the Division's "Guidelines for Land Application of Municipal Sludges." Prior to disposal of sludge by land application, the permittee shall submit a proposal to the Division for approval in accordance with applicable criteria in the Division's "Guidelines for Land Application of Municipal Sludges." Upon evaluation of the permittee's proposal, the Division may require that more stringent control of this activity is required. Upon written notification, the permittee shall submit to the Division for approval, a detailed plan of operation for land application of sludge. Upon approval, the plan will become a part of the NPDES permit. Disposal of nonhazardous sludge by other means, such as landfilling, must be approved by the Division.

7. Sludge Monitoring Requirements

The permittee shall develop and implement procedures to insure adequate year-round sludge disposal. The permittee shall monitor the volume and concentration of solids removed from the plant. Records shall be maintained which document the quantity of solids removed from the plant. The ultimate disposal of solids shall be reported monthly (in the unit of lbs/day) to the Division with the Operation Monitoring Report Forms required under Part I (C)(2) of this permit.

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8. Power Failures

Upon the reduction, loss, or failure of the primary source of power to said water pollution control facilities, the permittee shall use an alternative source of power if available to reduce or otherwise control production and/or all discharges in order to maintain compliance with the effluent limitations and prohibitions of this permit.

If such alternative power source is not in existence, and no date for its implementation appears in Part I, the permittee shall halt, reduce or otherwise control production and/or all discharges from wastewater control facilities upon the reduction, loss, or failure of the primary source of power to said wastewater control facilities.

B. RESPONSIBILITIES

1. Right of Entry

The permittee shall allow the Director of the Division, the Regional Administrator of EPA, and/or their authorized representatives, agents, or employees, upon the presentation of credentials:

- a. To enter upon the permittee's premises where a regulated activity or facility is located or conducted or where any records are required to be kept under the terms and conditions of this permit; and
- b. At reasonable times, to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and to sample any substance or parameters in any location.

2. Transfer of Ownership or Control

A permit may be transferred to another person by a permittee if:

- a. The permittee notifies the Director in writing of the proposed transfer at least thirty (30) days in advance of the proposed transfer;
- b. A written agreement containing a specific date for transfer of permit responsibility and coverage between the current and new permittee (including acknowledgement that the existing permittee is liable for violations up to that date, and that the new permittee is liable for violations from that date on) is submitted to the Director at least thirty (30) days in advance of the proposed transfer; and

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- c. The Director, within thirty (30) days, does not notify the current permittee and the new permittee of the Division's intent to modify, revoke and reissue, or terminate the permit and to require that a new application be filed rather than agreeing to the transfer of the permit.

3. Availability of Reports

Except for data deemed to be confidential under O.C.G.A. § 12-5-26 or by the Regional Administrator of the EPA under the Code of Federal Regulations, Title 40, Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at an office of the Division. Effluent data, permit applications, permittee's names and addresses, and permits shall not be considered confidential.

4. Permit Modification

After written notice and opportunity for a hearing, this permit may be modified, suspended, revoked or reissued in whole or in part during its term for cause including, but not limited to, the following:

- a. Violation of any conditions of this permit;
- b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;
- c. A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge; or
- d. To comply with any applicable effluent limitation issued pursuant to the order the United States District Court for the District of Columbia issued on June 8, 1976, in Natural Resources Defense Council, Inc. et.al. v. Russell E. Train, 8 ERC 2120(D.D.C. 1976), if the effluent limitation so issued:
 - (1) is different in conditions or more stringent than any effluent limitation in the permit; or
 - (2) controls any pollutant not limited in the permit.

5. Toxic Pollutants and Best Available Technology Economically Achievable

The permittee shall comply with effluent standards or prohibitions established pursuant to Section 307(a) and Section 301(b)2 of the Federal Clean Water Act for pollutants, toxic and otherwise,

which are present in the discharge within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

6. Civil and Criminal Liability

Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

7. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Federal Clean Water Act.

8. Water Quality Standards

Nothing in this permit shall be construed to preclude the modification of any condition of this permit when it is determined that the effluent limitations specified herein fail to achieve the applicable State water quality standards.

9. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

10. Expiration of Permit

Permittee shall not discharge after the expiration date. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit such information, forms, and fees as are required by the agency authorized to issue permits no later than 180 days prior to the expiration date.

11. Contested Hearings

Any person who is aggrieved or adversely affected by an action of the Director of the Division shall petition the Director for a hearing within thirty (30) days of notice of such action.

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12. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

13. Best Management Practices

The permittee will implement best management practices to control the discharge of hazardous and/or toxic materials from ancillary manufacturing activities. Such activities include, but are not limited to, materials storage areas; in-plant transfer, process and material handling areas; loading and unloading operations; plant site runoff; and sludge and waste disposal areas.

14. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

15. Duty to Provide Information

- a. The permittee shall furnish to the Director of the Division, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish upon request copies of records required to be kept by this permit.
- b. When the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or any report to the Director, it shall promptly submit such facts and information.

16. Stormwater Runoff

In addition to the outfalls identified in Part I, Section A. of this permit, the permittee is authorized to discharge stormwater runoff from point sources at this facility provided that these discharges do not cause violations of State water quality standards in the receiving streams.

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17. Upset Provisions

Provisions of 40 CFR 122.41(n)(1)-(4), regarding "Upset" shall be applicable to any civil, criminal, or administrative proceeding brought to enforce this permit.

PART III

A. PREVIOUS PERMITS

1. All previous State water quality permits issued to this facility, whether for construction or operation, are hereby revoked by the issuance of this permit. This action is taken to assure compliance with the Georgia Water Quality Control Act, as amended, and the Federal Clean Water Act, as amended. Receipt of the permit constitutes notice of such action. The conditions, requirements, terms and provisions of this permit authorizing discharge under the National Pollutant Discharge Elimination System govern discharges from this facility.

B. SPECIAL REQUIREMENTS

1. Certification Requirements (Operation)

The permittee shall insure that the person in responsible charge for the daily operation of this wastewater treatment plant is a Certified Operator in accordance with the Georgia Certification of Water and Wastewater Plant Operators and Laboratory Analysts Act, as amended, and the Rules promulgated thereunder and holds a classification consistent with the plant classification specified by Subparagraph 391-3-6-.12 of the Rules and Regulations for Water Quality Control. Operators, other than the person in responsible charge, must obtain certification in Class III operator classification or higher within one year of obtaining employment as an operator of a public wastewater treatment plant.

2. Certification Requirements (Laboratory)

The permittee shall insure that, when required, the person in responsible charge of the laboratory that is performing the laboratory analyses for this wastewater treatment plant is a certified Laboratory Analyst in accordance with the Georgia Certification of Water and Wastewater Treatment Plant Operators and Laboratory Analysts Act, as amended, and the Rules promulgated thereunder.

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C. BIOMONITORING AND TOXICITY REDUCTION REQUIREMENTS

The permittee may not discharge toxic wastes in concentrations or combinations which are harmful to humans, fish or aquatic life. The permittee shall ensure that the effluent being discharged does not kill 10% or more of the exposed test organisms in 96 hours or less, when the test solution contains volumes of effluent and stream water proportional to the plant design flow and the 7Q10 flow of the receiving stream.

1. If toxicity is suspected in the permittee's effluent, the Division may require the permittee to develop a program for whole effluent biomonitoring. The schedule will be as follows;
 - a. Within 90 days of Division notification, a study plan detailing the test methodology and test organisms shall be submitted for conducting forty-eight hour acute static renewal tests of the final effluent. If residual chlorine is present in the final effluent from treatment and/or disinfection processes, a prechlorinated or dechlorinated sample will also be tested.
 - b. Within 90 days of Division approval of the study plan, the permittee will conduct and submit the results of the forty-eight hour static renewal tests.
2. If toxicity is found in the permittee's effluent, the permittee shall, within 90 days of written notification by the Division, submit a Toxicity Reduction Evaluation (TRE) plan to the Division. The TRE plan shall detail the action the permittee will implement to eliminate toxicity. Within 270 days of Division approval of the TRE plan, the permittee shall complete implementation of the TRE plan and conduct follow-up biomonitoring of the effluent in accordance with the approved TRE plan. If toxicity is still indicated, the permittee shall continue the TRE plan. The TRE plan shall not be complete until the permittee has eliminated the toxicity in its effluent. On a case specific basis, chronic toxicity testing procedures may be required for the definitive determination that toxicity has been eliminated.
3. If toxicity is not indicated initially, or if there are substantial changes in the effluent composition, the permittee may be required to repeat the forty-eight hour static renewal test upon notification by the Division. On a case specific basis, chronic toxicity testing procedures may also be required.

Upon approval by the Division, all study plans and TRE plans will become part of the requirements of this permit.



State of Georgia
Department of Natural Resources
ENVIRONMENTAL PROTECTION DIVISION



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AMENDMENT TO
HAZARDOUS WASTE FACILITY PERMIT

Amendment To
Permit No. HW-045 (S&T)

Effective Date
Of Amendment 9/27/89

In accordance with the provisions of the Georgia Hazardous Waste Management Act and the Rules, Chapter 391-3-11, (as amended through June 28, 1988), adopted pursuant to that Act, Permit No. HW-045 (S&T) issued on 8/14/87 to:

Fort Stewart

for the following:

- 1) Storage of 44,500 gallons of hazardous waste in containers
- 2) Treatment of outdated munitions by detonation

Is hereby amended as follows:

- 1) The approved container storage building design is modified to include berms instead of sumps; and
- 2) The EOD treatment facility is closed and removed from the permit.

Reason for Amendment:

Request from permittee

This Permit Amendment is further subject to and conditioned upon the terms, conditions, limitations, standards, or schedules contained in or specified on the attached 5 page(s), which page(s) are a part of this Amendment. This Amendment is hereby made a part of Permit No. HW-045(S) and compliance with this Amendment is hereby ordered.

Leonard Ledbetter

Director
Environmental Protection Division

Permit Number: HW-045(S&T)
Fort Stewart

SECTION III. CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS (SWMUs) AND OTHER RELEASES

A. Applicability and Certification

1. The conditions of this Section apply to the determination of need for, and subsequent implementation of, corrective action for releases from all SWMUs and other releases, both those contained within the facility property boundary and, as required by §12-8-66 of the Georgia Hazardous Waste Management Act, those extending beyond the facility property boundary. All submittals made under this Section shall be certified in accordance with 40 CFR 270.11.
2. The conditions of this Section specifically apply to the following SWMUs and other releases identified by the RCRA Facility Assessment (RFA) report which was completed by the Director as of the effective date of this permit as those for which an RFI plan will be required under Condition III.C.1.:
 - Post Landfill
 - Camp Oliver Landfill
 - Tac-X Landfill
 - Burn Pits (7)
 - Explosive Ordnance Disposal Areas (5)
 - Fire Training Pit
 - Old Fire Training Pit
 - DRMO Hazardous Waste Storage Site
 - 724th Tanker Purging Station
 - Motor Pools (30)
 - 724th Battery Shop
 - Industrial Waste Water Treatment Plant
 - a. Equalization Pond
 - b. Sludge Drying Beds
 - Old Sludge Drying Beds
 - Radiator Shop
 - Wright Air Field
 - a. Land Application
 - b. Lagoon
 - Evans Army Heliport POL Storage Facility
3. The conditions of this Section also apply to any other SWMUs or releases discovered subsequent to the completion of the RFA report referenced in Condition III.A.2. or not otherwise identified in the RFA report.

B. RCRA Facility Assessment (RFA)

1. For those SWMUs and releases identified in Condition III.A.3. above, the Permittee shall prepare a RFA report. The report shall describe the methods and specific actions used to determine whether a prior or continuing release of hazardous waste, hazardous constituents or

Permit Number: HW-045(S&T)
Fort Stewart

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- hazardous waste constituents has occurred. The report must include, at a minimum, the following information and any other appropriate information necessary to determine the need for an RFI as required under Condition III.C.:
- . Type and function of unit;
 - . Location of each unit on a topographic map of appropriate scale;
 - . General dimensions and capacities;
 - . Dates that the unit was operated;
 - . Description of the wastes that were placed in the unit; and
 - . Description of any known releases or spills (to include groundwater data, soil analyses, and/or surface water data).
2. The report(s) required under Condition III.B.1. shall be completed and submitted to the Director within sixty (60) days of the date of discovery of any SWMU or release.
 3. The Director shall review RFA report(s) required under Condition III.B.1. and determine those SWMUs and releases from which residual contamination or continuing releases have resulted, and shall notify the Permittee whether an RFI plan will be required under Condition III.C.2. for those SWMUs or releases.

C. RCRA Facility Investigation (RFI)

1. The Permittee shall complete and submit an RFI plan for those units or releases referenced in Condition III.A.2. within six (6) months of the effective date of this permit. The plan shall include a schedule of implementation and a description of the specific actions necessary to determine the nature and extent of releases identified by the RFA report, including potential migration pathways for those releases (i.e. air, land, surface water, and groundwater), actual or potential receptors and applicable background concentrations. The Permittee must provide sufficient justification that migration through a potential pathway is not likely if a potential migration pathway associated with a release is not included in the plan. Such deletions are subject to the approval of the Director.
2. The Permittee shall complete and submit an RFI plan for those SWMUs or releases referenced in Condition III.B.3. within ninety (90) days of the date of notification under Condition III.B.3. The plan shall include a schedule of implementation and a description of the specific actions necessary to determine the nature and extent of subject releases, including sources, potential migration pathways (i.e. air, land, surface water, groundwater), actual or potential receptors and applicable background concentrations. The Permittee must provide sufficient justification that migration through a potential pathway is not likely if a potential migration pathway associated with a release is not included in the plan. Such deletions are subject to the approval of the Director.

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Fort Stewart

3. Upon approval by the Director of plan(s) required by Conditions III.C.1. and 2., the Permittee shall conduct the RFI in accordance with the schedule contained in the approved plan.
4. The Permittee shall complete and submit an RFI report in accordance with the schedule contained in the plan required by Conditions III.C.1. and 2. The report shall provide a summary of all activities undertaken during the RFI to implement the approved plan. The report shall provide a complete description of the nature and extent of all releases identified during the RFI including sources, migration pathways, actual or potential receptors and applicable background concentrations. The RFI report shall address all releases which extend beyond the facility property boundary unless the Permittee demonstrates to the Director's satisfaction that, despite the Permittee's best efforts, the Permittee was unable to obtain permission to undertake actions required by the plan(s), or such action is not necessary to protect public health or the environment.

D. Corrective Action

1. The Director shall review the RFI report required under Condition III.C.4. Upon determination that the report is complete, the Director shall specify to the Permittee those SWMUs or releases identified in such RFI report for which corrective action conforming to § 264.101(a) will be required.
2. Upon notification from the Director that corrective action is needed, the Permittee shall submit a corrective action plan in accordance with a schedule to be determined by the Director. The plan shall provide a description of the corrective measures to be taken with regard to those SWMUs or releases identified under Condition III.D.1., including a schedule of implementation for such corrective action.
3. Upon approval by the Director of any plan required by Condition III.D.2., the Permittee shall implement any required corrective action in accordance with the schedule in the approved plan.
4. If required to develop a corrective action plan under Condition III.D.2., the Permittee shall apply for a permit modification pursuant to § 270.41 to incorporate the plan into the permit.

E. Interim Measures

1. The Permittee may conduct interim measures to contain, remove or treat contamination resulting from the release of hazardous constituents from a SWMU or release in order to protect public health and the environment, upon approval by the Director. Such interim measures may be conducted concurrently with investigations required under the terms of this permit.

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Fort Stewart

2. The Permittee shall notify the Director of any proposed interim measures at least thirty (30) days prior to implementation. The notice shall include a description and a schedule of implementation of any proposed interim measures.
3. The Permittee shall give notice to the Director as soon as possible of any planned changes, reduction or additions to the interim measures.
4. Incorporation of interim measures into the corrective action plan shall be done in accordance with Condition III.D.3.
5. Upon completion of interim measures, the Permittee shall complete and submit an interim measures report. The report shall provide the following information:
 - i. A description of interim measures implemented;
 - ii. A summary of all data or other information obtained during implementation of interim measures; and
 - iii. A summary of the effectiveness of the interim measures in achieving the objective of Condition III.E.1.

F. Schedule of Compliance

1. If the Permittee at any time determines that any plan or report required under Condition III.B., C., D., or E. no longer satisfies the requirements of § 264.101 or this permit for prior or continuing releases of hazardous waste, hazardous constituents or hazardous waste constituents he must submit an amended plan or report to the Director within ninety (90) days of such determination.
2. All plans and schedules shall be subject to approval by the Director prior to implementation. The Permittee shall revise all submittals as specified by the Director.
3. For any schedule required by any plan or report, if the time required to complete any interim activity is more than one year, the schedule shall specify interim dates for the submission of reports of progress toward satisfaction of the interim requirements.
4. The results of all plans and reports shall be submitted in accordance with the approved schedule. Extensions of the due date for submittals may be granted by the Director based on the Permittee's demonstration that sufficient justification for the extension exists.
5. Upon approval by the Director all plans and schedules shall be enforceable as conditions of this permit.

(0325P)

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION



PERMIT NO. 9711-089-8054-C

COUNTY LIBERTY

EFFECTIVE DATE
OF PERMIT: JUN 29 1981

PERMIT TO CONSTRUCT

In compliance with the provisions of Georgia's Air Quality Act of 1978 and the Rules and Regulations, Chapter 391-3-1, adopted pursuant to or in effect under that Act, U.S. ARMY CORPS OF ENGINEERS - SAVANNAH DISTRICT, Post Office Box 889, Savannah, Georgia 31402 is issued a Permit to Construct the following:

One (1) 140 million BTU per hour wood-fired boiler,
One (1) Multicyclone, and one (1) venturi scrubber

location: Central Energy Plant, Building 1412, Fort Stewart, Georgia 31314

This Permit to Construct is conditioned upon compliance with all provisions of Georgia's Air Quality Act of 1978, the Rules and Regulations of Chapter 391-3-1 adopted or in effect under that act, or any other condition of this Permit.

This Permit may be subject to revocation, suspension, modification or amendment by the Director for cause including evidence of noncompliance with any of the above; or for any misrepresentation made in the application(s) dated February 4, 1981, supporting data entered therein or attached thereto, or any subsequent submittals or supporting data; or for any alterations affecting the emissions from this source.

Absent prior revocation, suspension, modification or amendment by the Director, this Permit shall expire at midnight, the 31st day of August 1982.

This Permit is further subject to and conditioned upon the terms, conditions, limitations, standards, or schedules contained in or specified on the attached 1 page(s), which page(s) are a part of this Permit.


Director
Environmental Protection Division

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STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

PERMIT NO. 9711-089-8054-C

PAGE 1 of 1

General Requirements

1. At all times, including periods of startup, shutdown, and malfunction, the Permittee shall to the extent practicable maintain and operate this source, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Division which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.
2. The Permittee shall commence construction of the permitted source within 18 months of the effective date of this permit.
3. The Permittee shall cause to be conducted a performance test at any specified emission point when so directed by the Division. The test results shall be submitted to the Division within thirty (30) days of the completion of testing. Any tests shall be performed and conducted using methods and procedures which have been previously approved by the Division.
4. In accordance with Georgia Rules for Air Quality, Chapter 391-3-1-.02(6)(a)2 for wood waste fired combination boilers, the Permittee shall install, calibrate, operate and maintain a continuous monitoring system for the measurement of opacity.
5. At no time shall the Permittee operate the wood-fired boiler while any of the existing fossil fuel-fired boilers are in operation.
6. The annual consumption of wood waste shall not exceed 100,000 tons. The annual consumption of #6 fuel oil shall not exceed 400,000 gallons.
7. When firing the boiler facilities, fuels utilized and methods of firing shall be regulated in such a manner that the total sulfur dioxide and nitrogen oxides emission rates do not exceed 250 tons per year.

Notification, Reporting and Recordkeeping

8. The Permittee shall furnish the Division written notification as follows:
 - a. The anticipated date of initial startup of this source, not more than sixty (60) nor less than thirty (30) days prior to such date.
 - b. The actual date of initial startup of this source, within fifteen (15) days after such date.

For purposes of this permit, "startup" shall mean the setting in operation of a source for any purpose.

FORT STEWART

The Fort is classified as a Federal facility. It presently operates (3) three #5 fuel-fired boilers. The 3 boilers are to be shut down and replaced with (1) one 140×10^6 BTU/HR wood-fired boiler.

Mr. Mitchell spoke with Roger Phaff on the phone June 5, 1981. Mr. Phaff informed Mr. Mitchell that at any source not classified as a major source, if after all modifications are completed and the source is not a major source, i.e. the emissions do not individually exceed 250 tons/year, then the source is not subject to PSD review, even though it may have been a major source prior to the modification.

The pollutants from the wood-fired boiler will not exceed 250 tons/year and therefore, will not be subject to PSD.

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STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

AMENDMENT TO PERMIT

AMENDMENT TO
PERMIT NO. 9711-089-8054-C

COUNTY LIBERTY



EFFECTIVE DATE
OF AMENDMENT

DEC 9 1981

In accordance with Section 9 of Georgia's Air Quality Act of 1978 (Ga. Law 1978, page 275 et seq, as amended) and the Rules, Chapter 391-3-1, adopted pursuant to or in effect under that Act, Permit No. issued on June 29, 1981 to US ARMY CORPS OF ENGINEERS

Savannah District
Post Office Box 889, Savannah, GA 31402

for the following: One (1) 140 million BTU per hour wood-fired boiler,
One (1) multicyclone, and one (1) venturi scrubber

is hereby amended as follows: Delete conditions number 5 and 6 of the existing permit and add conditions 5,6,9, and 10 attached to this Amendment.

Reason for Amendment: Fort Stewart would like the option of operating a fuel-fired boiler while the woodwaste boiler is operating.

This Permit is further subject to and conditioned upon the terms, conditions, limitations, standards, or schedules contained in or specified on the attached 1 page(s), which page(s) are a part of this Amendment.

This Permit Amendment is effective from the date first above written and is hereby made a part of Permit No. 9711-089-8054-C and compliance herewith is hereby ordered. Except as amended hereby, the above referenced Permit remains in full force and effect.

J. Leonard Ledbetter
Director
Environmental Protection Division

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STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

AMENDMENT
PERMIT NO. 9711-089-8054-C

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General Requirements

5. The annual consumption of woodwaste shall not exceed 124,000 tons. The annual consumption of No. 6 fuel oil used for startup and flame stabilization in the woodwaste boiler shall not exceed 321,000 gallons. The sulfur content of the No. 6 fuel oil shall not exceed 2.2% by weight.
6. The total steam output of the facility, whether it be ^{SOLELY} from the woodwaste boiler or from a combination of oil-fired boiler and woodwaste boiler, shall not exceed 95,000 pounds per hour.

Notification, Reporting and Recordkeeping

9. Permittee shall report fuel analyses and usage upon request by the Division:
 - a. The Permittee shall provide the Division analyses of the fuels burned, specifically to include heating value and percent sulfur by weight. The Division shall specify the frequency of sample collection, analyses and submittal. Sample collection and analyses shall be by methods approved by the Division.
 - b. The Permittee shall maintain a record of boiler operation and fuel consumption sufficient to confirm the annual hours of operation of the boiler and quantity of fuel burned. The records shall be retained for inspection or submittal for two years after the year of record.
10. The Permittee shall maintain records of the occurrence and duration of the operation of any oil-fired boiler while the woodwaste boiler is in operation. Such records shall be maintained a minimum of two (2) years.

Georgia Department of Natural Resources

270 Washington Street, S.W.,

825, Atlanta, Georgia 30334

J. Leonard Ledbetter, Commissioner

Harold F. Reheis, Assistant Director

Environmental Protection Division

JUL 31 1985

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Mr. Dale Kiefer
Chief, Environmental Office
HDQTRs 24th Infantry Division
AFZP-DEN-E
Environmental Office
Building 1135
Fort Stewart, Georgia 31314

RE: Amendment to Permit No.
9711-089-6355-0

Dear Mr. Kiefer:

Enclosed you will find an Amendment to your Permit No. 9711-089-6355-0, originally written for boilers, an incinerator, and fuel tanks. The new permitted items are the 72 X 10^6 BTU per hour oil-fired boiler built around 1979 and a new 140 X 10^6 BTU per hour wood-fired boiler. Please note the attached new permit conditions, specifically Nos. 5, 6, 8, 10, 11 and 12, which deal with your responsibility to monitor and control the sulfur content of your fuel oil.

The limitations placed upon you by these conditions are to prevent you from emitting more than 250 tons per year of sulfur dioxide. These limits should not be difficult to attain with the wood-fired boiler on line. I have chosen to use the formula $(2.5/S) \times 1,000,000$ gallons per year of No. 5 fuel oil. This allows you to burn more fuel if you use oil with lower sulfur content. For example, 1.25% sulfur allows you to burn 2,000,000 gallons per year, while using 2.5% sulfur oil will mean you can only burn 1,000,000 gallons per year.

As agreed by you on July 10, 1985, you will pull a sample from each truck delivering oil to Fort Stewart. This sample shall be tested for sulfur content. If there is more than one delivery within a two day period, equal volume samples from all trucks delivering in that period shall be mixed. A sample from that mixture shall be tested for sulfur content. Fuel information shall be submitted to the Division as per Condition Nos. 10, 11 and 12.

Feel free to call me at (404)656-4867 if you have any questions.

Sincerely,



John Yntema
Environmental Engineer
Air Pollution Compliance Program

JY:lr
Enclosure
c: Southeast Georgia Regional Office



State of Georgia
Department of Natural Resources
ENVIRONMENTAL PROTECTION DIVISION



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AMENDMENT TO AIR QUALITY PERMIT

Amendment To
Permit No.

9711-089-6355-0

Effective Date
Of Amendment

JUL 31 1985

In accordance with Section 9 of Georgia's Air Quality Act of 1978 (Ga. Law 1978, page 275 et seq, as amended) and the Rules, Chapter 391-3-1, adopted pursuant to or in effect under that Act, Permit No. 9711-089-6355-0 issued on Sept. 25, 1978 to Head quarters, 24th Infantry Division and Fort Stewart, DFAE, Environmental Office, Fort Stewart, GA 31314

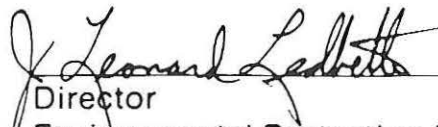
for the following: Boilers firing natural gas, No. 2 fuel oil, and No. 5 fuel oil, Hesston Model CA-200 incinerator, and fuel storage tanks.

is hereby amended as follows: Add conditions 2 through 14 to existing condition 1.

Reason for Amendment: Additional 72×10^6 BTU/hr. boiler firing No. 5 fuel oil, Permit application dated August 30, 1984. Additional 140×10^6 BTU/hr. boiler firing waste wood; Permit application dated May 28, 1985. Supplemental information received through July 1, 1985.

This Permit is further subject to and conditioned upon the terms, conditions, limitations, standards, or schedules contained in or specified on the attached 3 page(s), which page(s) are a part of this Amendment.

This Permit Amendment is effective from the date first above written and is hereby made a part of Permit No. 9711-089-6355-0 and compliance herewith is hereby ordered. Except as amended hereby, the above referenced Permit remains in full force and effect.


Director
Environmental Protection Division

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STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

AMENDMENT TO
PERMIT NO. 9711-089-6355-0

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General Requirements

2. At all times, including periods of startup, shutdown, and malfunction, the Permittee shall to the extent practicable maintain and operate this source, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Division which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.
3. The Permittee shall dispose of all solid waste and/or wastewater in a manner acceptable to the Division.
4. The Permittee shall cause to be conducted a performance test at any specified emission point when so directed by the Division. The test results shall be submitted to the Division within 30 days of the completion of testing. Any tests shall be performed and conducted using methods and procedures which have been previously approved by the Division.

Allowable Emissions

5. The total firing of fuel shall be limited such that the total uncontrolled annual emission of sulfur dioxide could not equal or exceed 250 tons. Allowing for some sulfur in wood being burned, the firing fuel oil shall be limited such that the total uncontrolled annual emission of sulfur dioxide could not exceed 235 tons. The annual consumption of fuel oil shall not exceed $\frac{2.5}{S} \times 1,000,000$ gallons. Where S is the average percentage of sulfur in the fuel oil.
6. The Permittee shall fire no fuel oil containing more than 2.5 percent sulfur, by weight.

Monitoring Requirements

7. The Permittee shall be required by the Division to install and operate steam flow and/or oil consumption monitors if present recordkeeping system is determined to be inadequate by the Division.
8. The Permittee shall monitor fuel oil consumption and sulfur content of fuel oil in order to provide data to verify compliance with condition No. 5. This shall be done using equipment and methods agreed upon by the Division.

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STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

AMENDMENT TO
PERMIT NO. 9711-089-6355-0

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Fugitive Emissions

9. The Permittee shall take all reasonable precautions with any operation, process, handling, transportation, or storage facilities to prevent fugitive emissions of air contaminants.

Notification, Reporting and Recordkeeping

10. The Permittee shall retain records of boiler operation for two years after the date and year of record. The records shall be available for inspection or submittal to the Division upon request and contain:
- a. Analyses of the fuel oil burned. The analyses shall include such properties as heating value, sulfur content, ash content, moisture and/or other properties specified by the Division. Fuel sampling and analysis frequency and methods shall be approved by the Division.
 - b. Boiler usage sufficient to confirm hours of operation.
 - c. Quantity of fuel oil burned.
11. The Permittee shall submit a quarterly report within thirty (30) days following each calendar quarter unless otherwise approved by the Division. The report shall be prepared from records retained in Condition 10, submitted in a manner suitable to the Division and contain:
- a. A summary of the analyses of the fuel oil burned.
 - b. Total hours of boiler operation for the quarter.
 - c. Total fuel oil consumption for the quarter.
12. The Permittee shall submit an annual report by January 30th of the year following the calendar year of record unless otherwise approved by the Division. The report shall be prepared from records retained in Condition 10, submitted in a manner suitable to the Division and contain:
- a. A summary of the analyses of the fuel oil burned.
 - b. Total hours of boiler operation for the year.
 - c. Total fuel oil consumption for the year.

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STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

AMENDMENT TO
PERMIT NO. 9711-089-6355-0

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Modifications

13. The Permittee shall give written notification to the Division when there is any modification to this source. This notice shall be submitted sufficiently in advance of any critical date involved to allow sufficient time for review, discussion, and revision of plans, if necessary. Such notice shall include, but not be limited to, information describing the precise nature of the change; modifications to any emission control system; production capacity of the plant before and after the change; and the anticipated completion date of the change.

Special Conditions

14. At any time that the Division, based upon data on potentially toxic or adverse effects of the compounds emitted from this operation or the availability of improved technology to limit emissions of such compounds, determines that additional control of emissions from the facility may reasonably be needed to provide for the continued protection of public health, safety and welfare, the Division reserves the right to amend the provisions of this Permit without prior notice.

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TABLE H-2-1. NPDES PERMIT SUMMARY, HINESVILLE REGIONAL SEWAGE TREATMENT FACILITY

Parameter	Monthly Average
BOD ₅	10 mg/L
TSS	30 mg/L
Ammonia Nitrogen as N	2.0 mg/L
pH	Between 6.0 and 9.0 standard units at all times.
Dissolved Oxygen	Minimum 6.0 mg/L at all times.

TABLE H-2-2. NPDES PERMIT SUMMARY, INDUSTRIAL WASTE TREATMENT PLANT, OUTFALL 003, NPDES NO. GA0004308, FORT STEWART, GEORGIA

Parameter	Discharge Limitations (All units mg/L unless stated otherwise.)		Monitoring Requirements	
	Monthly	Weekly	Frequency	Type Location
BOD ₅	30	45	2/month	Grab Effluent
Suspended Solids	30	45	2/month	Grab Effluent
Phenol	1.0	2.0	2/month	Grab Effluent
Oil & Grease	10	15	2/month	Grab Effluent
pH	Between 6.0 and 9.0 SU at all times.		2/month	Grab Effluent
SU: Standard Units				

EPR No. 32-24-7038-89, 1-12 Aug 88

TABLE H-2-3. EFFLUENT SUMMARY, INDUSTRIAL WASTE TREATMENT PLANT,
OUTFALL 003, NPDES NO. GA0004308, FORT STEWART,
GEORGIA

DATE	BOD ₅ (mg/L)	TSS (mg/L)	PHENOL (mg/L)	O&G (mg/L)	pH (su)
Permit Limits	30	30	1.0	10.0	6-9
Jun-87	2	4	0.01	5	7.1
Jul-87	3	6	0.02	7.5	7.2
Aug-87	3	4	0.02	2.5	7.2
Sep-87	3	5	0.01	5	7.4
Oct-87	3	4	0.02	6	7.2
Nov-87	2	3	0.01	5	7.4
Dec-87	2	3	0.01	5	7.4
Jan-88	3	4	0.01	5	7.3
Feb-88	3	6	0.01	5	7.5
Mar-88	5	11	0.01	5	7
Apr-88	3	5	0.02	5	7.1
May-88	3	5	0.02	5	7.1
Jun-88	3	4	0.01	5	7.3
AVG	3	5	0.01	5	7
MAX	5	11	0.02	7.5	7.5

EPR No. 32-24-7038-89, 1-12 Aug 88

TABLE H-2-4. NPDES PERMIT SUMMARY, EVANS ARMY AIRFIELD, PACKAGE TREATMENT PLANT, OUTFALL 001, NPDES NO. GA0004308, FORT STEWART, GEORGIA

Parameter	Discharge Limitations (All units mg/L unless unless stated otherwise.)		Monitoring Requirements		
	Monthly	Weekly	Frequency	Type	Location
Flow (MGD)	0.035	0.035	Daily	Cont.	Influent or Effluent
BOD ₅	20	30	1/month	Composite	Effluent
Suspended Solids	30	45	1/month	Composite	Effluent
Fecal Coliform (#/100 mL)	200	400	1/month	Grab	Effluent
Ammonia Nitrogen	5.0	7.5	1/month	Composite	Effluent
pH	Between 6.0 and 9.0 SU at all times.		1/month	Grab	Effluent

SU: Standard Units
Cont.: Continuous

TABLE H-2-5. EFFLUENT SUMMARY, EVANS ARMY AIRFIELD, PACKAGE TREATMENT PLANT,
OUTFALL 001, NPDES NO. GA0004308, FORT STEWART, GEORGIA

DATE	FLOW (MGD)	BOD ₅ (mg/L)	TSS (mg/L)	FC (#/100 mL)	NH ₃ -N (mg/L)	pH (su)
Permit Limits	0.035	20	30	200	5.0	6-9
Jun-87	0.001	6	3	0	0.03	6.9
Jul-87	0.0011	2	3	980	0.52	7.1
Aug-87	0.001056	2	5	0	0.03	7.3
Sep-87	0.001359	2	6	0	0.1	7.1
Oct-87	0.001171	3	5	0	0.03	7.4
Nov-87	0.001031		9	0	0.17	7.2
Dec-87	0.00523	4	7	0	0.02	7.4
Jan-88	0.0011	4	7	0	0.03	7.3
Feb-88	0.004185	8	6	0	0.04	7.3
Mar-88	0.00145	6	6	0	0.26	7.4
Apr-88	0.00252	4	6	0	0.03	7.3
May-88	0.002147	5	7	0	9.5	7.4
Jun-88	0.00756	6	3	0	0.03	6.9
AVG	0.0024	4	5.9	75	0.83	7.2
MAX	0.00756	8	9	980	9.5	7.4

TABLE H-2-7. NPDES PERMIT SUMMARY, TAC-X, PACKAGE TREATMENT PLANT, OUTFALL 002, NPDES NO. GA0004308, FORT STEWART, GEORGIA

Parameter	Discharge Limitations (All units mg/L unless unless stated otherwise.)		Monitoring Requirements		
	Monthly	Weekly	Frequency	Type	Location
Flow (MGD)	0.035	0.035	Daily	Cont.	Influent or Effluent
BOD ₅	20	30	1/month	Composite	Effluent
Suspended Solids	30	45	1/month	Composite	Effluent
Fecal Coliform (#/100 mL)	200	400	1/month	Grab	Effluent
Ammonia Nitrogen	5.0	7.5	1/month	Composite	Effluent
pH	Between 6.0 and 9.0 SU at all times.		1/month	Grab	Effluent

SU: Standard Units
Cont.: Continuous

TABLE H-2-7. EFFLUENT SUMMARY, TAC-X, PACKAGE TREATMENT PLANT, OUTFALL 002,
NPDES NO. GA0004308, FORT STEWART, GEORGIA

Date	Flow (MGD)	BOD ₅ (mg/L)	TSS (mg/L)	FC (#/100 mL)	NH ₃ -N (mg/L)	pH (su)
Permit Limits	0.035	20	30	200	5.0	6-9
Jun-87	0.010	8	21	2000	2.9	7.1
Jul-87	0.010	11	19	158	9.6	7.3
Aug-87	0.006	11	21	0	0.03	7.0
Sep-87	0.009	10	18	0	22	7.2
Oct-87	0.008	10	16	0	0.16	7.2
Nov-87	0.009	15	26	0	0.03	7.2
Dec-87	0.008	15	19	12	6.5	7.1
Jan-88	0.009	18	19	11	3.0	7.1
Feb-88	0.012	20	16	10	1.3	7.2
Mar-88	0.011	10	7	0	0.03	7.2
Apr-88	0.012	9	16	0	10	7.1
May-88	0.009	15	25	0	18	7.2
Jun-88	0.008	8	11	0	0.03	6.8
AVG	0.0093	12	18	169	6	7
MAX	0.0122	20	26	2000	22	7.3

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TABLE H-2-8. LAND APPLICATION PERMIT SUMMARY, WRIGHT ARMY AIRFIELD TREATMENT PLANT, LAS NO. GA03-834, FORT STEWART, GEORGIA

Parameter	Discharge Limitations (All units mg/L unless unless stated otherwise.)		Monitoring Requirements		
	Daily	Monthly	Frequency	Type	Location
Flow	1,800 gpd	ns	ns	ns	Discharge to spray irrigation system.
BOD ₅	ns	50	ns	ns	Discharge to spray irrigation system.
Suspended Solids	ns	100	ns	ns	Discharge to spray irrigation system.

ns: Not Specified.

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TABLE H-2-9. EFFLUENT SUMMARY, WRIGHT ARMY AIRFIELD, LAND APPLICATION SYSTEM, FORT STEWART, GEORGIA

DATE	BOD ₅ (mg/L)	TSS (mg/L)
Jun-87	16	18
Jul-87	15	21
Aug-87	17	17
Sep-87	15	30
Oct-87	17	18
Nov-87	21	22
Dec-87	23	35
Jan-88	23	30
Feb-88	25	27
Mar-88	17	21
Apr-88	18	23
May-88	16	29
Jun-88	18	27
AVG	19	24
MAX	25	35

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TABLE H-2-10. LAND APPLICATION PERMIT SUMMARY, CAMP OLIVER TREATMENT PLANT,
LAS NO. GA03-624, FORT STEWART, GEORGIA

Parameter	Discharge Limitations (All units mg/L unless unless stated otherwise.)		Monitoring Requirements		
	Daily	Quarterly	Frequency	Type	Location
Flow	0.070 MGD	ns	ns	ns	Discharge to spray irrigation system.
BOD ₅	ns	50	ns	ns	Discharge to spray irrigation system.
Suspended Solids	ns	100	ns	ns	Discharge to spray irrigation system.
ns: Not Specified					

APPENDIX C
CHEMICAL DATA

GEORGIA WATER QUALITY REGULATIONS

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(a) A general plan that clearly identifies the exact location of the facilities, areas reserved for future expansion, access roads to the various units, and the point at which the access roads connect with existing road or street systems. It shall also show sufficient detail of the units, pipelines or any other features so as to make the proposed treatment process clearly and easily understood. The elevations of all units and water surfaces shall be shown.

(b) Detail plans which show longitudinal and transverse sections sufficient to explain the construction of each treatment unit.

(c) Flow measuring devices at appropriate points in the plan. Sampling and recording devices may be required by the Division when deemed necessary.

(d) Such other information as the Division may require.

(9) **Approval of Plans and Specifications.** Approval of the plans and specifications by the Division does not include or imply approval of the structural, electrical, or mechanical integrity of the sewerage system, treatment facilities, units or equipment.

(10) **Deviation from Approved Plans and Specifications.** No deviations from approved plans and specifications shall be made during construction unless documentation showing proposed changes has been submitted to and approved by the Division.

(11) **Effective Date.** This Paragraph shall become effective on June 30, 1974.

391-3-6.03 Water Use Classifications and Water Quality Standards.*

(1) **Purpose.** The establishment of water quality standards.

(2) **Water Quality Enhancement:**

(a) The purposes and intent of the State in establishing Water Quality Standards are to provide enhancement of water quality and prevention of pollution; to protect the public health or welfare in accordance with the public interest for drinking water supplies, conservation of fish, game and other beneficial aquatic life, and agricultural, industrial, recreational, and other beneficial uses.

(b) Those waters in the State whose existing quality is better than the minimum levels established in standards on the date standards become effective will be maintained at high quality; with the State having the power to authorize new developments, when it has been affirmatively demonstrated to the State that a change is justifiable to provide necessary social or economic development; and provided further that the level of treatment required is the highest and best practicable under existing technology to protect existing beneficial water uses.

(c) In applying these policies and requirements, the State of Georgia will

recognize and protect the interest of the Federal Government in interstate (including coastal and estuarine) waters. Toward this end the State will consult and cooperate with the Environmental Protection Agency on all matters affecting the Federal interest.

(3) **Definitions.** All terms used in this Paragraph shall be interpreted in accordance with definitions as set forth in the Act and as otherwise herein defined:

(a) "Reasonable and necessary uses" means drinking water supplies, conservation of fish, game and other aquatic life, agricultural, industrial, recreational, and other legitimate uses.

(b) "Shellfish" refers to clams, oysters, scallops, mussels, and other mollusks.

(c) "Intake temperature" is the natural or background temperature of a particular waterbody unaffected by any man-made discharge or thermal input.

(d) "Coastal waters" are those littoral recreational waters on the ocean side of the Georgia coast.

(4) **Water Use Classifications.** Water use classifications for which the criteria of this Paragraph are applicable are as follows:

(a) Drinking Water Supplies

(b) Recreation

(c) Fishing, Propagation of Fish, Shellfish, Game and Other Aquatic Life

(d) Agricultural

(e) Industrial

(f) Navigation

(g) Wild River

(h) Scenic River

(i) Urban Stream

(5) **General Criteria for All Waters.** The following criteria are deemed to be necessary and applicable to all waters of the State:

(a) All waters shall be free from materials associated with municipal or domestic sewage, industrial waste or any other waste which will settle to form sludge deposits that become putrescent, unsightly or otherwise objectionable.

(b) All waters shall be free from oil, scum and floating debris associated with municipal or domestic sewage, industrial waste or other discharges in amounts sufficient to be unsightly or to interfere with legitimate water uses.

(c) All waters shall be free from material related to municipal, industrial or other discharges which produce turbidity, color, odor or other objectionable conditions which interfere with legitimate water uses.

(d) All waters shall be free from toxic, corrosive, acidic and caustic substances discharged from municipalities, industries or other sources in amounts, concentrations or combinations which are harmful to humans, animals or aquatic life.

(e) Applicable State and Federal requirements and regulations for the discharge of radioactive substances shall be met at all times.

(f) No man-made physical or other alteration of stream beds that may violate established water quality standards, or reduce the waste assimilative capacity of the streams, will be permitted without the expressed approval of the Environmental Protection Division.

(6) **Specific Criteria for Classified Water Usage.** The following criteria are deemed necessary and shall be required for the specific water usage as shown:

(a) **Drinking Water Supplies:**

1. Those waters approved by the Environmental Protection Division and requiring only approved disinfection and meeting the requirements of the Federal Drinking Water Standards; or waters approved by the Environmental Protection Division for human consumption and food-processing or for any other use requiring water of a lower quality:

(i) **Bacteria:** Fecal coliform not to exceed a geometric mean of 50 per 100 ml based on at least four samples taken over a 30-day period and not to exceed 200 per 100 ml in more than five percent of the samples in any 90-day period.

(ii) **Floating solids, settleable solids, sludge deposits or any taste, odor or color producing substances:** None associated with any waste discharge.

(iii) **Sewage, industrial or other wastes:** None.

2. Those raw water supplies requiring approved treatment to meet the requirements of the Environmental Protection Division and the Federal Drinking Water Standards or which are approved by the Environmental Protection Division for human consumption and food-processing or for any other use requiring water of a lower quality:

(i) **Bacteria:** Fecal coliform not to exceed a geometric mean of 1,000 per 100 ml based on at least four samples taken over a 30-day period and not to exceed a maximum of 4,000 per 100 ml.

(ii) **Dissolved Oxygen:** A daily average of 6.0 mg/l and no less than 5.0 mg/l at all times for waters designated as trout streams by the State Game and Fish Division. A daily average of 5.0 mg/l and no less than 4.0 mg/l at all times for water supporting warm water species of fish.

(iii) **pH:** Within the range of 6.0-8.5.

(iv) No material or substance in such concentration that, after treatment, would exceed the requirements of the Environmental Protection Division and the latest edition of Federal Drinking Water Standards.

(v) **Temperature:** Not to exceed 90 degrees F. At no time is the temperature of the receiving waters to be increased more than 5 degrees F above intake temperature except that in estuarine waters the increase will not be more than 1.5 degrees F. In streams designated as trout or smallmouth bass waters by the State Game and Fish

*Applicable to Intrastate and Interstate Waters of Georgia.

Division, there shall be no elevation or depression of natural stream temperature.

(b) Recreation:

1. General recreational activities such as water skiing, boating, and swimming, or for any other use requiring water of a lower quality. These criteria are not to be interpreted as condoning water contact sports in proximity to sewage or industrial waste discharges regardless of treatment requirements:

(i) Bacteria: Fecal coliform not to exceed a geometric mean of:

(I) Coastal Waters — 100 per 100 ml

(II) All other recreational waters — 200 per 100 ml

(III) Should water quality and sanitary studies show natural fecal coliform levels exceed 200/100 ml (geometric mean) occasionally in high quality recreational waters, then the allowable geometric mean fecal coliform level shall not exceed 300 per 100 ml in lakes and reservoirs and 500 per 100 ml in free flowing fresh water streams.

1. The geometric mean will be used as the method of criteria expression. This technique will be applied to no less than four samples collected from a given sampling site over a 30-day period at intervals not less than 24 hours.

(ii) Dissolved Oxygen: A daily average of 6.0 mg/l and no less than 5.0 mg/l at all times for waters designated as trout streams by the State Game and Fish Division. A daily average of 5.0 mg/l and no less than 4.0 mg/l at all times for waters supporting warm water species of fish.

(iii) pH: Within the range of 6.0-8.5.

(iv) Toxic Wastes, Other Deleterious Materials: None in concentrations that would harm man, fish and game or other beneficial aquatic life.

(v) Temperature: Not to exceed 90 degrees F. At no time is the temperature of the receiving waters to be increased more than 5 degrees F above intake temperature except that in estuarine waters the increase will not be more than 1.5 degrees F. In streams designated as trout or smallmouth bass waters by the State Game and Fish Division, there shall be no elevation or depression of natural stream temperatures.

(c) Fishing, Propagation of Fish, Shellfish, Game and Other Aquatic Life; or for any other use requiring water of a lower quality:

1. Dissolved Oxygen: A daily average of 6.0 mg/l and no less than 5.0 mg/l at all times for waters designated as trout streams by the State Game and Fish Division. A daily average of 5.0 mg/l and no less than 4.0 mg/l at all times for waters supporting warm water species of fish.

2. pH: Within the range of 6.0-8.5.

3. Bacteria: Fecal coliform not to exceed a geometric mean of 1,000 per 100 ml based on at least four samples taken over a

30-day period and not to exceed a maximum of 4,000 per 100 ml.

4. Bacteria: (Applicable only to waters designated as approved shellfish harvesting waters by the appropriate State agencies). The requirements will be consistent with those established by the State and Federal agencies responsible for the National Shellfish Sanitation Program.

5. Temperature: Not to exceed 90 degrees F. At no time is the temperature of the receiving waters to be increased more than 5 degrees F above intake temperature except that in estuarine waters the increase will not be more than 1.5 degrees F. In streams designated as trout or smallmouth bass waters by the State Game and Fish Division, there shall be no elevation or depression of natural stream temperatures.

6. Toxic Wastes, Other Deleterious Materials: None in concentrations that would harm man, fish and game or other beneficial aquatic life.

(d) Agricultural:

1. For general agricultural uses such as stock watering and irrigating; or for any other use requiring water of a lower quality:

(i) Bacteria: Fecal coliform not to exceed a geometric mean of 5,000 per 100 ml based on at least four samples taken over a 30-day period.

(ii) Dissolved Oxygen: No less than 3.0 mg/l at any time.

(iii) pH: Within the range of 6.0-8.5.

(iv) Temperature: Not to exceed 90 degrees F. At no time is the temperature of the receiving waters to be increased more than 5 degrees F above intake temperature except that in estuarine waters the increase will not be more than 1.5 degrees F. In streams designated as trout or smallmouth bass waters by the State Game and Fish Division, there shall be no elevation or depression of natural stream temperatures.

(v) Toxic Substances, Other Deleterious Materials: None in concentrations that would interfere with or adversely affect uses for general agricultural purposes or would prevent fish survival.

(e) Industrial:

1. For processing and cooling water with or without special treatment; or for any other use requiring water of a lower quality:

(i) Dissolved Oxygen: No less than 3.0 mg/l at any time.

(ii) pH: Within the range of 6.0-8.5.

(iii) Toxic Substances, Other Deleterious Materials: None in concentrations that would prevent fish survival or interfere with legitimate and beneficial industrial uses.

(iv) Temperature: Not to exceed 90 degrees F. At no time is the temperature of the receiving waters to be increased more than 5 degrees F above intake temperature except that in estuarine waters the increase will not be more than 1.5 degrees F. In

streams designated as trout or smallmouth bass waters by the State Game and Fish Division, there shall be no elevation or depression of natural stream temperatures.

(f) Navigation:

1. To provide for commercial ship traffic and protection of seamen or crews:

(i) Bacteria: Fecal coliform not to exceed a geometric mean of 5,000 per 100 ml based on at least four samples taken over a 30-day period.

(ii) Dissolved Oxygen: No less than 3.0 mg/l at any time.

(iii) pH: Within the range of 6.0 - 8.5.

(iv) Toxic Substances, Other Deleterious Materials: None in concentrations that would damage vessels, prevent fish survival or otherwise interfere with commercial navigation.

(v) Temperature: Not to exceed 90 degrees F. At no time is the temperature of the receiving waters to be increased more than 5 degrees F above intake temperature except that in estuarine waters the increase will not be more than 1.5 degrees F. In streams designated as trout or smallmouth bass waters by the State Game and Fish Division, there shall be no elevation or depression of natural stream temperatures.

(g) Wild River:

1. This classification will be applicable to any waters of the State when so designated by an authorized State or Federal Agency and will be effective simultaneously with that Agency's proper designation.

2. For all waters designated as "Wild River," there shall be no alteration of natural water quality from any source.

(h) Scenic River:

1. This classification will be applicable to any waters of the State when so designated by an authorized State or Federal Agency and will be effective simultaneously with that Agency's proper designation.

2. For all waters designated as "Scenic River," there shall be no alteration of natural water quality from any source.

(i) Urban Stream:

1. This classification is applicable to streams in highly developed urban areas:

(i) All conditions specified under "General Criteria for All Waters" [391-3-6-.03(5)] will apply, and in addition, the waters so classified are to be aesthetically compatible to adjacent areas.

(ii) Bacteria: Fecal coliform not to exceed a geometric mean of 2,000 per 100 ml based on at least four samples taken over a 30-day period and not to exceed a maximum of 5,000 per 100 ml.

(iii) pH: Within the range of 6.0 - 8.5.

(iv) Dissolved Oxygen: No less than 3.0 mg/l at any time.

(7) Natural Water Quality: It is recognized that certain natural waters of the State may have a quality that will not be within

Water Quality Data--Ogeechee River at Eden

Date Sampled	Nov 13 1973	Feb 12 1974	May 8 1974	Aug 14 1974
Time sampled	1045	1130	0945	1415
Discharge	495	4930	1080	1820
pH (units)	7.3	7.0	6.8	6.4
Temperature (degree C)	5.0	10.0	21.0	26.0
Dissolved oxygen (mg/l)	13.1	10.0	5.9	6.8
Alkalinity as CaCO ₃ (mg/l)	28	7	24	10
Dissolved nitrate plus nitrate (mg/l)	.02	.02	.11	.05
Dissolved ammonia nitrogen (mg/l)	.02	.02	.02	.02
Total phosphorus (mg/l)	.02	.04	.05	.04
Hardness, Ca Mg (mg/l)	26	12	24	18
Specific conductance (micromhos)	86	43	70	61
Color (platinum-cobalt units)	35	100	60	-
Turbidity (JTU)	3	11	5	-
Biochemical oxygen demand (mg/l)	.1	.6	.2	-
Fecal coliform (FC Broth) (MPN)	30	430	150	-
Total organic carbon (mg/l)	3.0	16	6.0	21

Source FST DEH, 1977.

Water Quality Data--Ogeechee River at Claxton

Date Sampled	Nov 12 1973	Feb 12 1974	May 7 1974	Aug 13 1974	Sep 13 1974
Time Sampled	1315	1200	1030	1400	1400
Discharge (cfs)	106	2900	69	191	143
PH (units)	5.3	5.6	6.1	5.8	6.2
Temperature (deg C)	5.0	9.0	21.0	26.0	23.0
Dissolved oxygen (mg/l)	12.0	8.6	5.4	8.1	7.5
Alkalinity as CaCO ₃ (mg/l)	2	3	4	3	5
Dissolved nitrate plus nitrate (mg/l)	.02	.02	.08	.02	.04
Dissolved ammonia nitrogen (mg/l)	.02	.02	.04	.02	.04
Dissolved ammonia, NH ₄ (mg/l)	-	-	.05	-	.05
Total phosphorus (mg/l)	.03	.02	.08	.06	.11
Hardness, Ca, Mg. (mg/l)	7	4	8	14	8
Specific conductance (micromhos)	38	32	37	44	43
Color (platinum-cobalt units)	100	100	120	120	100
Turbidity (JTU)	3	11	5	5	11
Biochemical oxygen demand (mg/l)	1.5	0.6	0.7	1.1	1.5
Fecal coliform (FC Broth) (MPN)	2300	1500	230	-	4300
Total organic carbon	14	18	15	24	18

Source: FST DFAE, 1977.

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11 50 42.0 041 17 23.0 B
GOOCHREE RIVER - U.S. HIGHWAY 17
3051 GEORGIA
GOOCHREE RIVER BASIN 0314
114670
0000 CLASS 00 CSN-PSP 0259944-C

0000 CLAS 00 C5N-PS 0254346-0422111

F-5

STORET RETRIEVAL DATE 03/01/17 - INVENT - VERSION OF SEP. 1991

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31 58 59.0 NHI 23 07.0 2
CANOUCHEE RIVER AT FORT STEWART, GA.
13024 GEORGIA HRYAN
031792

/TYPE/AMHNT/STREFAM

112WR1 03060203000
0000 CLASS 00 CSN-PSP 0005141-0194960

PARAMETER	UNIT	NUMBER	MEAN	VARIANCE	STAND DEV	COEFF VAR	STAND ER	MAXIMUM	MINIMUM	MEG DATE	END DATE	
00010 WATER TEMP	TEMP	50	17.7777	55.1030	7.42314	.397384	1.04479	31.0000	3.00000	58/02/25	82/04/18	
00020 AIR TEMP	TEMP	48	20.2032	54.6832	7.39441	.365932	1.06735	32.0000	2.49901	78/07/11	82/04/18	
00025 BAROMETRIC PRESSURE	MM OF Hg	4	754.554	21.7500	4.66364	.006148	1.55456	766.000	751.000	81/10/21	82/06/21	
00065 STREAM STAGE	FEET	25	6.04400	5.30509	2.30328	.380431	.460656	10.8000	3.20000	78/07/11	82/04/18	
00070 TURBIDITY	JTU	48	4.47716	5.68040	2.38336	.478667	.344008	13.0000	2.00000	78/07/11	82/04/18	
00080 COLOR	PT-CO	50	134.295	1706.45	41.7864	.630204	12.4149	400.000	40.0000	58/02/25	82/04/18	
00045 CONDUCTIVITY	AT 25C	30	55.4446	355.388	18.8517	.336539	3.44184	108.000	31.0000	58/02/25	82/06/21	
00300 DO	MG/L	46	6.70467	3.92200	1.98040	.295201	.291995	11.2000	3.40000	78/07/11	82/04/18	
00310 HDO	5 DAY	46	1.05552	.231406	.481047	.455314	.070926	2.30000	.300000	78/07/11	82/04/18	
00400 PH	SI	44	5.40454	.786014	.888574	.152738	.133656	7.80000	4.30000	58/02/25	82/04/18	
00403 LAH	SI	23	6.11734	.818726	.904835	.147912	.188671	7.20000	4.70000	80/10/22	82/04/18	
00410 T ALK	CACO3	26	6.46153	35.1346	5.92777	.917393	1.16253	22.0000	1.00000	58/02/25	80/08/19	
00440 HCO3 ION	HCO3	2	6.00000	.000000	.000000	.000000	.000000	6.00000	6.00000	58/02/25	58/05/31	
00445 CO3 ION	CO3	2	.000000	.000000	.000000	.000000	.000000	.000000	.000000	58/02/25	58/05/31	
00530 RESIDUE	TOT NFLT	31	7.45161	155.722	12.4789	1.67465	2.24127	70.0000	1.00000	78/07/11	82/04/18	
00610 NH3+NH4- N TOTAL	MG/L	K	17	.999999	.000000	.001641	.000410	1.00000	.999999	78/08/08	82/03/17	
		TOT	48	5.16666	109.120	10.4461	2.02182	1.50776	70.0000	.999999	78/07/11	82/04/18
		K	34	.043447	.011679	.108068	.115030	.017531	.510000	.020000	78/07/11	82/04/18
00630 NO2+NO3 N-TOTAL	MG/L	TOT	10	.020000	.027104	.000029	.001439	.020000	.020000	78/10/03	80/04/19	
		K	44	.014541	.010115	.100573	1.28050	.014516	.510000	.020000	78/07/11	82/04/18
		TOT	45	.235222	.045074	.212317	.898804	.031650	.880000	.020000	78/07/11	82/04/18
00665 PHOS-TOT	MG/L	K	3	.020000	.232104	.000000	.000000	.020000	.020000	79/04/12	80/04/02	
		TOT	43	.222706	.044999	.212129	.952500	.030618	.880000	.020000	78/07/11	82/04/18
		K	47	.146405	.015835	.125838	.673621	.018355	.490000	.040000	78/07/11	82/04/18
00680 T ORG C	MG/L	K	46	17.5260	75.5345	4.69105	.495496	1.28143	44.0000	5.00000	78/07/11	82/04/18
		TOT	1	1.00000	.000000	.000000	.000000	1.00000	1.00000	79/11/07	79/11/07	
		K	47	17.1743	74.7075	4.92768	.519427	1.30224	44.0000	1.00000	78/07/11	82/04/18
00900 TOT HARD	CACO3	2	5.50000	.500000	.707118	.128567	.500000	6.00000	5.00000	58/02/25	58/05/31	
00902 NC HARD	CACO3	2	5.50000	.500000	.707107	1.41421	.500000	1.000000	.000000	58/02/25	58/05/31	
00915 CALCIUM	CA-DISS	2	1.40000	.320000	.565664	.404064	.400002	1.80000	1.000000	58/02/25	58/05/31	
00925 MAGNESIUM	MG-DISS	2	.500000	.020000	.141421	.282843	.100000	.600000	.400000	58/02/25	58/05/31	
00930 SODIUM	NA-DISS	2	3.55000	.004990	.070637	.019898	.049944	3.60000	3.50000	58/02/25	58/05/31	
00931 SODIUM	ADDITION	2	.650000	.005000	.076717	.108796	.050005	.700000	.600000	58/02/25	58/05/31	
00932 PERCENT	SODIUM	2	5.55000	.245000	.49475	.089185	3.50000	59.0000	42.0000	58/02/25	58/05/31	
00935 POTASSIUM	K-DISS	2	.500000	.020000	.141421	.282843	.100000	.600000	.400000	58/02/25	58/05/31	
00940 CHLORIDE	TOTAL	3	6.33333	.083333	.288675	.045504	.166753	6.50000	6.00000	58/02/25	80/04/19	
00945 SULFATE	SO4-TOT	2	1.30000	.500000	.707107	.543229	.500001	1.80000	.800000	58/02/25	58/05/31	
00950 FLUORIDE	F-DISS	2	.100000	.372106	.600000	.000000	.000000	.100000	.100000	58/02/25	58/05/31	
00955 SILICA	DISOLVED	2	7.80000	.320000	.565664	.072525	.400005	8.20000	7.40000	58/02/25	58/05/31	
01045 IRON	FE-TOT	1	520.000	.000000	.000000	.000000	.000000	520.000	520.000	58/02/25	58/02/25	
01046 IRON	FE-DISS	1	100.0000	.000000	.000000	.000000	.000000	100.0000	100.0000	58/02/25	58/02/25	

Water Quality Study for Hunter Army Airfield (USAEHA, 1976b)

Water Quality Sp Study No. C-0496-77, 6-23 Jul 76

TABLE 1

WATER QUALITY ENGINEERING SPECIAL STUDY NO. P4-049-76
HUNTER ARMY AIRFIELD, SAVANNA, GEORGIA
6-21 JULY 1976

CONTINUOUS DATA

SAMPLE POINT 1 PERIOD 3

PARAMETER	DAY 16	DAY 17	DAY 18	DAY 19
TIME	900	830	820	825
PH	6.4	6.6	6.5	6.1
CONDUCTIVITY (UMHO/CM)	230	269	295	98
BOFS (MG/L)	3.0	*****	*****	*****
TOC (MG/L)	31.0	31.0	30.0	21.0
NH3-N (MG N/L)	.31	.26	.38	.14
KJELDAHL N (MG N/L)	1.20	1.30	1.30	.94
NO2+NO3-N (MG N/L)	.07	.08	.10	.06
SUSPENDED SOLIDS (MG/L)	49.0	49.0	34.0	68.0
TOTAL SOLIDS (MG/L)	268	277	302	190
TOTAL DIS. SOLIDS (MG/L)	219	228	268	122
TOTAL PHOSPHATE (MG P/L)	.23	.24	.14	.11
DISSOLVED OXYGEN (MG/L)	4.70	4.50	4.20	3.95
TEMPERATURE (C)	27.5	28.0	27.5	23.5

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TABLE 2

WATER QUALITY ENGINEERING SPECIAL STUDY NO. 24-049-76
HUNTER ARMY AIRFIELD, SAVANNA, GEORGIA
6-21 JULY 1976

CONTINUOUS DATA

SAMPLE POINT 2 PERIOD 3

PARAMETER	DAY 16	DAY 17	DAY 18	DAY 19
TIME	900	830	830	830
PH	5.9	6.4	6.5	5.9
CONDUCTIVITY (UMHO/CM)	80	98	171	39
BOD5 (MG/L)	2.0	*****	*****	*****
TOC (MG/L)	32.0	30.0	31.0	21.0
NH3-N (MG N/L)	.35	.31	.48	.14
KJELDAHL N (MG N/L)	.62	1.30	1.70	.84
NO2+NO3-N (MG N/L)	.05	.06	.08	.04
SUSPENDED SOLIDS (MG/L)	22.0	24.0	42.0	73.0
TOTAL SOLIDS (MG/L)	153	176	239	150
TOTAL DIS. SOLIDS (MG/L)	131	152	197	77
TOTAL PHOSPHATE (MG P/L)	.16	.19	.26	.12
DISSOLVED OXYGEN (MG/L)	5.90	6.10	5.80	5.60
TEMPERATURE (C)	26.5	28.0	27.2	23.0

TABLE 3

WATER QUALITY ENGINEERING SPECIAL STUDY NO. 24-049-76
HUNTER ARMY AIRFIELD, SAVANNA, GEORGIA
6-21 JULY 1976

CONTINUOUS DATA

SAMPLE POINT 3 PERIOD 3

PARAMETER	DAY 16	DAY 17	DAY 18	DAY 19
TIME	900	830	835	840
PH	4.9	5.0	5.0	5.1
CONDUCTIVITY (UMHO/CM)	79	79	85	79
BOD5 (MG/L)	1.0	*****	*****	*****
TOC (MG/L)	39.0	38.0	36.0	32.0
NH3-N (MG N/L)	.20	.26	.18	.19
KJFLAHL N (MG N/L)	1.00	1.20	1.00	1.10
NO2+NO3-N (MG N/L)	< .04	< .04	< .04	< .04
SUSPENDED SOLIDS (MG/L)	9.0	15.0	11.0	12.0
TOTAL SOLIDS (MG/L)	130	138	153	129
TOTAL DIS. SOLIDS (MG/L)	121	123	142	116
TOTAL PHOSPHATE (MG P/L)	.06	.06	< .04	< .04
DISSOLVED OXYGEN (MG/L)	4.30	5.10	4.25	4.50
TEMPERATURE (C)	27.0	27.0	25.5	24.0

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TABLE 4

WATER QUALITY ENGINEERING SPECIAL STUDY NO. 24-049-76
HUNTER ARMY AIRFIELD, SAVANNA, GEORGIA
6-21 JULY 1976

CONTINUOUS DATA

SAMPLE POINT 4 PERIOD 3

PARAMETER	DAY 9	DAY 10	DAY 11	DAY 12	DAY 13
TIME	1000	1000	925	1230	1010
PH	6.4	6.6	6.5	*****	*****
CONDUCTIVITY (UMHO/CM)	820	1300	1580	*****	*****
BOD5 (MG/L)	1.0	2.0	2.0	*****	*****
TOC (MG/L)	30.0	28.0	28.0	*****	*****
NH3-N (MG N/L)	.11	.12	.11	*****	*****
KJELDAHL N (MG N/L)	.90	.80	.75	*****	*****
NO2+NO3-N (MG N/L)	.05	.05	.04	*****	*****
SUSPENDED SOLIDS (MG/L)	85.0	53.0	58.0	*****	*****
TOTAL SOLIDS (MG/L)	572	1067	1063	*****	*****
TOTAL DIS. SOLIDS (MG/L)	487	1014	1005	*****	*****
TOTAL PHOSPHATE (MG P/L)	.16	.10	.16	*****	*****
DISSOLVED OXYGEN (MG/L)	3.80	3.40	3.20	3.40	4.10
TEMPERATURE (C)	26.0	26.0	27.0	27.5	28.0
	DAY 14	DAY 15	DAY 16	DAY 17	DAY 18
TIME	1215	*****	1140	1035	1040
PH	*****	*****	6.5	6.4	6.4
CONDUCTIVITY (UMHO/CM)	*****	*****	2100	1410	1120
BOD5 (MG/L)	*****	*****	1.2	*****	*****
TOC (MG/L)	*****	*****	28.0	29.0	28.0
NH3-N (MG N/L)	*****	*****	.30	.20	.15
KJELDAHL N (MG N/L)	*****	*****	1.10	1.10	1.00
NO2+NO3-N (MG N/L)	*****	*****	.04	.05	.05
SUSPENDED SOLIDS (MG/L)	*****	*****	40.0	24.0	27.0
TOTAL SOLIDS (MG/L)	*****	*****	1416	959	829
TOTAL DIS. SOLIDS (MG/L)	*****	*****	1376	935	802
TOTAL PHOSPHATE (MG P/L)	*****	*****	.08	.12	.11
DISSOLVED OXYGEN (MG/L)	3.80	3.60	2.90	3.70	3.50
TEMPERATURE (C)	28.5	29.0	30.0	30.0	30.0

DAY 19

TIME	920
PH	6.1
CONDUCTIVITY (UMHO/CM)	315
TOC (MG/L)	30.0
NH3-N (MG N/L)	.16
KJELDAHL N (MG N/L)	1.30
NO2+NO3-N (MG N/L)	.06
SUSPENDED SOLIDS (MG/L)	59.0
TOTAL SOLIDS (MG/L)	333
TOTAL DIS. SOLIDS (MG/L)	274
TOTAL PHOSPHATE (MG P/L)	.20
DISSOLVED OXYGEN (MG/L)	3.70
TEMPERATURE (C)	27.0

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TABLE 5
WATER QUALITY ENGINEERING SPECIAL STUDY NO. 24-049-76
HUNTER ARMY AIRFIELD, SAVANNA, GEORGIA
6-21 JULY 1976

CONTINUOUS DATA

SAMPLE POINT 4 PERIOD 4

PARAMETER	DAY 9
TIME	1400
PH	5.8
CONDUCTIVITY (UMHO/CM)	180
BOFS (MG/L)	2.0
TOC (MG/L)	35.0
NH3-N (MG N/L)	.08
KJELDAHL N (MG N/L)	.90
NO2+NO3-N (MG N/L)	.04
SUSPENDED SOLIDS (MG/L)	68.0
TOTAL SOLIDS (MG/L)	227
TOTAL DIS. SOLIDS (MG/L)	159
TOTAL PHOSPHATE (MG P/L)	.14
DISSOLVED OXYGEN (MG/L)	5.00
TEMPERATURE (C)	26.0

TABLE 6

WATER QUALITY ENGINEERING SPECIAL STUDY NO. 24-049-76
HUNTER ARMY AIRFIELD, SAVANNA, GEORGIA
6-21 JULY 1976

CONTINUOUS DATA

SAMPLE POINT 5 PERIOD 3

PARAMETER	DAY 16
TIME	925
PH	6.7
CONDUCTIVITY (UMHO/CM)	130
BOD5 (MG/L)	1.0
TOC (MG/L)	10.0
NH3-N (MG N/L)	.53
KJELDAHL N (MG N/L)	.83
NO2+NO3-N (MG N/L)	.10
SUSPENDED SOLIDS (MG/L)	22.0
TOTAL SOLIDS (MG/L)	97
TOTAL DIS. SOLIDS (MG/L)	75
TOTAL PHOSPHATE (MG P/L)	.04
DISSOLVED OXYGEN (MG/L)	5.30
TEMPERATURE (C)	25.0

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TABLE 7.

WATER QUALITY ENGINEERING SPECIAL STUDY NO. 24-049-76
HUNTER ARMY AIRFIELD, SAVANNA, GEORGIA
6-21 JULY 1976

CONTINUOUS DATA

SAMPLE POINT 6 PERIOD 3

PARAMETER	DAY 10	DAY 11	DAY 12	DAY 13	DAY 14
TIME	930	830	*****	830	830
PH	6.9	6.8	6.8	6.8	6.7
CONDUCTIVITY (UMHO/CM)	140	131	155	170	118
BOD5 (MG/L)	< 1.0	< 1.0	< 1.0	3.0	3.0
TOC (MG/L)	8.8	9.0	6.0	7.0	11.0
NH3-N (MG N/L)	.30	.16	.17	.18	.12
KJELDAHL N (MG N/L)	.30	.46	.32	.41	.40
NO2+NO3-N (MG N/L)	.04	< .04	< .04	< .04	.07
SUSPENDED SOLIDS (MG/L)	19.0	9.0	10.0	14.0	15.0
TOTAL SOLIDS (MG/L)	139	127	104	139	112
TOTAL DIS. SOLIDS (MG/L)	120	118	94	125	97
TOTAL PHOSPHATE (MG P/L)	.08	.13	.13	.15	.17
GREASE AND OIL (MG/L)	*****	*****	*****	< 1.0	*****
DISSOLVED OXYGEN (MG/L)	5.00	4.20	*****	4.20	3.20
TEMPERATURE (C)	25.0	27.5	*****	25.0	25.0
	DAY 15	DAY 16	DAY 17	DAY 18	DAY 19
TIME	830	905	915	815	840
PH	6.7	6.9	6.6	6.9	6.8
CONDUCTIVITY (UMHO/CM)	138	142	151	150	111
BOD5 (MG/L)	1.0	1.0	*****	*****	*****
TOC (MG/L)	6.0	6.0	9.0	7.2	16.0
NH3-N (MG N/L)	.24	.22	.26	.33	.35
KJELDAHL N (MG N/L)	.29	.35	.36	.42	.05
NO2+NO3-N (MG N/L)	< .04	< .04	< .04	< .04	.08
SUSPENDED SOLIDS (MG/L)	5.0	9.0	9.0	7.0	155.0
TOTAL SOLIDS (MG/L)	141	95	129	152	241
TOTAL DIS. SOLIDS (MG/L)	136	86	120	145	86
TOTAL PHOSPHATE (MG P/L)	.10	.20	.09	.14	.25
DISSOLVED OXYGEN (MG/L)	4.60	5.10	4.20	2.70	2.60
TEMPERATURE (C)	25.0	26.0	25.0	25.0	24.5

TABLE 8

WATER QUALITY ENGINEERING SPECIAL STUDY NO. 24-049-76
HUNTER ARMY AIRFIELD, SAVANNA, GEORGIA
6-21 JULY 1976

CONTINUOUS DATA

SAMPLE POINT 8 PERIOD 3

PARAMETER	DAY 9	DAY 10	DAY 11	DAY 12	DAY 13
TIME	830	1000	840	1000	930
PH	6.8	6.8	6.9	6.9	7.0
CONDUCTIVITY (UMHO/CM)	240	160	183	205	205
BODS (MG/L)	1.0	1.0	1.0	2.0	2.0
TOC (MG/L)	19.0	21.0	14.0	12.0	12.0
NH3-N (MG N/L)	.38	.43	.37	.44	.58
KJELDAHL N (MG N/L)	.75	1.10	1.00	.89	.85
NO2+NO3-N (MG N/L)	.37	.23	.38	.45	.33
SUSPENDED SOLIDS (MG/L)	34.0	17.0	18.0	15.0	12.0
TOTAL SOLIDS (MG/L)	225	166	194	190	168
TOTAL DIS. SOLIDS (MG/L)	191	149	176	175	156
TOTAL PHOSPHATE (MG P/L)	.32	.16	.27	.29	.32
DISSOLVED OXYGEN (MG/L)	4.20	4.80	4.50	5.70	6.10
TEMPERATURE (C)	*****	26.0	25.0	26.5	26.5
	DAY 15	DAY 16	DAY 17	DAY 18	DAY 19
TIME	900	930	1000	925	905
PH	6.2	7.0	6.8	7.0	6.5
CONDUCTIVITY (UMHO/CM)	198	200	173	194	105
BODS (MG/L)	1.0	2.0	*****	*****	*****
TOC (MG/L)	12.0	11.0	11.0	9.0	14.0
NH3-N (MG N/L)	1.20	1.70	.95	.48	.23
KJELDAHL N (MG N/L)	1.20	1.70	1.20	.77	.89
NO2+NO3-N (MG N/L)	.43	.48	.36	.62	.20
SUSPENDED SOLIDS (MG/L)	10.0	14.0	12.0	9.0	38.0
TOTAL SOLIDS (MG/L)	162	145	161	169	120
TOTAL DIS. SOLIDS (MG/L)	152	131	149	160	82
TOTAL PHOSPHATE (MG P/L)	.31	.38	.30	.35	.20
DISSOLVED OXYGEN (MG/L)	5.20	5.30	5.10	4.50	3.30
TEMPERATURE (C)	26.0	26.5	28.0	26.5	25.0

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TABLE 9

WATER QUALITY ENGINEERING SPECIAL STUDY NO. 24-049-76
HUNTER ARMY AIRFIELD, SAVANNA, GEORGIA
6-21 JULY 1976

CONTINUOUS DATA

SAMPLE POINT 8 PERIOD 4

PARAMETER	DAY 6
PH	6.6
CONDUCTIVITY (UMHO/CM)	200
BOD5 (MG/L)	4.0
TDC (MG/L)	20.0
NH3-N (MG N/L)	.30
KJELDAHL N (MG N/L)	.93
NO2+NO3-N (MG N/L)	.30
SUSPENDED SOLIDS (MG/L)	36.0
TOTAL SOLIDS (MG/L)	208
TOTAL DIS. SOLIDS (MG/L)	172
TOTAL PHOSPHATE (MG P/L)	.17

TABLE 10
WATER QUALITY ENGINEERING SPECIAL STUDY NO. 24-049-76
HUNTER ARMY AIRFIELD, SAVANNA, GEORGIA
6-21 JULY 1976

CONTINUOUS DATA

SAMPLE POINT 9 PERIOD 3

PARAMETER	DAY 14	DAY 15	DAY 16	DAY 17	DAY 18
TIME	1015	900	1000	1000	940
PH	7.0	6.7	7.0	6.8	7.1
CONDUCTIVITY (UMHO/CM)	210	405	410	365	290
BOD5 (MG/L)	4.0	1.0	2.0	*****	*****
TOC (MG/L)	12.0	15.0	15.0	13.0	11.0
NH3-N (MG N/L)	.44	.23	.39	.19	.39
KJELDAHL N (MG N/L)	.79	1.00	1.10	1.00	.85
NO2+NO3-N (MG N/L)	.41	.44	.73	.67	.55
SUSPENDED SOLIDS (MG/L)	24.0	23.0	20.0	28.0	14.0
TOTAL SOLIDS (MG/L)	182	302	330	278	253
TOTAL DIS. SOLIDS (MG/L)	158	279	310	250	239
TOTAL PHOSPHATE (MG P/L)	.33	.30	.36	.33	.33
DISSOLVED OXYGEN (MG/L)	3.90	4.70	4.10	4.80	4.10
TEMPERATURE (C)	28.0	26.0	28.5	28.0	28.5

DAY 19

TIME	920
PH	6.5
CONDUCTIVITY (UMHO/CM)	122
TOC (MG/L)	13.0
NH3-N (MG N/L)	.23
KJELDAHL N (MG N/L)	.76
NO2+NO3-N (MG N/L)	.20
SUSPENDED SOLIDS (MG/L)	29.0
TOTAL SOLIDS (MG/L)	147
TOTAL DIS. SOLIDS (MG/L)	118
TOTAL PHOSPHATE (MG P/L)	.02
DISSOLVED OXYGEN (MG/L)	3.20
TEMPERATURE (C)	25.0

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TABLE 11

WATER QUALITY ENGINEERING SPECIAL STUDY NO. 24-049-76
 UNITED ARMY AIRFIELD, SAVANNA, GEORGIA
 6-21 JULY 1976

CONTINUOUS DATA

SAMPLE POINT 10 PERIOD 3

PARAMETER	DAY 14	DAY 15	DAY 16	DAY 17	DAY 18
TIME	1020	900	1000	1000	940
PH	6.7	6.7	6.9	6.8	7.
CONDUCTIVITY (UMHO/CM)	910	520	790	482	42
BOD5 (MG/L)	2.0	2.0	3.0	*****	*****
TOC (MG/L)	31.0	17.0	20.0	16.0	12.
NH3-N (MG N/L)	.22	.35	.37	.44	.2
KJELDAHL N (MG N/L)	.75	1.10	1.30	1.20	1.1
NO2+NO3-N (MG N/L)	.11	.28	.36	.49	.4
SUSPENDED SOLIDS (MG/L)	55.0	36.0	42.0	41.0	23.
TOTAL SOLIDS (MG/L)	585	376	566	359	35
TOTAL DIS. SOLIDS (MG/L)	530	340	524	318	32
TOTAL PHOSPHATE (MG P/L)	.20	.28	.32	.28	.3
DISSOLVED OXYGEN (MG/L)	4.80	4.90	4.90	4.60	6.1
TEMPERATURE (C)	28.5	27.0	29.0	28.0	30.

DAY 19

TIME	925
PH	6.5
CONDUCTIVITY (UMHO/CM)	155
TOC (MG/L)	14.0
NH3-N (MG N/L)	.28
KJELDAHL N (MG N/L)	1.00
NO2+NO3-N (MG N/L)	.22
SUSPENDED SOLIDS (MG/L)	18.0
TOTAL SOLIDS (MG/L)	158
TOTAL DIS. SOLIDS (MG/L)	140
TOTAL PHOSPHATE (MG P/L)	.27
DISSOLVED OXYGEN (MG/L)	3.40
TEMPERATURE (C)	25.0

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TABLE 12

WATER QUALITY ENGINEERING SPECIAL STUDY NO. 24-049-76
 FUNTER ARMY AIRFIELD, SAVANNA, GEORGIA
 6-21 JULY 1976

CONTINUOUS DATA

SAMPLE POINT 11 PERIOD 3

PARAMETER	DAY 9	DAY 10	DAY 11	DAY 16	DAY 17
TIME	945	945	915	1130	1030
PH	6.4	6.5	6.5	6.5	6.5
CONDUCTIVITY (UMHO/CM)	910	1750	1720	2125	1305
DOES (MG/L)	1.0	2.0	1.0	2.0	*****
TOC (MG/L)	30.0	29.0	28.0	26.0	30.0
NH3-N (MG N/L)	.07	.09	.08	.21	.18
KJELDAHL N (MG N/L)	.65	.90	1.00	1.20	1.20
NO2+NO3-N (MG N/L)	.04	.05	.04	.04	.05
SUSPENDED SOLIDS (MG/L)	72.0	52.0	58.0	43.0	29.0
TOTAL SOLIDS (MG/L)	620	1017	1140	1450	868
TOTAL DIS. SOLIDS (MG/L)	548	965	1082	1407	839
TOTAL PHOSPHATE (MG P/L)	.08	.09	.14	.11	.09
DISSOLVED OXYGEN (MG/L)	3.70	3.40	2.60	2.90	3.70
TEMPERATURE (C)	26.0	26.0	28.0	30.0	30.0
	DAY 18	DAY 19			
TIME	1030	945			
PH	6.5	6.4			
CONDUCTIVITY (UMHO/CM)	1205	400			
TOC (MG/L)	28.0	26.0			
NH3-N (MG N/L)	1.10	.26			
KJELDAHL N (MG N/L)	1.10	1.10			
NO2+NO3-N (MG N/L)	.05	.13			
SUSPENDED SOLIDS (MG/L)	33.0	32.0			
TOTAL SOLIDS (MG/L)	931	341			
TOTAL DIS. SOLIDS (MG/L)	898	309			
TOTAL PHOSPHATE (MG P/L)	.08	.15			
DISSOLVED OXYGEN (MG/L)	3.65	3.60			
TEMPERATURE (C)	30.0	27.0			

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TABLE 13.

WATER QUALITY ENGINEERING SPECIAL STUDY NO. 24-042-76
 FORT RAY AIRFIELD, SAVANNAH, GEORGIA
 6-21 JULY 1976

CONTINUOUS DATA

SAMPLE POINT 11 PERIOD 4

PARAMETER	DAY 9
TIME	1400
PH	6.5
CONDUCTIVITY (UMHO/CM)	430
BOFS (MG/L)	2.0
TTC (MG/L)	24.0
NH3-N (MG N/L)	.24
NITRATE N (MG N/L)	.95
NO2+NO3-N (MG N/L)	.37
SUSPENDED SOLIDS (MG/L)	67.0
TOTAL SOLIDS (MG/L)	371
TOTAL DIS. SOLIDS (MG/L)	304
TOTAL PHOSPHATE (MG P/L)	.28
DISSOLVED OXYGEN (MG/L)	1.90
TEMPERATURE (C)	27.5

TABLE 14

WATER QUALITY ENGINEERING SPECIAL STUDY NO. 24-049-76
HUNTER ARMY AIRFIELD, SAVANNA, GEORGIA
6-21 JULY 1976

CONTINUOUS DATA

SAMPLE POINT 12 PERIOD 3

PARAMETER	DAY 9	DAY 10	DAY 11	DAY 16	DAY 17
TIME	935	935	905	1120	1000
PH	6.5	6.6	6.5	6.6	6.5
CONDUCTIVITY (UMHO/CM)	2500	3800	3400	3420	2750
BOD5 (MG/L)	1.0	2.0	1.0	1.0	*****
TOC (MG/L)	30.0	26.0	26.0	24.0	26.0
NH3-N (MG N/L)	.08	.09	.11	.11	.22
KJELDAHL N (MG N/L)	.90	.75	.85	1.10	.92
NO2+NO3-N (MG N/L)	.04	.05	.04	.04	.05
SUSPENDED SOLIDS (MG/L)	119.0	49.0	46.0	35.0	33.0
TOTAL SOLIDS (MG/L)	1301	2235	2137	2399	1832
TOTAL DIS. SOLIDS (MG/L)	1182	2156	2091	2364	1799
TOTAL PHOSPHATE (MG P/L)	.20	.09	.14	.05	.10
DISSOLVED OXYGEN (MG/L)	3.50	3.60	3.20	2.80	3.50
TEMPERATURE (C)	26.0	27.0	28.0	30.0	30.0
	DAY 18	DAY 19			
TIME	1025	910			
PH	6.6	6.4			
CONDUCTIVITY (UMHO/CM)	2890	1150			
TOC (MG/L)	23.0	27.0			
NH3-N (MG N/L)	.20	.28			
KJELDAHL N (MG N/L)	1.10	1.20			
NO2+NO3-N (MG N/L)	.04	.07			
SUSPENDED SOLIDS (MG/L)	33.0	32.0			
TOTAL SOLIDS (MG/L)	1878	790			
TOTAL DIS. SOLIDS (MG/L)	1345	758			
TOTAL PHOSPHATE (MG P/L)	.10	.10			
DISSOLVED OXYGEN (MG/L)	3.50	3.80			
TEMPERATURE (C)	30.0	28.5			

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Water Quality Sp Study No. 24-0496-77, 6-23 Jul 76

TABLE 15

WATER QUALITY ENGINEERING SPECIAL STUDY NO. 24-049-76
HUNTER ARMY AIRFIELD, SAVANNA, GEORGIA
6-21 JULY 1976

CONTINUOUS DATA

SAMPLE POINT 12 PERIOD 4

PAPAMETER	DAY 9
TIME	1400
PH	6.2
CONDUCTIVITY (UMHO/CM)	390
BOD5 (MG/L)	2.0
TOC (MG/L)	34.0
NH3-N (MG N/L)	.10
KJELDAHL N (MG N/L)	.85
NO2+NO3-N (MG N/L)	.04
SUSPENDED SOLIDS (MG/L)	63.0
TOTAL SOLIDS (MG/L)	335
TOTAL DIS. SOLIDS (MG/L)	272
TOTAL PHOSPHATE (MG P/L) <	.04
DISSOLVED OXYGEN (MG/L)	6.00
TEMPERATURE (C)	27.0

RESULTS OF ANALYSES OF FORT STEWART WATER SAMPLES FOR NPDWR MCL's

Sample Location	Sample Type	Arsenic mg/L	Barium mg/L	Cadmium mg/L	Chromium mg/L	Lead mg/L	Mercury mg/L
Well No. 1	raw	ND	ND	0.008	ND	0.007	ND
Well No. 4	raw	ND	ND	0.003	ND	ND	ND
Main Dist	treated	ND	ND	0.007	ND	ND	ND
TAC-X	treated	ND	ND	0.009	ND	ND	ND
Camp Oliver	raw	ND	ND	0.010	ND	ND	ND
Camp Oliver	treated	ND	ND	0.010	ND	ND	ND
Wright Field	treated	ND	ND	0.008	ND	ND	ND
Evans Field	treated	ND	ND	0.008	ND	ND	ND
Taylor Creek	treated	ND	ND	0.007	ND	ND	ND
F-24 Detection Limit		0.01	0.3	0.005	0.025	0.005	0.0002
NPDWR MCL		0.05	1.	0.010	0.05	0.05	0.002

milligrams per liter (mg/L)

not detected (ND)

nitrate nitrite reported as nitrogen (NO_3/NO_2 as N)

micrograms per liter ($\mu\text{g/L}$)

pico curies per liter (pCi/L)

for fluoride based upon annual average of maximum daily air temp equal to 79.1°F

Source: USAEHA, 1981a.

for William C. Dolzine

THEODORE W. DOLZINE

CPT, MSC

Chief, Environmental Chemistry Division

HSE-MS
SUBJECT:

Addendum to Potable/Recreational Water Quality
Engineering Survey No. 31-62-0178-81, 24th Infantry
Division and Fort Stewart, Fort Stewart, GA,
17-26 November 1980

31 July 1981

Engineering Survey No. 31-62-0178-81, 24th Infantry
Division and Fort Stewart, Fort Stewart, GA,
17-26 November 1980

Sample Location	Sample Type	Heptachlor μg/L	Heptepoxide μg/L	Cis-chlordane μg/L	Trans chlordane μg/L	Malathion μg/L	Chlorpyrifos μg/L
Well No. 1	raw	ND	0.53	ND	ND	ND	ND
Well No. 4	raw	-	-	-	-	-	-
Main Dist	treated	ND	ND	ND	ND	ND	ND
TAC-X	treated	ND	ND	ND	ND	ND	ND
Camp Oliver	raw	ND	ND	ND	ND	ND	ND
Camp Oliver	treated	ND	ND	ND	ND	ND	ND
Wright Field	treated	ND	ND	ND	ND	ND	ND
Evans Field	treated	ND	ND	ND	ND	ND	ND
Taylor Creek	treated	ND	ND	ND	ND	ND	ND
Detection Limit		0.06	0.16	0.16	0.16	1.60	0.24

for William C. Dolzine

THEODORE W. DOLZINE
CPT, MSC
Chief, Environmental Chemistry Division

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HSE-
S-107

Memorandum to Pot. Nat. Security
Engineering Survey No. 37 02-01/88 B1,
Division and Fort Stewart, Fort Stewart, GA,
17-26 November 1980

Sample Location	Sample Type	HCB µg/L	BHC µg/L	DDD µg/L	DDE µg/L	DDT µg/L	Oxychlorthane µg/L	Mirex µg/L	Aldrin µg/L	Chlordane µg/L	Dieldrin µg/L
Well No. 1	raw	ND	ND	1.41	ND	ND	ND	ND	ND	ND	ND
Well No. 2	raw	-	-	-	-	-	-	-	-	-	-
Main Dist	treated	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TAC-X	treated	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Camp Oliver	raw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Camp Oliver	treated	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Wright Field	treated	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Evans Field	treated	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Taylor Creek	treated	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Detection Limit		0.80	0.20	0.40	0.40	0.60	0.16	0.04	0.16	1.20	0.24

for William C. Neal

THEODORE W. DOLZINE
CPT, MSC
Chief, Environmental Chemistry Division

17-26

SUBJECT:

Addendum to Potable/Recreational Water Quality
Engineering Survey No. 31-62-0178-81, 24th Infantry
Division and Fort Stewart, Fort Stewart, GA,
17-26 November 1980

Sample Location	Sample Type	NO ₃ /NO ₂ as N mg/L ³	Selenium mg/L	Silver mg/L	Fluoride mg/L	Endrin µg/L ⁴	Lindane µg/L
Well No. 1	raw	0.06	ND	ND	0.55	1.27	0.57
Well No. 4	raw	0.03	ND	ND	0.54	-	-
Main Dist	treated	0.15	ND	ND	1.1	ND	ND
TAC-X	treated	0.16	ND	ND	0.37	ND	ND
Camp Oliver	raw	0.06	ND	ND	0.34	ND	ND
Camp Oliver	treated	0.06	ND	ND	0.43	ND	ND
Wright Field	treated	0.05	ND	ND	0.83	ND	ND
Evans Field	treated	0.03	ND	ND	0.40	ND	ND
Taylor Creek	treated	0.22	ND	ND	0.59	ND	ND
Detection Limit		0.04	0.005	0.025	0.1	0.04	0.08
NPDWR MCL		10	0.01	0.05	1.6 ⁶	0.2	4

³See footnote on pg 1.

⁴See footnote on pg 1.

⁶See footnote on pg 1.

for William C. Meats

THEODORE W. DOLZINE

CPT, MSC

Chief, Environmental Chemistry Division

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Sample Location	Sample Type	Methoxychlor µg/L	Toxaphene µg/L	2,4-D µg/L	Silvex µg/L	Total Trihalomethanes µg/L
Well No. 1	raw	ND	ND	ND	ND	1.5
Well No. 4	raw	-	-	-	-	0.2
Main Dist	treated	ND	ND	ND	ND	2.2
TAC-X	treated	ND	ND	ND	ND	2.3
Camp Oliver	raw	ND	ND	ND	ND	0.1
Camp Oliver	treated	ND	ND	ND	ND	14.6
Wright Field	treated	ND	ND	ND	ND	8.1
Evans Field	treated	ND	ND	ND	ND	7.6
F-28 Taylor Creek	treated	ND	ND	ND	ND	32.4
Detection Limit		1.60	1.60	3.80	0.5	0.50
NPDWR MCL		100.	5.	100.	10.	100.

see footnote on pg 2.

for William C. Neal

THEODORE W. DOLZINE
CPT, MSC
Chief, Environmental Chemistry Division

NOTES:
SUBJECT: Addendum to Potable/Recreational Water Quality
Engineering Survey No. 31-62-0178-81, 24th Infantry
Division and Fort Stewart, Fort Stewart, GA,
17-26 November 1980

HSE-MS
SUBJECT:

31 July 1981
Addendum to Potable/Recreational Water Quality
Engineering Survey No. 31-62-0178-81, 24th Infantry
Division and Fort Stewart, Fort Stewart, GA,
17-26 November 1980

Sample Location	Sample Type	Gross Alpha pCi/L ⁵	Gross Beta pCi/L	Tritium pCi/L	Strontium pCi/L
Well No. 1	raw	<1.0	2.6 ± 1.2	<410	-
Well No. 4	raw	1.2 0.8	3.2 ± 0.9	<410	-
Main Dist	treated	<1.0	2.5 ± 0.9	<410	-
TAC-X	treated	1.4 0.9	10.8 ± 1.4	<410	<0.6
Camp Oliver	raw	<1.0	3.9 ± 1.0	<410	-
Camp Oliver	treated	<1.0	4.2 ± 1.1	<410	-
Wright Field	treated	<1.0	7.2 ± 1.3	<410	-
Evans Field	treated	<1.0	7.2 ± 1.2	<410	-
Taylor Creek	treated	<1.0	3.6 ± 1.0	<410	-
Detection Limit		-	-	-	-
NIPDWR MCL		15	50	20000	8

⁵See footnote on pg 1.

for William Chealy

THEODORE W. DOLZINE

CPT, MSC

Chief, Environmental Chemistry Division

RESULTS OF ANALYSES OF FORT STEWART WATER SAMPLES FOR NSDWR MCL's

Sample Location	Sample Type	Chloride mg/L	Copper mg/L	Iron mg/L	Manganese mg/L	pH S.U. ¹	Sulfate mg/L	Total Dissolved Solids (mg/L)	Zinc mg/L
Well No. 1	raw	5.0	0.179	ND	ND	8.1	8.3	179	0.070
Well No. 4	raw	5.0	ND	ND	ND	8.1	8.9	173	ND
Main Dist	treated	7.4	ND	ND	ND	7.9	8.1	173	0.540
TAC-X	treated	6.9	ND	ND	ND	7.9	7.2	199	0.038
Camp Oliver	raw	6.9	0.030	ND	ND	7.9	4.8	189	ND
Camp Oliver	treated	11	0.152	0.39	ND	7.9	4.4	209	1.42
Wright Field	treated	21	ND	0.11	ND	8.2	4.4	224	0.190
Evans Field	treated	7.4	ND	ND	ND	8.1	5.6	202	0.113
Taylor Creek	treated	11	ND	ND	ND	8.2	4.4	186	0.470
Detection Limit		0.50	0.025	0.10	0.030	-	0.5	1	0.015
NPDWR MCL		250	1	0.3	0.05	6.5-8.5	250	500	5

Standard Units (S.U.)

for William C. Meals

THEODORE W. DOLZINE

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SUBJECT: Addendum to Potable/Recreational Water Quality Engineering Survey No. 31-62-0178-81, 24th Infantry Division and Fort Stewart, Fort Stewart, GA, 17-26 November 1980

RESULTS OF FORT STEWART WATER SAMPLES FOR MISCELLANEOUS INORGANICS AND PESTICIDES

Sample Location	Sample Type	Conductivity $\mu\text{mhos/cm}^1$	Hardness (as CaCO_3) mg/L^2	Total Alkalinity (as CaCO_3) mg/L^3	Calcium mg/L	Sodium mg/L	Magnesium mg/L
Well No. 1	raw	213	82	107	18.8	16.5	8.6
Well No. 4	raw	212	90	107	21.0	18.4	9.3
Main Dist	treated	216	105	103	26.7	16.4	8.9
TAC-X	treated	227	94	103	28.0	26.3	6.0
Camp Oliver	raw	229	64	108	18.7	14.2	7.3
Camp Oliver	treated	231	87	107	22.7	14.0	6.9
Wright Field	treated	306	118	151	28.0	20.6	11.7
Evans Field	treated	221	107	108	28.7	16.9	8.7
Taylor Creek	treated	259	106	116	28.6	20.7	8.3
Detection Limit		-	-	-	1.0	1.0	0.5

SubTitle: Addendum to Potable/Recreational Water Quality
Engineering Survey No. 31-62-0178-81, 24th Infantry
Division and Fort Stewart, Fort Stewart, GA,
17-26 November 1980

¹ microhmhos per centimeter ($\mu\text{mhos/cm}$)
hardness reported as calcium carbonate (as CaCO_3)
³ Total alkalinity reported as calcium carbonate (as CaCO_3)

for William C. Meals

THEODORE W. DOLZINE
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U.S Army Drinking Water Surveillance Program Data--Fort Stewart

312834 FT. STEWART, GA.

SOURCE TW01											
	AS	BA	CD	CR	F	PB	HG	NO3	SE	AG	NA
MIN	< .020	< .30	< .001	< .025	.5	< .010	< .0002	< .0	.000	< .001	15.0
MEAN	.020	.33	.002	.025	.8	.021	.0002	.1	.000	.018	15.7
MAX	< .020	< .36	< .005	< .025	1.1	.036	.0002	.1	.000	< .028	17.0
NR OBS	4	2	3	3	4	3	3	4	0	3	3
	ALPHA	BETA	TRITIUM	90SR	226RA	B	CU	FE	MG	MN	ZN
MIN	< .5	1.6	.0011	.00	.00	.00	< .025	< .1	8.6	< .03	< .001
MEAN	.6	2.6	.0670	.00	.00	.00	.078	.2	9.2	.03	.025
MAX	< .8	4.3	< .1000	.00	.00	.00	.183	.3	9.6	< .03	.058
NR OBS	3	3	3	0	0	0	3	3	3	3	3
	COLOR	ALK	PH	HARD	SP C	CA	K	SI	TDS	CL	SO4
MIN	.0	104.5	7.7	83.9	220.	18.0	1.70	30.0	114.0	3.2	4.1
MEAN	2.5	108.4	7.9	85.6	225.	18.7	2.33	30.0	154.7	4.8	6.4
MAX	5.0	116.0	8.1	86.9	232.	19.5	3.00	30.0	188.0	7.7	10.0
NR OBS	4	4	4	4	4	3	3	1	4	4	4
SOURCE TW02											
	AS	BA	CD	CR	F	PB	HG	NO3	SE	AG	NA
MIN	< .020	< .30	< .001	< .025	.8	< .005	< .0002	< .0	.000	< .001	14.7
MEAN	.020	.31	.003	.025	1.0	.012	.0002	.3	.000	.020	15.4
MAX	< .020	< .36	< .005	< .025	1.2	.029	.0003	1.0	.000	< .028	16.0
NR OBS	4	4	4	4	4	4	4	4	0	4	4
	ALPHA	BETA	TRITIUM	90SR	226RA	B	CU	FE	MG	MN	ZN
MIN	< .4	2.0	.0006	.00	.00	.00	< .025	< .1	8.0	< .03	< .015
MEAN	.6	3.1	.0504	.00	.00	.00	.040	.1	9.0	.03	.233
MAX	< .8	4.6	< .1000	.00	.00	.00	.084	.2	9.8	.03	.836
NR OBS	4	4	4	0	0	0	4	4	4	4	4
	COLOR	ALK	PH	HARD	SP C	CA	K	SI	TDS	CL	SO4
MIN	.0	92.5	7.3	82.0	220.	17.4	2.19	30.0	128.0	2.4	5.0
MEAN	2.5	100.1	7.6	85.7	234.	18.9	2.47	30.0	145.0	6.1	6.2
MAX	5.0	108.0	7.7	94.0	260.	20.5	2.80	30.0	160.0	8.5	7.6
NR OBS	4	4	4	4	4	4	4	1	4	4	4

313834 FT. STEWART, GA.

SOURCE TW03

	AS	BA	CD	CR	F	PB	HG	NO3	SE	AG	NA
MIN	< .020	< .30	< .001	< .025	.5	< .005	< .0002	< .0	< .010	< .001	13.5
MEAN	.020	.38	.004	.025	.7	.011	.0002	.1	.010	.021	15.8
MAX	< .020	< .50	< .005	< .025	1.5	.030	.0002	< .1	< .010	< .028	18.0
NR OBS	6	6	6	6	6	6	6	6	1	6	6
	ALPHA	BETA	TRITIUM	90SR	226RA	B	CU	FE	MG	MN	ZN
MIN	< .5	1.9	.0003	.00	.00	.00	< .025	< .1	4.4	< .03	< .001
MEAN	.7	2.8	.0403	.00	.00	.00	.042	.7	8.8	.03	.019
MAX	< 1.2	4.3	< .1000	.00	.00	.00	.114	3.3	9.9	< .03	.038
NR OBS	5	5	5	0	0	0	6	6	6	6	6
	COLOR	ALK	PH	HARD	SP C	CA	K	SI	TDS	CL	SO4
MIN	.0	104.0	7.5	83.2	209.	17.5	2.40	34.3	124.0	3.0	4.5
MEAN	3.3	111.0	7.8	91.3	225.	20.5	2.54	40.0	146.0	5.4	7.0
MAX	5.0	118.0	8.0	118.0	250.	24.1	2.65	42.8	166.0	6.5	7.9
NR OBS	6	6	6	6	6	6	6	3	6	6	6

SOURCE TW05

	AS	BA	CD	CR	F	PB	HG	NO3	SE	AG	NA
MIN	< .020	< .30	< .001	< .025	.4	< .005	< .0002	< .0	< .010	< .001	11.2
MEAN	.020	.36	.003	.025	.4	.006	.0002	.1	.010	.021	12.4
MAX	< .020	.60	< .005	< .025	.4	< .010	.0002	< .1	< .010	< .028	14.0
NR OBS	5	5	5	5	5	5	5	5	1	5	5
	ALPHA	BETA	TRITIUM	90SR	226RA	B	CU	FE	MG	MN	ZN
MIN	< .4	1.5	< .0003	.00	.00	.00	< .025	< .1	8.3	< .03	.045
MEAN	.7	2.0	.0411	.00	.00	.00	.025	.1	9.1	.03	.256
MAX	< 1.2	3.0	< .1000	.00	.00	.00	< .025	< .1	9.7	< .03	.702
NR OBS	5	5	5	0	0	0	5	5	5	5	5
	COLOR	ALK	PH	HARD	SP C	CA	K	SI	TDS	CL	SO4
MIN	.0	107.5	7.7	94.6	227.	22.1	1.50	41.3	122.0	4.7	< 1.0
MEAN	3.0	113.0	7.9	97.8	231.	22.9	1.82	43.1	145.2	6.3	3.1
MAX	5.0	122.0	8.2	102.0	240.	24.0	2.01	44.9	164.0	8.2	5.3
NR OBS	5	5	5	5	5	5	5	2	5	5	5

313834 FT. STEWART, GA.

SOURCE TW06

	AS	BA	CD	CR	F	PB	HG	NO3	SE	AG	NA
MIN	< .020	< .30	< .001	< .025	.7	< .005	< .0002	< .0	< .010	< .001	22.9
MEAN	.020	.31	.003	.025	.8	.006	.0002	.1	.010	.020	173.9
MAX	< .020	< .36	< .005	< .025	.8	< .010	.0003	< .1	< .010	< .028	624.1
NR OBS	5	4	4	4	5	4	4	5	1	4	4
	ALPHA	BETA	TRITIUM	90SR	226RA	B	CU	FE	MG	MN	ZN
MIN	< .4	5.6	< .0003	.00	.00	.00	< .025	< .1	11.4	< .03	.009
MEAN	.8	6.5	.0404	.00	.00	.00	.025	.1	12.6	.03	.033
MAX	1.4	8.4	< .1000	.00	.00	.00	< .025	< .1	14.0	< .03	.048
NR OBS	5	5	5	0	0	0	4	4	4	4	4
	COLCR	ALK	PH	HARD	SP C	CA	K	SI	TDS	CL	SO4
MIN	.0	147.0	7.4	104.0	308.	21.9	2.52	36.4	186.0	4.6	< 1.0
MEAN	3.0	153.3	7.7	107.3	313.	23.2	5.53	39.2	203.0	9.1	1.8
MAX	5.0	161.0	8.2	110.0	320.	24.5	6.90	41.9	216.0	13.4	2.5
NR OBS	5	5	5	5	5	4	4	2	5	5	5

SOURCE TW07

	AS	BA	CD	CR	F	PB	HG	NO3	SE	AG	NA
MIN	< .020	< .30	< .001	< .025	.3	< .005	< .0002	< .0	< .010	< .001	9.3
MEAN	.020	.35	.003	.025	.4	.010	.0003	.1	.010	.021	59.7
MAX	< .020	< .50	< .005	< .025	.4	.024	.0005	< .1	< .010	< .028	245.2
NR OBS	5	5	5	5	5	5	5	5	1	5	5
	ALPHA	BETA	TRITIUM	90SR	226RA	B	CU	FE	MG	MN	ZN
MIN	< .5	1.5	< .0003	.00	.00	.00	< .025	< .1	5.9	< .03	< .001
MEAN	.9	2.2	.0406	.00	.00	.00	.036	.2	7.3	.03	.018
MAX	1.3	3.3	< .1000	.00	.00	.00	.078	.4	9.2	< .03	.037
NR OBS	5	5	5	0	0	0	5	5	5	5	5
	COLCR	ALK	PH	HARD	SP C	CA	K	SI	TDS	CL	SO4
MIN	.0	100.0	7.7	89.1	214.	18.6	2.00	44.9	137.0	5.5	3.0
MEAN	3.0	105.9	7.8	92.5	229.	25.0	2.16	47.7	163.4	6.2	5.5
MAX	5.0	112.0	8.1	98.0	252.	28.5	2.59	50.5	186.0	7.6	7.3
NR OBS	5	5	5	5	5	5	5	2	5	5	5

313831 FT. STEWART, GA.

SOURCE TW08											
	AS	BA	CD	CR	F	PB	HG	NO3	SE	AG	NA
MIN	< .020	< .30	< .001	< .025	.4	< .005	< .0002	< .0	< .010	< .001	8.9
MEAN	.020	.38	.003	.025	.7	.007	.0002	.1	.010	.021	111.2
MAX	< .020	< .50	< .005	< .025	.9	< .010	.0003	.3	< .010	< .028	468.1
NR OBS	5	5	5	5	5	5	5	5	1	5	5
	ALPHA	BETA	TRITIUM	90SR	226RA	B	CU	FE	MG	MN	ZN
MIN	< .4	2.5	< .0003	.00	.00	.00	< .025	< .1	7.5	< .03	< .001
MEAN	.8	3.4	.0404	.00	.00	.00	.040	.2	8.4	.03	.027
MAX	1.8	4.8	< .1000	.00	.00	.00	.101	.4	9.6	< .03	.063
NR OBS	5	5	5	0	0	0	5	5	5	4	5
	COLOR	ALK	PH	HARD	SP C	CA	K	SI	TDS	CL	SO4
MIN	.0	112.6	7.5	72.0	238	14.3	2.05	15.8	156.0	4.7	< 1.0
MEAN	3.0	122.1	7.8	82.3	247	19.7	2.35	18.8	167.6	8.5	2.1
MAX	5.0	130.0	8.2	97.6	261	22.8	2.79	21.9	188.0	11.7	3.7
NR OBS	5	5	5	5	5	5	5	2	5	5	5

SOURCE TW09											
	AS	BA	CD	CR	F	PB	HG	NO3	SE	AG	NA
MIN	< .020	< .30	< .001	< .025	.3	< .005	< .0002	< .0	< .010	< .001	13.3
MEAN	.020	.31	.003	.025	.4	.009	.0002	.1	.010	.021	78.6
MAX	< .020	< .36	< .005	< .025	.4	.016	< .0002	.4	< .010	< .028	334.4
NR OBS	5	5	5	5	5	5	5	5	1	5	5
	ALPHA	BETA	TRITIUM	90SR	226RA	B	CU	FE	MG	MN	ZN
MIN	< .5	2.2	< .0003	.00	.00	.00	< .025	< .1	7.4	< .03	< .001
MEAN	.8	2.8	.0503	.00	.00	.00	.037	.1	7.9	.03	.023
MAX	< 1.2	3.7	< .1000	.00	.00	.00	.086	< .1	9.2	< .03	.056
NR OBS	4	4	4	0	0	0	5	5	5	5	5
	COLOR	ALK	PH	HARD	SP C	CA	K	SI	TDS	CL	SO4
MIN	.0	108.0	7.6	84.0	205	20.4	2.31	38.1	138.0	2.8	2.5
MEAN	3.0	109.8	7.9	88.5	222	21.7	2.55	40.0	159.8	4.8	3.6
MAX	5.0	116.0	8.2	99.7	231	22.6	2.73	41.9	178.0	7.4	5.6
NR OBS	5	5	5	5	5	5	5	2	5	5	5

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SOURCE TW10

	AS	BA	CD	CR	F	PB	HG	NO3	SE	AG	NA
MIN	< .020	< .30	< .001	< .025	< .1	< .005	< .0002	< .0	< .010	< .001	12.9
MEAN	.020	.30	.004	.025	.6	.007	.0002	.6	.010	.019	14.9
MAX	< .020	< .30	< .005	< .025	1.0	.011	< .0002	2.1	< .010	< .025	16.0
NR OBS	4	4	4	4	4	4	4	4	1	4	4
	ALPHA	BETA	TRITIUM	90SR	226RA	B	CU	FE	MG	MN	ZN
MIN	< .4	1.6	< .0003	.00	.00	.00	< .025	< .1	8.6	< .03	.028
MEAN	.7	2.7	.0258	.00	.00	.00	.025	.1	10.3	.03	.090
MAX	< 1.2	4.6	< .1000	.00	.00	.00	< .025	.2	12.9	< .03	.207
NR OBS	4	4	4	0	0	0	4	4	4	4	4
	COLOR	ALK	PH	HARD	SP C	CA	K	SI	TDS	CL	SO4
MIN	.0	108.0	7.8	83.2	203.	17.7	2.20	37.0	135.0	3.7	< 1.0
MEAN	2.5	120.2	8.0	94.0	241.	20.4	2.76	38.3	171.5	4.9	5.9
MAX	5.0	156.2	8.2	118.0	302.	26.8	3.83	39.6	221.0	6.6	9.5
NR OBS	4	4	4	4	4	4	4	2	4	4	4

SOURCE TW11

	AS	BA	CD	CR	F	PB	HG	NO3	SE	AG	NA
MIN	< .020	< .50	< .005	< .025	2.4	< .005	< .0002	.1	.000	< .025	10.2
MEAN	.020	.50	.005	.025	2.4	.005	.0002	.1	.000	.025	10.2
MAX	< .020	< .50	< .005	< .025	2.4	< .005	< .0002	.1	.000	< .025	10.2
NR OBS	1	1	1	1	1	1	1	1	0	1	1
	ALPHA	BETA	TRITIUM	90SR	226RA	B	CU	FE	MG	MN	ZN
MIN	< .6	1.2	.0004	.00	.00	.00	.027	< .1	9.0	< .03	< .015
MEAN	.6	1.2	.0004	.00	.00	.00	.027	.1	9.0	.03	.015
MAX	< .6	1.2	.0004	.00	.00	.00	.027	< .1	9.0	< .03	< .015
NR OBS	1	1	1	0	0	0	1	1	1	1	1
	COLOR	ALK	PH	HARD	SP C	CA	K	SI	TDS	CL	SO4
MIN	5.0	97.9	7.5	102.0	238.	26.9	2.05	45.6	155.0	8.8	3.5
MEAN	5.0	97.9	7.5	102.0	238.	26.9	2.05	45.6	155.0	8.8	3.5
MAX	5.0	97.9	7.5	102.0	238.	26.9	2.05	45.6	155.0	8.8	3.5
NR OBS	1	1	1	1	1	1	1	1	1	1	1

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SOURCE TW11											
	AS	BA	CD	CR	F	PB	HG	NO3	SE	AG	NA
MIN	< .020	< .30	< .001	< .025	< .1	< .005	< .0002	< .0	< .010	< .001	9.0
MEAN	.020	.30	.003	.025	.5	.005	.0002	.1	.010	.013	9.6
MAX	< .020	< .30	< .005	< .025	1.0	< .005	< .0002	< .1	< .010	< .025	10.3
NR OBS	2	2	2	2	2	2	2	2	1	2	2
	ALPHA	BETA	TRITIUM	90SR	226RA	B	CU	FE	MG	MN	ZN
MIN	< .5	1.4	.0004	.00	.00	.00	< .025	< .1	8.5	< .03	< .015
MEAN	.6	1.5	.0007	.00	.00	.00	.230	.1	8.6	.03	.037
MAX	< .8	1.6	.0011	.00	.00	.00	.436	< .1	8.8	< .03	.060
NR OBS	2	2	2	0	0	0	2	2	2	2	2
	COLCR	ALK	PH	HARD	SP C	CA	K	SI	TDS	CL	SO4
MIN	.0	102.0	7.4	88.9	227.0	24.0	1.70	53.0	160.0	5.5	6.3
MEAN	2.5	104.3	7.8	94.0	230.0	24.5	1.81	53.0	166.0	5.7	6.7
MAX	5.0	106.5	8.2	99.1	233.0	24.9	1.92	53.0	172.0	5.9	7.2
NR OBS	2	2	2	2	2	2	2	1	2	2	2

SOURCE TW12											
	AS	BA	CD	CR	F	PB	HG	NO3	SE	AG	NA
MIN	< .020	< .30	< .001	< .025	.4	< .005	< .0002	< .0	< .010	< .001	8.4
MEAN	.020	.30	.004	.025	.6	.005	.0003	.1	.010	.017	9.1
MAX	< .020	< .30	.006	< .025	.8	< .005	.0004	< .1	< .010	< .025	10.0
NR OBS	3	3	3	3	3	3	3	3	1	3	3
	ALPHA	BETA	TRITIUM	90SR	226RA	B	CU	FE	MG	MN	ZN
MIN	< .4	1.6	< .0003	.00	.00	.00	< .025	< .1	7.9	< .03	< .015
MEAN	.5	1.9	.0008	.00	.00	.00	.025	.1	8.3	.03	.020
MAX	< .6	2.4	.0014	.00	.00	.00	< .025	< .1	8.9	< .03	.030
NR OBS	3	3	3	0	0	0	3	3	3	3	3
	COLCR	ALK	PH	HARD	SP C	CA	K	SI	TDS	CL	SO4
MIN	.0	100.5	7.7	96.5	224.	22.5	.51	44.1	153.0	5.5	4.1
MEAN	3.3	102.9	7.9	99.2	227.	23.9	1.30	48.5	163.3	6.6	5.5
MAX	5.0	105.2	8.3	101.0	231.	25.9	1.79	53.0	182.0	8.2	6.5
NR OBS	3	3	3	3	3	3	3	2	3	3	3

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SOURCE TW13

	AS	BA	CD	CR	F	PB	HG	NO3	SE	AG	NA
MIN	< .020	< .30	< .001	< .025	.4	< .005	< .0002	< .0	< .010	< .001	17.7
MEAN	.020	.30	.004	.025	.5	.005	.0002	.1	.010	.017	18.3
MAX	< .020	< .30	< .005	< .025	.6	.006	< .0002	.2	< .010	< .025	18.6
NR OBS	3	3	3	3	3	3	3	3	1	3	3
	ALPHA	BETA	TRITIUM	90SR	226RA	B	CU	FE	MG	MN	ZN
MIN	< .4	1.2	.0004	.00	.00	.00	< .025	< .1	9.6	< .03	< .015
MEAN	.6	4.1	.0007	.00	.00	.00	.025	.2	10.3	.03	.069
MAX	< .8	6.2	.0012	.00	.00	.00	< .025	.5	11.3	< .03	.115
NR OBS	3	3	3	0	0	0	3	3	3	3	3
	COLOR	ALK	PH	HARD	SP C	CA	K	SI	TDS	CL	SO4
MIN	.0	119.6	7.8	84.8	252.	16.7	1.92	35.5	178.0	4.5	1.1
MEAN	3.3	124.4	8.0	90.8	262.	19.5	3.82	39.8	189.0	7.5	3.5
MAX	5.0	130.6	8.3	96.0	269.	21.0	6.30	44.1	208.0	12.8	7.0
NR OBS	3	3	3	3	3	3	3	2	3	3	3

SOURCE TW14

	AS	BA	CD	CR	F	PB	HG	NO3	SE	AG	NA
MIN	< .020	< .30	< .001	< .025	.2	< .005	< .0002	< .0	< .005	< .001	9.6
MEAN	.020	.30	.004	.025	.3	.005	.0002	.1	.005	.017	10.9
MAX	< .020	< .30	.007	< .025	.4	< .005	< .0002	.1	< .005	< .025	13.1
NR OBS	3	2	3	3	3	3	3	3	1	3	3
	ALPHA	BETA	TRITIUM	90SR	226RA	B	CU	FE	MG	MN	ZN
MIN	< .4	1.1	< .0003	.00	.00	.00	< .025	< .1	7.9	< .03	.033
MEAN	.7	1.3	.0007	.00	.00	.00	.025	.1	8.2	.03	.091
MAX	< .9	1.6	.0012	.00	.00	.00	< .025	.2	8.5	< .03	.172
NR OBS	3	3	3	0	0	0	3	3	3	3	3
	COLOR	ALK	PH	HARD	SP C	CA	K	SI	TDS	CL	SO4
MIN	.0	105.0	7.7	97.3	227.	23.0	1.60	47.7	172.0	5.0	2.7
MEAN	3.3	107.6	8.0	98.8	231.	24.6	1.78	50.3	177.3	6.4	4.8
MAX	5.0	111.4	8.3	101.0	236.	26.1	1.95	53.0	183.0	8.7	6.7
NR OBS	3	3	3	3	3	3	3	2	3	3	3

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SOURCE TW15

	AS	BA	CD	CR	F	PB	HG	NO3	SE	AG	NA
MIN	< .020	< .30	< .005	< .025	.3	< .005	< .0002	< .0	< .010	< .001	9.2
MEAN	.020	.30	.007	.025	.4	.005	.0002	.1	.010	.017	9.8
MAX	< .020	< .30	.011	< .025	.4	< .005	< .0002	< .1	< .010	< .025	10.2
NR OBS	3	3	3	3	3	3	3	3	1	3	3
	ALPHA	BETA	TRITIUM	90SR	226RA	B	CU	FE	MG	MN	ZN
MIN	< .4	.9	.0003	.00	.00	.00	< .025	< .1	8.6	< .03	< .015
MEAN	.6	1.8	.0006	.00	.00	.00	.025	.3	8.9	.03	.080
MAX	< .8	2.4	.0010	.00	.00	.00	< .025	.5	9.3	< .03	.211
NR OBS	3	3	3	0	0	0	3	3	3	3	3
	COLOR	ALK	PH	HARD	SP C	CA	K	SI	TDS	CL	SO4
MIN	.0	97.2	7.9	91.5	213.	21.8	1.69	44.1	155.0	4.2	2.9
MEAN	3.3	103.4	8.0	95.5	224.	24.1	3.49	47.1	178.7	6.5	4.9
MAX	5.0	110.4	8.2	98.0	231.	26.9	6.98	50.2	202.0	7.7	6.8
NR OBS	3	3	3	3	3	3	3	2	3	3	3

SOURCE TW16

	AS	BA	CD	CR	F	PB	HG	NO3	SE	AG	NA
MIN	< .020	< .30	< .001	< .025	.2	< .005	< .0002	< .0	< .010	< .001	16.2
MEAN	.020	.30	.004	.025	.2	.008	.0002	.1	.010	.017	20.6
MAX	< .020	< .30	< .005	< .025	.3	.014	< .0002	.1	< .010	< .025	23.8
NR OBS	3	3	3	3	3	3	3	3	1	3	3
	ALPHA	BETA	TRITIUM	90SR	226RA	B	CU	FE	MG	MN	ZN
MIN	< .4	3.8	< .0003	.00	.00	.00	< .025	.2	7.8	< .03	.167
MEAN	.6	4.4	.0007	.00	.00	.00	.025	1.1	8.5	.03	.409
MAX	< .8	5.1	.0010	.00	.00	.00	< .025	1.8	8.9	< .03	.569
NR OBS	3	3	3	0	0	0	3	3	3	3	3
	COLOR	ALK	PH	HARD	SP C	CA	K	SI	TDS	CL	SO4
MIN	.0	121.9	7.0	98.0	264.	26.6	2.21	42.4	192.0	9.5	2.5
MEAN	4.0	128.5	7.4	100.7	283.	28.1	3.99	45.2	220.0	11.8	4.3
MAX	7.0	137.0	7.9	105.0	297.	29.2	5.10	48.1	272.0	13.3	7.8
NR OBS	3	3	3	3	3	3	3	2	3	3	3

SOURCE TW17

	AS	BA	CD	CR	F	PB	HG	NO3	SE	AG	NA
MIN	< .020	< .30	< .001	< .025	.3	< .005	< .0002	< .0	< .010	< .001	11.5
MEAN	.020	.30	.004	.025	.4	.007	.0006	.1	.010	.017	12.8
MAX	< .020	< .30	< .005	< .025	.6	.008	.0013	.2	< .010	< .025	14.5
NR OBS	3	3	3	3	3	3	3	3	1	3	3
	ALPHA	BETA	TRITIUM	90SR	226RA	B	CU	FE	MG	MN	ZN
MIN	< .4	2.0	< .0003	.00	.00	.00	< .025	< .1	9.3	< .03	.249
MEAN	.6	3.8	.0006	.00	.00	.00	.028	.3	9.8	.03	.371
MAX	< .8	5.2	.0009	.00	.00	.00	.034	.5	10.3	< .03	.454
NR OBS	3	3	3	0	0	0	3	3	3	3	3
	COLOR	ALK	PH	HARD	SP C	CA	K	SI	TDS	CL	SO4
MIN	.0	99.1	7.9	91.5	217.	17.5	2.68	36.4	138.0	3.6	4.1
MEAN	3.3	104.6	8.0	95.5	235.	21.1	3.98	42.3	197.7	9.5	5.8
MAX	5.0	108.3	8.2	100.0	264.	23.9	6.37	48.2	272.0	15.3	7.6
NR OBS	3	3	3	3	3	3	3	2	3	3	3

SOURCE TW18

	AS	BA	CD	CR	F	PB	HG	NO3	SE	AG	NA
MIN	< .020	< .30	< .001	< .025	.3	< .005	< .0002	< .0	< .010	< .001	8.0
MEAN	.020	.30	.004	.025	.3	.005	.0002	.1	.010	.017	8.5
MAX	< .020	< .30	< .005	< .025	.4	< .005	< .0002	< .1	< .010	< .025	9.3
NR OBS	3	3	3	3	3	3	3	3	1	3	3
	ALPHA	BETA	TRITIUM	90SR	226RA	B	CU	FE	MG	MN	ZN
MIN	< .4	1.7	< .0003	.00	.00	.00	< .025	< .1	7.8	< .03	< .015
MEAN	.6	3.4	.0006	.00	.00	.00	.025	.3	8.6	.03	.022
MAX	< .8	6.1	.0009	.00	.00	.00	< .025	.5	9.1	< .03	.030
NR OBS	3	3	3	0	0	0	3	3	3	3	3
	COLOR	ALK	PH	HARD	SP C	CA	K	SI	TDS	CL	SO4
MIN	.0	105.0	7.8	102.0	231.	24.8	1.50	44.1	143.0	4.2	3.1
MEAN	3.3	106.9	8.0	103.3	233.	25.6	1.66	47.1	164.0	6.9	5.4
MAX	5.0	108.5	8.2	105.0	235.	27.0	1.86	50.2	188.0	9.5	7.2
NR OBS	3	3	3	3	3	3	3	2	3	3	3

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9/27/83

Table F-1. Preliminary Ground Water Quality Data at FST

Parameter	Boring 1		Boring 2		Boring 3		Boring 4		Boring 6	Boring 8
	July 17	July 21	July 16	July 16	July 17	July 21	July 17	July 21	July 20	July 20
pH (pH units)	5.3	4.8	5.4	5.1	5.3	5.4	5.3		5.3	6.1
COD (mg/l)					44.9					
Nitrate Nitrogen (as N) (mg/l)			0.13							
Total Phosphate (as P) (mg/l)*		0.5	<0.01	0.04	0.04	<0.01	0.015	0.05		
Fecal Coliforms (organisms/100 ml)			10	0	0	30				

* Each sample was passed through a 0.45-micron (u) filter prior to preservation and analysis.

Source: USAEHA, 1975b.

Table F-2. Preliminary Ground Water Quality Data at HAA

Parameter	Boring CS-1 July 18, 1975	Boring CS-3 July 18, 1975	Boring CS-5 July 21, 1975
pH (pH units)	6.6	6.3	5.2
COD (mg/l)	18.8	--	--
Nitrate Nitrogen (as N) (mg/l)	0.22	--	--
Total Phosphate (as P) (mg/l)*	0.04	0.04	0.06
Fecal Coliforms (organisms/100 ml)	0	0	0
Total Coliforms (organisms/100 ml)	30	--	--

* Each sample was passed through a 0.45-u filter prior to preservation and analysis.

Source: USAEHA, 1975c.

Table F-3. Historical Data for Well 1 at FST

Parameter	1941	1959
Silica (mg/l)	36.0	35.0
Iron (mg/l)	0.02	0.04
Calcium (mg/l)	19.0	20.0
Magnesium (mg/l)	9.4	8.5
Sodium (mg/l)	16.0	16.0
Potassium (mg/l)	2.6	2.8
Bicarbonate (mg/l)	133	136
Sulfate (mg/l)	8.4	7.4
Chloride (mg/l)	3.6	3.5
Fluoride (mg/l)	0.4	0.6
Nitrate (mg/l)	0	0.2
Dissolved Solids (mg/l)	152	161
Hardness (mg/l)	86	85
Specific Conductance (umhos)*	--	233
pH (pH units)	--	7.8

* umhos = micromhos.

Source: EPA, Environmental Systems Laboratory, 1982.

ESE, Inc.
PROJECT NUMBER
FIELD GROUP STEW-S
ALL

DATE 05/02/90 STATUS :
PROJECT NAME FORT STEWART
PROJECT MANAGER DOYCE BLAIR
LAB COORDINATOR KEVIN MCHUGH
SAMPLE ID/#

PAGE 1

PARAMETERS	STORET	WSB-1	WSB-2	WSB-3	WSB-4	REPLICATE	RINSEBLK	TRPBLK
UNITS	METHOD	STEW-S	STEW-S	STEW-S	STEW-S	STEW-S	STEW-S	STEW-S
		7	8	9	10	11	12	13
DATE		02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90
TIME		08:50	10:06	10:55	12:15	10:55	12:30	12:00
CHLOROMETHANE	34421	<29	<29	<28	<29	<29	NRQ	NRQ
UG/KG-DRY	DMS							
BROMOMETHANE	34416	<1.4	<1.4	<1.4	<1.4	<1.4	NRQ	NRQ
UG/KG-DRY	DMS							
VINYL CHLORIDE	34495	<1.9	<1.8	<1.8	<1.9	<1.9	NRQ	NRQ
UG/KG-DRY	DMS							
CHLOROETHANE	34314	<2.1	<2.1	<2.1	<2.1	<2.1	NRQ	NRQ
UG/KG-DRY	DMS							
METHYLENE CHLORIDE	34426	3.9	<1.9	3.4	3.3	2.5	NRQ	NRQ
UG/KG-DRY	DMS							
1,1-DICHLOROETHANE	34499	<1.0	<1.0	<1.00	<1.0	<1.0	NRQ	NRQ
UG/KG-DRY	DMS							
1,1-DICHLOROETHENE	98789	<1.4	<1.4	<1.4	<1.4	<1.4	NRQ	NRQ
UG/G-DRY	DMS							
CHLOROFORM	34318	<1.4	<1.4	<1.4	<1.4	<1.4	NRQ	NRQ
UG/KG-DRY	DMS							
1,2-DICHLOROETHANE	34534	<1.0	<1.0	<1.0	<1.0	<1.0	NRQ	NRQ
UG/KG-DRY	DMS							
1,1,1-TRICHL'ETHANE	34509	<1.6	<1.6	<1.5	<1.6	<1.6	NRQ	NRQ
UG/KG-DRY	DMS							
CARBON TETRACHLORIDE	34299	<1.2	<1.1	<1.1	<1.2	<1.2	NRQ	NRQ
UG/KG-DRY	DMS							
BROMODICHLOROMETHANE	34330	<1.2	<1.2	<1.1	<1.2	<1.2	NRQ	NRQ
UG/KG-DRY	DMS							
1,2-DICHLOROPROPANE	34544	<1.2	<1.1	<1.1	<1.2	<1.2	NRQ	NRQ
UG/KG-DRY	DMS							
TRANS-1,3-DICHLOROPR	34697	<1.0	<1.0	<1.0	<1.0	<1.0	NRQ	NRQ
OPENE	UG/KG-DRY							
TRICHLOROETHENE	34487	<1.0	<1.0	<1.0	<1.0	<1.0	NRQ	NRQ
UG/KG-DRY	DMS							
BENZENE	34237	<1.3	<1.3	<1.3	<1.3	<1.4	NRQ	NRQ
UG/KG-DRY	DMS							
DIBROMOCHLOROMETHANE	34309	<1.6	<1.5	<1.5	<1.6	<1.6	NRQ	NRQ
UG/KG-DRY	DMS							
1,1,2-TRICHL'ETHANE	34514	<1.9	<1.9	<1.9	<1.9	<1.9	NRQ	NRQ
UG/KG-DRY	DMS							
CIS-1,3-DICHLOROPROP	34702	<1.8	<1.8	<1.8	<1.8	<1.8	NRQ	NRQ
ENE	UG/KG-DRY							
BROMOFORM	34290	<2.9	<2.9	<2.9	<2.9	<3.0	NRQ	NRQ
UG/KG-DRY	DMS							
1,1,2,2-TETRACHLORO	34519	<1.8	<1.8	<1.8	<1.8	<1.8	NRQ	NRQ
ETHANE	UG/KG-DRY							
TETRACHLOROETHENE	34478	<0.61	<0.60	<0.60	<0.61	<0.61	NRQ	NRQ
UG/KG-DRY	DMS							
TOLUENE	34483	22	33	14	22	26	NRQ	NRQ
UG/KG-DRY	DMS							
CHLOROBENZENE	34304	<0.78	<0.77	<0.76	<0.78	<0.78	NRQ	NRQ
UG/KG-DRY	DMS							

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ESE, Inc.
PROJECT NUMBER
FIELD GROUP STEW-S
ALL

DATE 05/02/90 STATUS :
PROJECT NAME FORT STEWART
PROJECT MANAGER DOYCE BLAIR
LAB COORDINATOR KEVIN MCHUGH

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PARAMETERS	UNITS	STORET METHOD	WSB-1	WSB-2	WSB-3	WSB-4	REPLICATE	RINSEBLK	SAMPLE ID/#
			STEW-S 7	STEW-S 8	STEW-S 9	STEW-S 10	STEW-S 11	STEW-S 12	TRPBLK STEW-S 13
DATE			02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90
TIME			08:50	10:06	10:55	12:15	10:55	12:30	12:00
ETHYLBENZENE		34374	<1.2	<1.2	<1.2	<1.2	<1.2	NRQ	NRQ
UG/KG-DRY		DMS							
2-HEXANONE		75166	<3.7	<3.7	<3.7	<3.7	<3.8	NRQ	NRQ
UG/KG-DRY		DMS							
ACETONE		75059	<20	<20	<20	<20	<20	NRQ	NRQ
UG/KG-DRY		DMS							
CARBON DISULFIDE		78544	<3.7	<3.7	<3.6	<3.7	<3.7	NRQ	NRQ
UG/KG-DRY		DMS							
STYRENE		75192	<1.9	<1.9	<1.9	<1.9	<1.9	NRQ	NRQ
UG/KG-DRY		DMS							
VINYL ACETATE		98583	<3.1	<3.0	<3.0	<3.1	<3.1	NRQ	NRQ
UG/KG-DRY		DMS							
XYLENE, SED		45510	<1.2	<1.2	<1.2	<1.2	<1.2	NRQ	NRQ
UG/KG-DRY		DMS							
1,2-DICHLOROETHENE,		98677	<1.55	<1.53	<1.52	<1.55	<1.56	NRQ	NRQ
TOTAL		DMS							
2-BUTANONE		78356	<11.3	<11.1	<11.1	<11.3	<11.4	NRQ	NRQ
UG/KG-DRY		DMS							
4-METHYL-2-PENTANONE		99081	<3.20	<3.16	<3.14	<3.20	<3.22	NRQ	NRQ
UG/KG-DRY		DMS							
ACENAPHTHENE		34208	<150	<150	<150	<150	<150	NRQ	NRQ
UG/KG-DRY		GMS							
ACENAPHTHYLENE		34203	<110	<110	<110	<110	<110	NRQ	NRQ
UG/KG-DRY		GMS							
ANTHRACENE		34223	<85	<85	<84	<86	<86	NRQ	NRQ
UG/KG-DRY		GMS							
BENZO(A)ANTHRACENE		34529	<70	<70	<69	<70	<71	NRQ	NRQ
UG/KG-DRY		GMS							
BENZO(A)PYRENE		34250	<210	<210	<200	<210	<210	NRQ	NRQ
UG/KG-DRY		GMS							
BENZO(B)FLUORANTHENE		34233	<150	<150	<150	<150	<150	NRQ	NRQ
UG/KG-DRY		GMS							
BENZO(GHI)PERYLENE		34524	<83	<83	<82	<84	<85	NRQ	NRQ
UG/KG-DRY		GMS							
BENZO(K)FLUORANTHENE		34245	<190	<190	<190	<190	<190	NRQ	NRQ
UG/KG-DRY		GMS							
CHRYSENE		34323	<110	<110	<110	<110	<110	NRQ	NRQ
UG/KG-DRY		GMS							
DIBEN(A,H)ANTHRACENE		34559	<71	<72	<71	<72	<72	NRQ	NRQ
UG/KG-DRY		GMS							
FLUORANTHENE		34379	<130	<130	<130	<130	<130	NRQ	NRQ
UG/KG-DRY		GMS							
FLUORENE		34384	<120	<120	<120	<120	<120	NRQ	NRQ
UG/KG-DRY		GMS							
INDENO(1,2,3-CD)PYRENE		34406	<110	<110	<110	<110	<110	NRQ	NRQ
UG/KG-DRY		GMS							
NAPHTHALENE		34445	<230	<240	<230	<240	<240	NRQ	NRQ
UG/KG-DRY		GMS							

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ESE, Inc.
PROJECT NUMBER
FIELD GROUP STEW-S
ALL

DATE 05/02/90 STATUS :
PROJECT NAME FORT STEWART
PROJECT MANAGER DOYCE BLAIR
LAB COORDINATOR KEVIN MCHUGH

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PARAMETERS	UNITS	STORET METHOD	WSB-1 STEW-S 7	WSB-2 STEW-S 8	WSB-3 STEW-S 9	WSB-4 STEW-S 10	REPLICATE STEW-S 11	RINSEBLK STEW-S 12	SAMPLE ID/# TRPBLK STEW-S 13
DATE			02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90
TIME			08:50	10:06	10:55	12:15	10:55	12:30	12:00
PHENANTHRENE		34464	<76	<76	<75	<77	<77	NRQ	NRQ
UG/KG-DRY		GMS							
PYRENE		34472	<81	<81	<80	<82	<82	NRQ	NRQ
UG/KG-DRY		GMS							
BARIUM, SED		1008	8.28	8.83	7.95	4.36	6.28	NRQ	NRQ
MG/KG-DRY		ADICP							
CADMIUM, SED		1028	<0.416	<0.417	<0.412	<0.420	<0.423	NRQ	NRQ
MG/KG-DRY		ADICP							
LEAD, SED		1052	10.9	7.77	10.8	<6.00	7.84	NRQ	NRQ
MG/KG-DRY		ADICP							
CHROMIUM, SED		1029	9.58	8.57	18.9	10.5	8.83	NRQ	NRQ
MG/KG-DRY		ADICP							
SILVER, SED		1078	<0.678	<0.679	<0.671	<0.684	<0.688	NRQ	NRQ
MG/KG-DRY		ADICP							
ARSENIC, SED		1003	<0.547	<0.548	3.35	1.37	4.59	NRQ	NRQ
MG/KG-DRY		AGF							
SELENIUM, SED		1148	<0.476	<0.477	0.531	<0.480	<0.483	NRQ	NRQ
MG/KG-DRY		GFAA							
MERCURY, SED		71921	<0.119	<0.119	<0.118	<0.120	<0.121	NRQ	NRQ
MG/KG-DRY		CVAA							
BARIUM, TOTAL		1007	NRQ	NRQ	NRQ	NRQ	NRQ	3.0	NRQ
UG/L		DICAP							
CADMIUM, TOTAL		1027	NRQ	NRQ	NRQ	NRQ	NRQ	<3.5	NRQ
UG/L		DICAP							
LEAD, TOTAL		1051	NRQ	NRQ	NRQ	NRQ	NRQ	<25.0	NRQ
UG/L		DICAP							
CHROMIUM, TOTAL		1034	NRQ	NRQ	NRQ	NRQ	NRQ	<7.0	NRQ
UG/L		DICAP							
SILVER, TOTAL		1077	NRQ	NRQ	NRQ	NRQ	NRQ	<5.7	NRQ
UG/L		DICAP							
ARSENIC, TOTAL		1002	NRQ	NRQ	NRQ	NRQ	NRQ	<2.3	NRQ
UG/L		DFAA							
SELENIUM, TOTAL		1147	NRQ	NRQ	NRQ	NRQ	NRQ	<2.0	NRQ
UG/L		DFAA							
MERCURY, TOTAL		71900	NRQ	NRQ	NRQ	NRQ	NRQ	<0.2	NRQ
UG/L		DCVAA							
4-METHYL-2-PENTANONE		78133	NRQ	NRQ	NRQ	NRQ	NRQ	<3	<3
UG/L		DMS							
1,1,1-TRICHL'ETHANE		34506	NRQ	NRQ	NRQ	NRQ	NRQ	<1.6	<1.6
UG/L		DMS							
1,1,2,2-TETRACHLORO		34516	NRQ	NRQ	NRQ	NRQ	NRQ	<1.5	<1.5
ETHANE		DMS							
1,1,2-TRICHL'ETHANE		34511	NRQ	NRQ	NRQ	NRQ	NRQ	<0.87	<0.87
UG/L		DMS							
1,1-DICHLOROETHANE		34496	NRQ	NRQ	NRQ	NRQ	NRQ	<0.85	<0.85
UG/L		DMS							
1,1-DICHLOROETHYLENE		34501	NRQ	NRQ	NRQ	NRQ	NRQ	<1.2	<1.2
UG/L		DMS							

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ESE, Inc.
PROJECT NUMBER
FIELD GROUP STEW-S
ALL

DATE 05/02/90 STATUS :
PROJECT NAME FORT STEWART
PROJECT MANAGER DOYCE BLAIR
LAB COORDINATOR KEVIN MCHUGH

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PARAMETERS	STOR	WSB-1	WSB-2	WSB-3	WSB-4	REPLICATE	RINSEBLK	SAMPLE ID/#
UNITS	ET	STEW-S	STEW-S	STEW-S	STEW-S	STEW-S	STEW-S	TRPBLK
	METHOD	7	8	9	10	11	12	STEW-S
								13
DATE		02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90
TIME		08:50	10:06	10:55	12:15	10:55	12:30	12:00
1,2-DICHLOROETHANE	34531	NRQ	NRQ	NRQ	NRQ	NRQ	<0.87	<0.87
UG/L	DMS							
1,2-DICHLOROPROPANE	34541	NRQ	NRQ	NRQ	NRQ	NRQ	<0.97	<0.97
UG/L	DMS							
2-BUTANONE	99080	NRQ	NRQ	NRQ	NRQ	NRQ	<9.44	<9.44
UG/L	DMS							
ACETONE	81552	NRQ	NRQ	NRQ	NRQ	NRQ	<17	<17
UG/L	DMS							
BENZENE	34030	NRQ	NRQ	NRQ	NRQ	NRQ	<1.1	<1.1
UG/L	DMS							
BROMODICHLOROMETHANE	32101	NRQ	NRQ	NRQ	NRQ	NRQ	<0.98	<0.98
UG/L	DMS							
BROMOFORM	32104	NRQ	NRQ	NRQ	NRQ	NRQ	<2.5	<2.5
UG/L	DMS							
BROMOMETHANE	34413	NRQ	NRQ	NRQ	NRQ	NRQ	<1.2	<1.2
UG/L	DMS							
CARBON DISULFIDE	77041	NRQ	NRQ	NRQ	NRQ	NRQ	<3.1	<3.1
UG/L	DMS							
CARBON TETRACHLORIDE	32102	NRQ	NRQ	NRQ	NRQ	NRQ	<0.97	<0.97
UG/L	DMS							
CHLOROBENZENE	34301	NRQ	NRQ	NRQ	NRQ	NRQ	<0.65	<0.65
UG/L	DMS							
CHLOROETHANE	34311	NRQ	NRQ	NRQ	NRQ	NRQ	<1.8	<1.8
UG/L	DMS							
CHLOROFORM	32106	NRQ	NRQ	NRQ	NRQ	NRQ	<1.2	<1.2
UG/L	DMS							
CHLOROMETHANE	34418	NRQ	NRQ	NRQ	NRQ	NRQ	<24	<24
UG/L	DMS							
CIS-1,3-DICHLOROPROP	34704	NRQ	NRQ	NRQ	NRQ	NRQ	<1.5	<1.5
ENE	DMS							
DIBROMOCHLOROMETHANE	32105	NRQ	NRQ	NRQ	NRQ	NRQ	<1.3	<1.3
UG/L	DMS							
ETHYLBENZENE	34371	NRQ	NRQ	NRQ	NRQ	NRQ	<1.0	<1.0
UG/L	DMS							
METHYLENE CHLORIDE	34423	NRQ	NRQ	NRQ	NRQ	NRQ	3.7	3.3
UG/L	DMS							
STYRENE	77128	NRQ	NRQ	NRQ	NRQ	NRQ	<1.6	<1.6
UG/L	DMS							
1,2-DICHLOROETHENE,	97721	NRQ	NRQ	NRQ	NRQ	NRQ	<1.30	<1.30
TOTAL	DMS							
TRANS-1,3-DICHLOROPR	34699	NRQ	NRQ	NRQ	NRQ	NRQ	<0.86	<0.86
OPENE	DMS							
TETRACHLOROETHENE	34475	NRQ	NRQ	NRQ	NRQ	NRQ	<0.51	<0.51
UG/L	DMS							
TOLUENE	34010	NRQ	NRQ	NRQ	NRQ	NRQ	2.2	1.2
UG/L	DMS							
TRICHLOROETHENE	39180	NRQ	NRQ	NRQ	NRQ	NRQ	<0.87	<0.87
UG/L	DMS							

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ESE, Inc.
PROJECT NUMBER
FIELD GROUP STEW-S
ALL

DATE 05/02/90 STATUS :
PROJECT NAME FORT STEWART
PROJECT MANAGER DOYCE BLAIR
LAB COORDINATOR KEVIN MCHUGH
SAMPLE ID/#

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PARAMETERS	STORET	WSB-1	WSB-2	WSB-3	WSB-4	REPLICATE	RINSEBLK	TRPBLK
UNITS	METHOD	STEW-S	STEW-S	STEW-S	STEW-S	STEW-S	STEW-S	STEW-S
		7	8	9	10	11	12	13
DATE		02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90
TIME		08:50	10:06	10:55	12:15	10:55	12:30	12:00
VINYL ACETATE	77057	NRQ	NRQ	NRQ	NRQ	NRQ	<2.6	<2.6
UG/L	DMS							
VINYL CHLORIDE	39175	NRQ	NRQ	NRQ	NRQ	NRQ	<1.6	<1.6
UG/L	DMS							
XYLENES, TOTAL	81551	NRQ	NRQ	NRQ	NRQ	NRQ	<1.0	<1.0
UG/L	DMS							
2-HEXANONE	77103	NRQ	NRQ	NRQ	NRQ	NRQ	<3.1	<3.1
UG/L	DMS							
ACENAPHTHENE	34205	NRQ	NRQ	NRQ	NRQ	NRQ	<3.8	NRQ
UG/L	GMS							
ACENAPHTHYLENE	34200	NRQ	NRQ	NRQ	NRQ	NRQ	<2.7	NRQ
UG/L	GMS							
ANTHRACENE	34220	NRQ	NRQ	NRQ	NRQ	NRQ	<2.1	NRQ
UG/L	GMS							
BENZO(A)ANTHRACENE	34526	NRQ	NRQ	NRQ	NRQ	NRQ	<1.8	NRQ
UG/L	GMS							
BENZO(A)PYRENE	34247	NRQ	NRQ	NRQ	NRQ	NRQ	<5.2	NRQ
UG/L	GMS							
BENZO(B)FLUORANTHENE	34230	NRQ	NRQ	NRQ	NRQ	NRQ	<3.8	NRQ
UG/L	GMS							
BENZO(GHI)PERYLENE	34521	NRQ	NRQ	NRQ	NRQ	NRQ	<2.1	NRQ
UG/L	GMS							
BENZO(K)FLUORANTHENE	34242	NRQ	NRQ	NRQ	NRQ	NRQ	<4.7	NRQ
UG/L	GMS							
CHRYSENE	34320	NRQ	NRQ	NRQ	NRQ	NRQ	<2.8	NRQ
UG/L	GMS							
DIBEN'(A,H)ANTH'CENE	34556	NRQ	NRQ	NRQ	NRQ	NRQ	<1.8	NRQ
UG/L	GMS							
FLUORANTHENE	34376	NRQ	NRQ	NRQ	NRQ	NRQ	<3.2	NRQ
UG/L	GMS							
FLUORENE	34381	NRQ	NRQ	NRQ	NRQ	NRQ	<3.1	NRQ
UG/L	GMS							
INDENO(1,2,3-CD)PYRENE	34403	NRQ	NRQ	NRQ	NRQ	NRQ	<2.7	NRQ
UG/L	GMS							
NAPHTHALENE	34696	NRQ	NRQ	NRQ	NRQ	NRQ	<5.9	NRQ
UG/L	GMS							
PHENANTHRENE	34461	NRQ	NRQ	NRQ	NRQ	NRQ	<1.9	NRQ
UG/L	GMS							
PYRENE	34469	NRQ	NRQ	NRQ	NRQ	NRQ	<2.0	NRQ
UG/L	GMS							

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ESE, Inc.
PROJECT NUMBER
FIELD GROUP

STEW-W
ALL

DATE 05/02/90 STATUS :

PROJECT NAME FORT STEWART
PROJECT MANAGER DOYCE BLAIR
LAB COORDINATOR KEVIN MCHUGH
SAMPLE ID/#

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PARAMETERS	STORET	WMW-1	REPLICATE	WMW-2	RINSEBLK	WMW-3	TRPBLK
UNITS	METHOD	STEW-W	STEW-W	STEW-W	STEW-W	STEW-W	STEW-W
		7	10	8	11	9	13
DATE		03/08/90	03/08/90	03/08/90	03/08/90	03/08/90	03/08/90
TIME		13:40	13:40	14:50	14:10	15:30	16:00
BARIUM, TOTAL	1007	1180	1630	148	2.0	28.5	NRQ
UG/L	DICAP						
CADMIUM, TOTAL	1027	<3.5	<3.5	<3.5	<3.5	<3.5	NRQ
UG/L	DICAP						
LEAD, TOTAL	1051	284	391	82.8	<25.0	<25.0	NRQ
UG/L	DICAP						
CHROMIUM, TOTAL	1034	241	329	54.4	<7.0	13.7	NRQ
UG/L	DICAP						
SILVER, TOTAL	1077	<5.7	<5.7	<5.7	<5.7	<5.7	NRQ
UG/L	DICAP						
ARSENIC, TOTAL	1002	8.5	4.8	<2.3	7.2	<2.3	NRQ
UG/L	DFAA						
SELENIUM, TOTAL	1147	2.2	4.6	2.5	3.1	3.4	NRQ
UG/L	DFAA						
MERCURY, TOTAL	71900	<0.2	<0.2	<0.2	<0.2	<0.2	NRQ
UG/L	DCVAA						
4-METHYL-2-PENTANONE	78133	<3	<3	<3	<3	<3	<3
UG/L	DMS						
1,1,1-TRICHL'ETHANE	34506	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
UG/L	DMS						
1,1,2,2-TETRACHLORO	34516	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
ETHANE UG/L	DMS						
1,1,2-TRICHL'ETHANE	34511	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
UG/L	DMS						
1,1-DICHLOROETHANE	34496	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85
UG/L	DMS						
1,1-DICHLOROETHYLENE	34501	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
UG/L	DMS						
1,2-DICHLOROETHANE	34531	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87
UG/L	DMS						
1,2-DICHLOROPROPANE	34541	<0.97	<0.97	<0.97	<0.97	<0.97	<0.97
UG/L	DMS						
2-BUTANONE	99080	<9.44	<9.44	<9.44	<9.44	<9.44	<9.44
UG/L	DMS						
ACETONE	81552	<17	<17	<17	75	<17	<17
UG/L	DMS						
BENZENE	34030	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
UG/L	DMS						
BROMODICHLOROMETHANE	32101	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98
UG/L	DMS						
BROMOFORM	32104	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
UG/L	DMS						
BROMOMETHANE	34413	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
UG/L	DMS						
CARBON DISULFIDE	77041	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1
UG/L	DMS						
CARBON TETRACHLORIDE	32102	<0.97	<0.97	<0.97	<0.97	<0.97	<0.97
UG/L	DMS						

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Appendices
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Lab Results
Wright/Hunter

229

ESE, Inc.
PROJECT NUMBER
FIELD GROUP

STEW-W
ALL

DATE 05/02/90 STATUS :
PROJECT NAME FORT STEWART
PROJECT MANAGER DOYCE BLAIR
LAB COORDINATOR KEVIN MCHUGH
SAMPLE ID/#

PAGE 2

PARAMETERS UNITS	STORET METHOD	WMW-1	REPLICATE	WMW-2	RINSEBLK	WMW-3	TRPBLK
		STEW-W 7	STEW-W 10	STEW-W 8	STEW-W 11	STEW-W 9	STEW-W 13
DATE TIME		03/08/90 13:40	03/08/90 13:40	03/08/90 14:50	03/08/90 14:10	03/08/90 15:30	03/08/90 16:00
CHLOROBENZENE UG/L	34301 DMS	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65
CHLOROETHANE UG/L	34311 DMS	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
CHLOROFORM UG/L	32106 DMS	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
CHLOROMETHANE UG/L	34418 DMS	<24	<24	<24	<24	<24	<24
CIS-1,3-DICHLOROPROP ENE UG/L	34704 DMS	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
DIBROMOCHLOROMETHANE UG/L	32105 DMS	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
ETHYLBENZENE UG/L	34371 DMS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
METHYLENE CHLORIDE UG/L	34423 DMS	<1.6	<1.6	<1.6	<1.6	<1.6	11
STYRENE UG/L	77128 DMS	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
1,2-DICHLOROETHENE, TOTAL UG/L	97721 DMS	<1.30	<1.30	<1.30	<1.30	<1.30	<1.30
TRANS-1,3-DICHLOROPR OPENE UG/L	34699 DMS	<0.86	<0.86	<0.86	<0.86	<0.86	<0.86
TETRACHLOROETHENE UG/L	34475 DMS	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51
TOLUENE UG/L	34010 DMS	<0.70	<0.70	<0.70	<0.70	<0.70	<0.70
TRICHLOROETHENE UG/L	39180 DMS	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87
VINYL ACETATE UG/L	77057 DMS	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6
VINYL CHLORIDE UG/L	39175 DMS	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
XYLENES, TOTAL UG/L	81551 DMS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-HEXANONE UG/L	77103 DMS	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1
ACENAPHTHENE UG/L	34205 GMS	<3.8	<3.8	<3.8	<3.8	<3.8	NRQ
ACENAPHTHYLENE UG/L	34200 GMS	<2.7	<2.7	<2.7	<2.7	<2.7	NRQ
ANTHRACENE UG/L	34220 GMS	<2.1	<2.1	<2.1	<2.1	<2.1	NRQ
BENZO(A)ANTHRACENE UG/L	34526 GMS	<1.8	<1.8	<1.8	<1.8	<1.8	NRQ
BENZO(A)PYRENE UG/L	34247 GMS	<5.2	<5.2	<5.2	<5.2	<5.2	NRQ
BENZO(B)FLUORANTHENE UG/L	34230 GMS	<3.8	<3.8	<3.8	<3.8	<3.8	NRQ

C-7A

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ESE, Inc.
PROJECT NUMBER
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DATE 05/02/90 STATUS :
PROJECT NAME FORT STEWART
PROJECT MANAGER DOYCE BLAIR
LAB COORDINATOR KEVIN MCHUGH
SAMPLE ID/#

PAGE 3

PARAMETERS	UNITS	STORET METHOD	WMW-1 REPLICATE STEW-W 7 STEW-W 10	WMW-2 RINSEBLK STEW-W 8 STEW-W 11	WMW-3 STEW-W 9	TRPBLK STEW-W 13
DATE			03/08/90	03/08/90	03/08/90	03/08/90
TIME			13:40	13:40	14:50	14:10
					15:30	16:00
BENZO(GH)PERYLENE	UG/L	34521	<2.1	<2.1	<2.1	<2.1
	GMS					NRQ
BENZO(K)FLUORANTHENE	UG/L	34242	<4.7	<4.7	<4.7	<4.7
	GMS					NRQ
CHRYSENE	UG/L	34320	<2.8	<2.8	<2.8	<2.8
	GMS					NRQ
DIBEN(A,H)ANTH'CENE	UG/L	34556	<1.8	<1.8	<1.8	<1.8
	GMS					NRQ
FLUORANTHENE	UG/L	34376	<3.2	<3.2	<3.2	<3.2
	GMS					NRQ
FLUORENE	UG/L	34381	<3.1	<3.1	<3.1	<3.1
	GMS					NRQ
INDENO(1,2,3-CD)PYRENE	UG/L	34403	<2.7	<2.7	<2.7	<2.7
	GMS					NRQ
NAPHTHALENE	UG/L	34696	<5.9	<5.9	<5.9	<5.9
	GMS					NRQ
PHENANTHRENE	UG/L	34461	<1.9	<1.9	<1.9	<1.9
	GMS					NRQ
PYRENE	UG/L	34469	<2.0	<2.0	<2.0	<2.0
	GMS					NRQ

C-8A

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TABLE C-1. CHEMICAL PARAMETERS FOUND IN THE LABORATORY ANALYSIS, AREA EOD-1

Sample ID	Units Detection Limit	Mercury	Barium	Lead	Parameters Cadmium	Chromium	Selenium	Arsenic
		µg/g 0.04	µg/g 0.01	µg/g 1.98	µg/g 1.98	µg/g 3.92	µg/g 0.2	µg/g 1.96
#1 Center of Crater		0.392	11	60.2	19.6	3.92	BDL	BDL
#2 Duplicate of #1		0.389	11.2	59.9	9.98	BDL	BDL	BDL
#3 Transect Member		0.398	10.7	34.8	1.99	BDL	0.219	BDL
#4 Transect Member		0.394	9.66	41.8	3.94	BDL	BDL	BDL
#5 Transect Member		0.396	9.71	28.5	BDL	BDL	BDL	3.96
#6 Transect Member		0.396	15.7	184	3.95	BDL	BDL	7.93
#7 Transect Member		0.359	16.7	148	10.8	BDL	BDL	1.8
#8 Transect Member		0.38	17.9	144	15.2	BDL	BDL	1.9
#9 Transect Member		0.396	8.32	53.3	3.96	BDL	BDL	1.98
#10 Transect Member		0.397	11.7	35.3	21.8	BDL	0.199	7.94

BDL - below detectable limits

TABLE C-2. CHEMICAL PARAMETERS FOUND IN THE LABORATORY ANALYSIS, AREA EOD-2

Sample ID	Units Detection Limit	Mercury	Barium	Lead	Parameters Cadmium	Chromium	Selenium	Arsenic
		µg/g 0.04	µg/g 0.01	µg/g 1.98	µg/g 1.98	µg/g 3.92	µg/g 0.2	µg/g 1.96
#11 Center of Crater		3.97	11.5	10	3.97	4.78	0.259	11.9
#12 Duplicate of #11		0.368	10.7	101	BDL	4.6	BDL	12.9
#13 Transect Member		0.38	5.33	88.8	BDL	BDL	BDL	7.61
#14 Transect Member		0.395	5.93	114	19.8	4.55	BDL	9.89
#15 Transect Member		0.391	7.03	30.1	25.4	BDL	BDL	3.91
#16 Transect Member		0.371	7.42	55.5	BDL	BDL	BDL	9.28
#17 Transect Member		0.429	9.23	116	2.15	BDL	BDL	10.7
#18 Transect Member		0.373	6.9	35.8	BDL	BDL	BDL	5.59
#19 Transect Member		0.399	6.39	47.3	BDL	BDL	BDL	5.96
#20 Transect Member		0.397	6.78	41.3	1.99	BDL	BDL	3.91

BDL - below detectable limits

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TABLE C-3. CHEMICAL PARAMETERS FOUND IN THE LABORATORY ANALYSIS, AREA EOD-3

Sample ID	Units Detection Limit	Parameters						Arsenic µg/g
		Mercury µg/g 0.04	Barium µg/g 0.01	Lead µg/g 1.98	Cadmium µg/g 1.98	Chromium µg/g 3.92	Selenium µg/g 0.2	
#21 Center of Crater		0.394	11	566	BDL	BDL	BDL	3.94
#22 Duplicate of #21		0.396	9.72	460	BDL	BDL	BDL	1.98
#23 Transect Member		0.399	15.4	97.8	24	10.4	BDL	9.91
#24 Transect Member		0.395	50.6	3281	1.98	BDL	BDL	5.93
#25 Transect Member		0.4	20.6	164	26	9	BDL	6
#26 Transect Member		0.398	23.7	98.1	BDL	BDL	BDL	5.97

BDL - below detectable limits

TABLE C-4. CHEMICAL PARAMETERS FOUND IN THE LABORATORY ANALYSIS, AREA EOD-4

Sample ID	Units Detection Limit	Parameters							TEP Cadmium mg/L 0.1
		Mercury µg/g 0.04	Barium µg/g 0.01	Lead µg/g 1.98	Cadmium µg/g 1.98	Chromium µg/g 3.96	Selenium µg/g 0.2	Arsenic µg/g 1.96	
#28 Center of Crater		0.398	4.18	64.7	53.8	BDL	BDL	3.98	BDL
#29 Duplicate of #28		0.414	4.35	166	60	4.35	0.787	4.14	BDL
#30 Transect Member		0.389	8.17	175	518	3.69	BDL	21.4	0.43
#31 Transect Member		0.395	5.14	45.8	1.98	BDL	BDL	1.98	BDL
#32 Transect Member		0.402	7.24	35.8	2.01	BDL	BDL	6.04	BDL
#33 Transect Member		0.395	4.54	432	73.1	4.34	BDL	3.95	BDL
#34 Transect Member		0.398	2.78	99.6	1.99	BDL	BDL	BDL	BDL
#35 Transect Member		0.4	3.2	191	12	BDL	BDL	7.99	BDL
#36 Transect Member		0.4	3.2	28	BDL	BDL	BDL	2	BDL

BDL - below detectable limits

APPENDIX D
SOIL BORING LOG

APPENDIX 4.1

Results of Soil Boring Program
FST-001, FST-002, FST-003

Soil Boring	Depth (ft)	Samples		Date Completed
		Split Spoon	Shelby	
<u>TAC-X Site</u>				
TX-B1	50	11	--	1/16/80
TX-B2	50	11	--	1/17/80
TX-B3	50	11	--	1/17/80
TX-B4	50	11	--	1/17/80
TX-B5	100	21	--	1/18/80
<u>Camp Oliver Site</u>				
CO-B1	100	21	--	1/23/80
CO-B2	50	11	--	1/21/80
CO-B3	50	11	--	1/21/80
CO-B4	50	11	--	1/22/80
CO-B5	50	11	--	1/22/80
<u>South Central Site</u>				
SC-B1	100	20	1	2/8/80
SC-B2	50	11	--	1/24/80
SC-B3	50	11	--	1/24/80
SC-B4	50	11	--	1/25/80
SC-B5	50	10	1	2/6/80
SC-B6	50	11	--	1/30/80
SC-B7	50	11	--	1/30/80
SC-B8	50	11	--	1/30/80
SC-B9	50	11	--	1/25/80
SC-B10	50	11	--	2/1/80
SC-B11	50	10	1	2/5/80
SC-B12	50	10	1	2/5/80
SC-B13	50	11	--	2/6/80
SC-B14	50	11	--	2/4/80
SC-B15	100	21	--	2/11/80
SC-B16	50	10	1	2/1/80

Source: ESE, 1981.

Source: Geraghty & Miller, Inc., February 1991

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APPENDIX 4.2

Results of Well Drilling Program
FST-001, FST-002, FST-003

Date	Depth	Yield	Date Completed
<u>TAX-C Site</u>			
TX-M1	46.5	7	1/24/80
TX-M2	26.0	10	2/4/80
TX-M3	45.5	4	2/8/80
TX-M4	49.5	3	1/30/80
TX-OW1	47.0	10	4/12/80
<u>Camp Oliver Site</u>			
CO-M1	36.0	0.5	2/13/80
CO-M2	45.5	*	2/17/80
CO-M3	25.5	3	2/21/80
CO-M4	46.0	*	2/25/80
<u>South Central Site</u>			
SC-M1	25.0	3	2/29/80
SC-M2	21.5	2	3/4/80
SC-M3	25.5	2	3/10/80
SC-M4	21.5	2	3/15/80
SC-M5	33.5	7	3/19/80
SC-M6	27.5	3	3/24/80
SC-OW1	50.0	*	4/15/80
SC-OW2	50.0	*	4/17/80
SC-OW3	31.0	*	4/19/80
SC-OW4	31.0	*	4/22/80
SC-OW5	30.0	*	4/25/80
SC-OW6	40.0	*	4/27/80
SC-OW7	35.0	*	4/29/80

* Not Measured

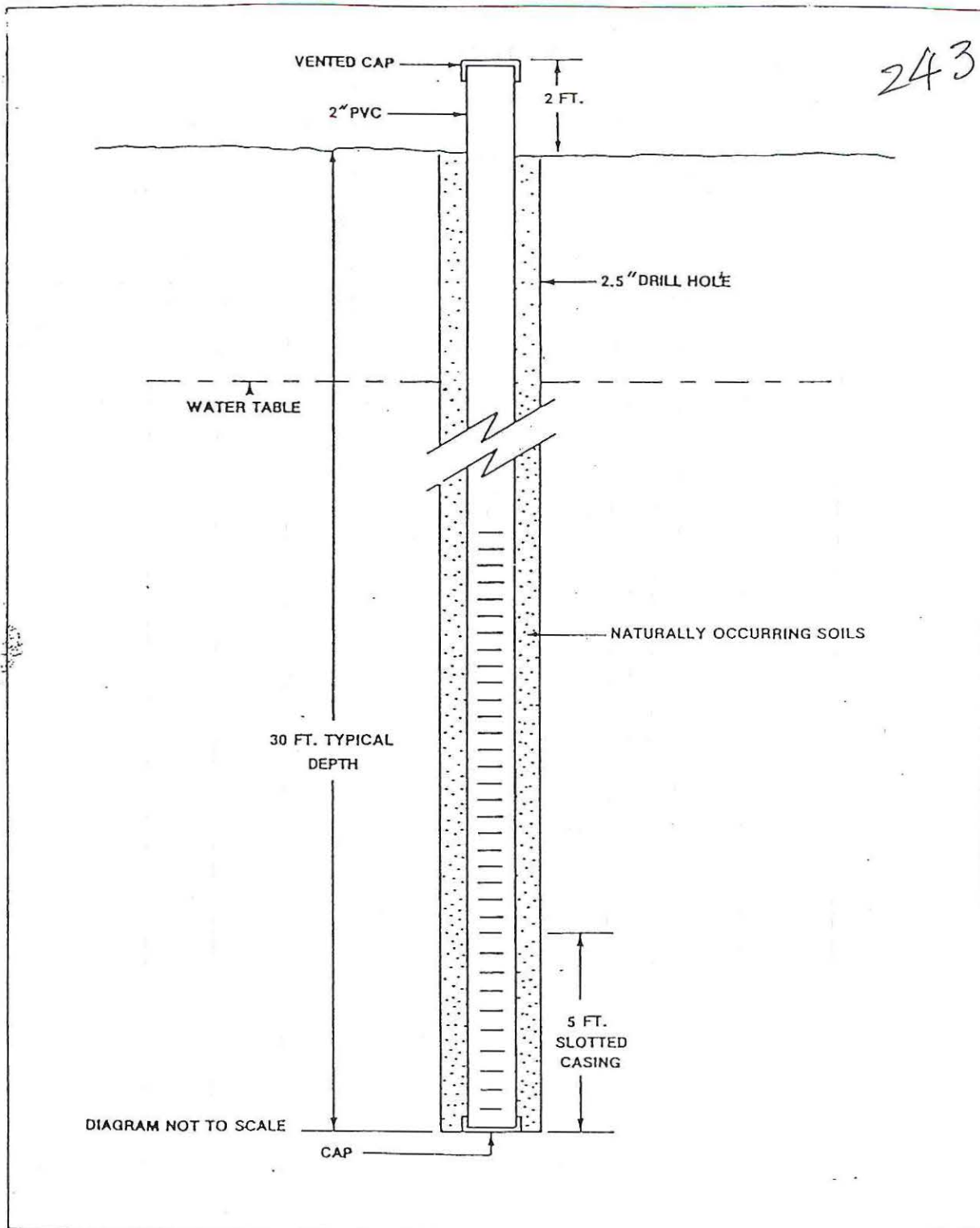
Source: ESE, 1981.

APPENDIX 4.12

Falling Head Permeability Tests
FST-001, FST-002, FST-003

Boring	Sample Number(s)	Depth (ft)	Coefficient of Permeability (cm/sec)
<u>TAC-X Site</u>			
TX-B3	5,6,7 mix	20.0-31.5	8.9×10^{-7}
TX-B4	7,8,9,10 mix	30.0-46.5	5.0×10^{-8}
<u>Camp Oliver Site</u>			
CO-B3	3,4,5 mix	10.0-21.5	1.9×10^{-8}
CO-B4	4,5,6 mix	15.0-26.5	3.9×10^{-7}
<u>South Central Site</u>			
SC-B1	2,3,4 mix	5.0-16.5	1.3×10^{-7}
SC-B1	8 (Shelby Tube)	35.0-36.5	2.23×10^{-4}
SC-B3	6,7,8,9 mix	25.0-41.5	3.7×10^{-8}
SC-B5	1,2,3 mix	0.0-11.5	1.6×10^{-6}
SC-B5	4 (Shelby Tube)	15.0-16.5	1.5×10^{-6}
SC-B2	2,3,4 mix	5.0-16.5	2.3×10^{-6}
SC-B6	6,7,8 mix	25.0-36.5	1.4×10^{-5}
SC-B8	3,4,5 mix	10.0-21.5	3.7×10^{-4}
SC-B9	6,7,8 mix	25.0-36.5	3.5×10^{-8}
SC-B10	1,2,3 mix	0.0-11.5	3.2×10^{-5}
SC-B11	4 (Shelby Tube)	15.0-16.5	1.8×10^{-3}
SC-B12	5 (Shelby Tube)	20.0-21.5	2.8×10^{-5}
SC-B15-	2,3,4 mix	5.0-16.5	3.7×10^{-9}
SC-B15	7,8,9 mix	30.0-41.5	5.9×10^{-6}
SC-B16	5 (Shelby Tube)	20.0-21.5	4.9×10^{-7}

Source: ESE, 1981.



FORT STEWART
TYPICAL OBSERVATION WELL INSTALLATION

Source: U. S. Army Environmental Hygiene Agency 1988

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Fort Stewart, GA		Hole No. TX-B1 SHEET 1 OF 2 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT Solic spoon 1 1/2" ID, Bit size			
LOCATION (Coordinates as Station) N 761020.89 E 659616.81				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) 3 7/8"			
2. DRILLING AGENCY Pittsburgh Testing Laboratories				12. MANUFACTURER'S DESIGNATION OF DRILL Acker AD2			
3. HOLE NO. (As shown on drawing title and file number) TX-B1				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN 11			
4. NAME OF DRILLER Robert Prophet				14. TOTAL NUMBER CORE BOXES			
5. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 3.08' ATOB			
6. THICKNESS OF OVERBURDEN				16. DATE HOLE STARTED 1/16/80 COMPLETED 1/16/80			
7. DEPTH DRILLED INTO ROCK 0'				17. ELEVATION TOP OF HOLE 72.9'			
8. TOTAL DEPTH OF HOLE 50'				18. TOTAL CORE RECOVERY FOR BORING 1			
				19. SIGNATURE OF INSPECTOR Robert Gregory			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling data, blow loss, depth of penetration, etc., if significant)	
			SP 2.5Y 7/2 light grey, slightly silty fine sand, poorly sorted 2.0'		1	very loose, dry blows/ft pushed	
	5		SP-SM 2.5Y 5/6 light olive brown slightly clayey silty fine sand, poorly sorted 7.0'		2	very firm, moist 30	
	10		SM 5 YR 5/2; reddish grey slightly clayey, silty very fine sand		3	very stiff, moist 22	
			coarse sand				
	15		grey clay 14.5'		4	firm, wet 17	
			SP 10 YR 6/2 light brownish grey, slightly silty fine sand, poorly sorted 18.0'				
	20		SP-SM 5 YR 6/8, reddish yellow, silty medium to coarse sand 21.0'		5	very loose, wet 2	
	25		SP 5Y 5/2 olive grey, slightly silty fine - medium sand (27.5')		6	dense, wet 18	
	30		SC 5Y 6/2, light olive grey slightly clayey, silty fine sand		7	stiff, moist 11	

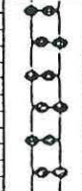
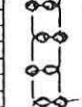
DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 72.9'		Hole No. TX-B1		
PROJECT Fort Stewart RCRA Studies		INSTALLATION Fort Stewart, GA		SHEET 2 OF 2 SHEETS		
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			(32.5')			245
	35		SM 2.5 Y 6/2 light brownish grey, slightly silty medium to coarse sand		8	Dense, wet 15
	40		SM 2.5 Y 6/2 light brownish grey, slightly silty medium to coarse sand		9	loose, wet 14
	45		SM 5 Y 6/2 light olive grey, slightly silty medium to coarse sand		10	loose, wet 13
	50		SM 2.5 Y 7/2 light grey slightly silty medium to coarse sand		11	loose, wet 32

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Fort Stewart, GA		SHEET 1 OF 2 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT S.S. 1 1/2" ID, BIT 3 7/8"			
LOCATION (Coordinates or Station) N. 760796.31 E. 659829.35				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
2. DRILLING AGENCY Pittsburgh Testing Laboratories				12. MANUFACTURER'S DESIGNATION OF DRILL Acker AD2			
4. HOLE NO. (As shown on drawing title and file number) TX-B2				13. TOTAL NO. OF OVER- BURDEN SAMPLES TAKEN		11	
3. NAME OF DRILLER Robert Prophet				14. TOTAL NUMBER CORE BOXES			
5. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 3.08' ATOB			
7. THICKNESS OF OVERBURDEN				16. DATE HOLE		STARTED 1/17/80 COMPLETED 1/17/80	
8. DEPTH DRILLED INTO ROCK 0'				17. ELEVATION TOP OF HOLE 72.1'			
9. TOTAL DEPTH OF HOLE 50'				18. TOTAL CORE RECOVERY FOR BORING			
				19. SIGNATURE OF INSPECTOR <i>Robert Gregory</i>			

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water level, depth of weathering, etc. If significant)
		•	SP 2.5 Y 6/2 light brownish grey fine to medium sand		1	loose, moist Blows/ft pushed
	2.25	•				
	5	•	SP-SM 10 YR 5/1, 10 YR 6/6 10 R 5/8 mixed red grey, brownish yellow slightly clayey silty sand, fine to medium		2	very stiff, moist 17
	10	•	SP-SM 10 YR 5/6 yellowish brown, very slightly clayey silty fine to medium sand		3	very firm, moist 26
	12.5	•				
	15	•	SP 10 YR 6/3 pale brown medium to coarse sand, poorly sorted		4	very firm, moist 29
	20	•	SP 10 YR 6/8 brownish yellow slightly silty medium to coarse sand, poorly sorted		5	firm, moist 15
	21.0	•				
	25	•	SP-SM 7.5 YR 6/6, reddish yellow clayey, silty medium to coarse sand		6	soft, moist 2
	28.0	•				
	30	•	SP 7.5 YR 7/6 reddish yellow slightly silty medium to coarse sand, poorly sorted,		7	loose, moist 6
	32.5	•				

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1	
		South Atlantic		Fort Stewart, GA		OF 2 SHEETS	
1. PROJECT				10. SIZE AND TYPE OF BIT S.S. 1 1/2" ID. Bit 3 7/8"			
Fort Stewart RCRA Studies				11. DATUM FOR ELEVATION MEASUREMENT			
LOCATION (Coordinates or Station)				MSL			
N. 760412.14 E. 659667.31				12. MANUFACTURER'S DESIGNATION OF DRILL			
DRILLING AGENCY				Acker AD2			
Pittsburgh Testing Laboratories				13. TOTAL NO. OF OVER- BURDEN SAMPLES TAKEN			
HOLE NO. (As shown on drawing title and file number)				11			
TX-B3				14. TOTAL NUMBER CORE BOXES			
3. NAME OF DRILLER				15. ELEVATION GROUND WATER			
Robert Propher				2.92' ATOB			
4. DIRECTION OF HOLE				16. DATE HOLE			
☒ VERTICAL ☐ INCLINED				1/17/80			
DEG. FROM VERT.				1/17/80			
7. THICKNESS OF OVERBURDEN				17. ELEVATION TOP OF HOLE			
0'				68.5'			
8. DEPTH DRILLED INTO ROCK				18. TOTAL CORE RECOVERY FOR BORING			
0'				1			
9. TOTAL DEPTH OF HOLE				19. SIGNATURE OF INSPECTOR			
50'				Robert Propher			

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	1 CORE RECOVER- ED	BOX OR SAMPLE NO.	REMARKS (Drilling time, mud flow, depth of weathering, etc. if significant)
a	b	c	d	e	f	g
		•	SP 2.5Y 6/4 light yellowish brown, slightly silty fine sand poorly sorted		1	loose, dry Blows/ft. pushed
	5	•	SP 7.5 YR 5/8 strong brown medium to coarse sand, poorly sorted		2	Dense, moist 13
	10	•	SP 10 YR 7/6 yellow silty fine to medium sand poorly sorted	10.75'	3	Dense, moist 31
	15	•	SP-SM 7.5 YR 7/8 reddish yellow, very slightly clayey silty medium to coarse sand with slight amount of gravel	14.5'	4	Firm, wet 22
	20	•	SM 5 YR 7/6 reddish yellow silty fine to medium sand		5	very soft, wet 1
	25	•	SM 7.5 YR 7/6 reddish yellow very slightly silty fine to medium sand, poorly sorted, with chunks of grey clay in wash.		6	Firm, moist 16
	30	•	SM 10 YR 7/8 yellow slightly silty fine to medium sand poorly sorted	(32.5')	7	Very loose, moist 4

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 68.5'		Hole No. TX-B3	
PROJECT Fort Stewart RCRA Studies			INSTALLATION Fort Stewart, GA		SHEET 2 OF 2 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. (RY) e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			SM (32.5')			
	35		SM-SC 10 YR 5/2 greyish brown clayey silty medium to coarse sand, poorly sorted (37.5')		8	Firm, moist 12
	40		SP-SM 2.5 Y 5/2 greyish brown slightly clayey, silty medium to coarse sand, poorly sorted		9	Firm, moist 12
	45		SP-SM 2.5 Y 5/2 greyish brown silty medium to coarse sand poorly sorted (47.5')		10	Loose, moist 6
	50		SM 10 YR 6/1 grey slightly silty medium to coarse sand		11	Loose, moist 20

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Fort Stewart, GA		SHEET 1 OF 2 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BITS S.S. 1 1/2" ID, Bit 3 7/8"			
LOCATION (Coordinates or Station) N. 760717.38 E. 659264.50				11. DAY ON FOR ELEVATION SHOWN (T.M. - 130)			
DRILLING AGENCY Pittsburgh Testing Laboratories				12. MANUFACTURER'S DESIGNATION OF DRILL Acker AD2			
4. HOLE NO. (As shown on drawing title and title number) TX-B4				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 11	
3. NAME OF DRILLER Robert Prophet				14. TOTAL NUMBER CORE BOXES			
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 2.17' ATOB			
7. THICKNESS OF OVERBURDEN				16. DATE HOLE		STARTED 1/17/80 COMPLETED 1/17/80	
8. DEPTH DRILLED INTO ROCK 0'				17. ELEVATION TOP OF HOLE 67.5'			
9. TOTAL DEPTH OF HOLE 50'				18. TOTAL CORE RECOVERY FOR BORING			
				19. SIGNATURE OF INSPECTOR <i>Robert Prophet</i>			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	1 CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling conditions, loose, depth of weathering, etc., if standard)	
			SP 10 YR 5/11 grey slightly silty fine sand, poorly sorted		1	Loose, moist	Blows/ft. pushed
	5		SP 10 YR 5/2 greyish brown very slightly silty fine to medium sand poorly sorted (7.5')		2	Firm, moist	12
	10		SP-SM 10 YR 5/2 greyish brown very slightly clayey silty fine to medium sand (12.5')		3	Firm, moist	15
	15		SP 10 YR 6/3 pale brown slightly silty fine to medium sand, poorly sorted		4	very firm, moist	28
	20		SP 10 YR 4/4 dark yellowish brown very slightly silty medium sand, with very slight amount of organics. 22.5'		5	loose, moist	6
	25		SM SC-SM 10 YR 4/3 brown very slightly silty, clayey fine sand 28.75'		6	very stiff, moist	20
	30		SM 10 YR 4/2 dark greyish brown, slightly silty fine to medium sand 32.5'		7	very firm, moist	24

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 67.5'		Hole No. TX-B4	
PROJECT Fort Stewart RCRA Studies			INSTALLATION Fort Stewart, GA			SHEET 2 OF 2 SHEETS
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			32.5'			251
	30	●	SM2.5 Y 6/2 light brownish grey slightly silty fine to medium sand (37.5')		8	very firm, moist 21
	40	●	SP-SM 2.5 Y 6/2 light brownish grey very slightly clayey, silty fine sand (42.5')		9	firm, moist 25
	45	●	SP 2.5 Y 6/2 light brownish grey very slightly silty fine sand		10	dense, moist 29
	50	●	SP 2.5 Y 6/2 light brownish grey very slightly clayey fine to medium sand		11	dense, moist 54

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Fort Stewart, GA		SHEET 1 OF 3 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT S.S. 1 1/2" ID, Bit 3 7/8"			
2. LOCATION (Coordinates or Station) N. 761028.11 E. 659291.50				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Pittsburgh Testing Laboratories				12. MANUFACTURE'S DESIGNATION OF DRILL Acker AD2			
4. HOLE NO. (As shown on drawing title and file number) TX-B5				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		14. TOTAL NUMBER CORE BOXES	
				21		3.50' ATOB	
5. NAME OF DRILLER Robert Prophet				15. ELEVATION GROUND WATER			
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED DEG. FROM VERT.				16. DATE HOLE 1/18/80		17. ELEVATION TOP OF HOLE 72.4'	
7. THICKNESS OF OVERBURDEN				18. TOTAL CORE RECOVERY FOR BORING		19. SIGNATURE OF INSPECTOR	
8. DEPTH DRILLED INTO ROCK 0'						Robert Prophet	
9. TOTAL DEPTH OF HOLE 100'							

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	1. CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water, foam, depth of weathering, etc., if significant)
			SP 2.5 Y 6/2 light brownish grey slightly silty fine sand with organics poorly sorted 1.5'		1	loose, moist Blows/ft pushed
	5		SM-SP 2.5 Y 6/4 light yellowish brown very slightly clayey silty fine sand, poorly sorted		2	loose, moist 6
	10		SM-SP 5 YR 5/1 grey, very slightly clayey silty medium to coarse sand, poorly sorted coarse sand and gravel (12.5')		3	very firm, moist 29
	15		SP 10 YR 6/2 light brownish grey slightly silty medium sand, poorly sorted		4	dense, wet 33
	20		SP 5 Y 4/1 dark grey silty fine sand with slight amount of organics 23.0'		5	soft, wet 2
	25		SC 5 Y 5/1 grey, slightly silty clayey silty fine sand 26.25'		6	very stiff, moist 19
	30		SM 5 Y 5/1 grey slightly silty medium to coarse sand, poorly sorted 32.5'		7	very firm, moist 25

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE

72.4'

Hole No. TX-B5

PROJECT

Fort Stewart RCRA Studies

INSTALLATION

Fort Stewart, GA

SHEET 2

OF 3 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						253
			32.5'			
	35	•	SP 5 Y 5/2 olive grey, very slightly clayey medium to coarse sand, poorly sorted		8	very firm, moist 20
	40	•	SP 5 Y 5/1 grey very slightly clayey medium to coarse sand, poorly sorted		9	very firm, moist 22
			(42.5')			
	45	•	SM10 YR 6/2 light brownish grey slightly silty medium to coarse sand, poorly sorted		10	dense, wet 34
	50	•	SM10 YR 5/1 grey very slightly silty medium to coarse sand with slight amount of gravel poorly sorted		11	very dense, wet 56
	55	•	SM5 Y 6/1 grey slightly silty medium to coarse sand with slight amount of gravel poorly sorted		12	very dense, wet 50/0.75'
	60	•	SM10 YR 5/1 grey slightly silty medium to coarse sand with slight amount of gravel increasing in size		13	very dense, wet 50/0.83' beginning to lose drilling fluid
	65	•	SM 2.5 Y 6/4 light yellowish brown slightly silty coarse sand with slight amount of gravel		14	very dense, wet 50/0.50' continued loss of drilling fluid
	70	•	SM 2.5 Y 5/2 greyish brown slightly silty micaceous fine sand, poorly sorted 72.5'		15	hard, moist difficult drilling 50/0.67'

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No. TX-B5	
PROJECT Fort Stewart RCRA Studies		72.4'		SHEET 3 OF 3 SHEETS	
INSTALLATION Fort Stewart, GA		CLASSIFICATION OF MATERIALS (Description)		REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
ELEVATION a	DEPTH b	LEGEND c		% CORE RECOVERY e	BOX OR SAMPLE NO. f
			72.5'		
	75	SP 2.5 Y 5/2 greyish brown very slightly silty micaceous			16 very hard, moist 50 difficult drilling
	80	SP 2.5 Y 6/2 light greyish brown very slightly silty, micaceous medium to coarse sand			17 very hard, moist 50/0.92' difficult drilling
	85	SP 5 Y 6/1 grey slightly silty micaceous fine sand			18 hard, wet 50/0.92' difficult drilling
	90	SP 5 Y 5/2 olive grey slightly silty micaceous fine sand			19 hard, wet 50/0.92' difficult drilling
	95	SP 5 Y 4/1 dark grey slightly silty micaceous fine sand			20 hard, wet 50/0.79 difficult drilling
	100	SP 5 Y 5/3 olive, slightly silty micaceous fine sand			21 hard, wet difficult drilling 50/0.83

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Fort Stewart, GA		SHEET 1 OF 3 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT split-spoon 1 1/2" ID, bit 3 7/8"			
2. LOCATION (Coordinate or Station) N. 754448.76 E. 608748.37				11. DATUM FOR ELEVATION SHOW (TUM - MSL)			
3. DRILLING AGENCY Pittsburgh Testing Laboratories				12. MANUFACTURER'S DESIGNATION OF DRILL Acker AD2			
4. HOLE NO. (As shown on drawing title and file number) CO-B1				13. TOTAL NO. OF OVER- BURDEN SAMPLES TAKEN		14. TOTAL NUMBER CORE BOXES	
5. NAME OF DRILLER Robert Prophet				15. ELEVATION GROUND WATER 11.75' @ 24 hrs		16. DATE HOLE STARTED 1/23/80 COMPLETED 1/23/80	
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				17. ELEVATION TOP OF HOLE 143.9'		18. TOTAL CORE RECOVERY % ON BORING	
7. THICKNESS OF OVERBURDEN				19. SIGNATURE OF INSPECTOR <i>Robert Gregory</i>		20. REMARKS (Drilling time, mud, flow, depth of water, etc. & significant)	
8. DEPTH DRILLED INTO ROCK 0'				21. SIGNATURE OF INSPECTOR		22. REMARKS	
9. TOTAL DEPTH OF HOLE 100'							

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
	0				1	Blows/ft. Pushed
	2.75		SP 7.5 YR 5/6 strong brown slightly silty, slightly clayey, poorly sorted fine sand			
	5		SM 2.5 YR 4/6 red clayey silty medium to coarse sand (7.5)		2	stiff, moist 11
	10		SM-SP 5 YR 6/8 reddish yellow, slightly clayey, silty, fine to medium sand (12.5)		3	very stiff, wet 20
	15		SC 5Y 8/2, 5 YR 7/6 mixed white, reddish yellow slightly silty, clayey fine sand, sand component increases at 17'		4	very stiff, moist 17
	20		SC 10 YR 6/6 brownish yellow silty, clayey fine sand		5	stiff, wet 9
	25		SC 5 YR 6/4 light reddish brown slightly silty, clayey sand 27.0'		6	stiff, moist 11
	30		SP-SM 2.5Y 7/2 light grey clayey silty poorly sorted fine sand		7	medium density, moist 6

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		143.9'		Hole No. CO-B1		
PROJECT			Fort Stewart RCRA Studies			INSTALLATION		
			Fort Stewart, GA			SHEET 2 OF 3 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)		
a	b	c	d	e	f	g		

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 143.9'		Hole No. CO-B1		
PROJECT Fort Stewart RCRA Studies			INSTALLATION Fort Stewart, GA		SHEET 3 OF 3 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVER- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			(72.5')			257
	75		SM 10 YR 7/3 very pale brown clayey silty medium sand 78.5'		16	hard, moist 50/0.71'
	80		SP-SM 10 YR 7/2 light grey clayey silty medium sand		17	hard, moist cemented 50/0.54'
	85		SP-SM 10 YR 8/1 white clayey silty fine sand alternating layers some cemented some not		18	dense, moist 64/0.5'
	90		SP-SM 5Y 8/1 white clayey, fine sand - silty fine sand (mixed) 94.25'		19	dense, moist 37'
	95		CH blue-lavender; no Munsell soil equivalent silty clay 97.25'		20	very stiff, moist 22'
	100		SP 10 YR 7/6 yellow silty fine to medium poorly graded sand		21	very dense, moist 50/0.79'

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Fort Stewart, GA		SHEET 1 OF 2 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT Split spoon 1 1/2" I.D., bit size			
2. LOCATION (Coordinates or Station) N. 754747.28 E. 608893.43				11. DATUM / OR ELEVATION SHOW (TUM - MSL) 3 7/8"			
3. DRILLING AGENCY Pittsburgh Testing Laboratories				12. MANUFACTURER'S DESIGNATION OF DRILL Acker AD2			
4. HOLE NO. (As shown on drawing title and file number) CO-B2				13. TOTAL NO. OF OVER- BURDEN SAMPLES TAKEN		11	
5. NAME OF DRILLER Robert Prophet				14. TOTAL NUMBER CORE BOXES			
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				15. DATE HOLE		1/21/80	
7. THICKNESS OF OVERBURDEN				16. ELEVATION GROUND WATER 4.17' @ 24 hrs.		17. ELEVATION TOP OF HOLE 134.5'	
8. DEPTH DRILLED INTO ROCK 0'				18. DATE HOLE		1/21/80	
9. TOTAL DEPTH OF HOLE 50'				19. SIGNATURE OF INSPECTOR		Robert Prophet	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	1. CORE RECOVER- ED	BOX OR SAMPLE NO.	REMARKS (Drilling time, blow count, depth of penetration, etc., if significant)	
			SP-SM 10 YR 5/4 yellowish brown very slightly clayey, silty fine sand with very slight amounts of coarse sand		1	soft, dry	Blows/ft Pushed
	5		SP-SM 10 YR 7/8 yellow clayey, silty fine to medium sand with gravel		2	soft, moist	3
	10		SP-SM 2.5 YR 6/8 light red very slightly clayey silty fine to medium sand with very slight amounts of gravel		3	hard, moist	37
	15		SP-SM 5 YR 6/8 reddish yellow, silty medium sand with gravel		4	very stiff, moist	26
	20		SM 7.5 YR 7/8 reddish yellow silty coarse sand poorly sorted, with slight amount of gravel		5	firm, wet some fluid loss at 20 - 21'	11
	25		SM 10R 6/6 light red slightly clayey silty fine sand		6	loose, moist	10
	30		SM 10R 6/8 light red slightly silty medium to coarse sand with gravel		7	firm, wet beginning to loose drilling fluid at 28'	10
			(32.5')				

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		134.5'		Hole No. CO-B2	
PROJECT Fort Stewart RCRA Studies			INSTALLATION Fort Stewart, GA			SHEET 2 OF 2 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVER- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	
			(32.5')			259	
	35	•	SP 10R 6/6 light red medium to coarse sand with gravel		8	firm, wet 13 easy drilling continual loss of drilling fluids	
	40	•	SP 10R 6/6 light red medium to coarse sand with gravel		9	firm, wet 15 losing drilling fluid	
	45	•	SP 10 YR 7/8 yellow medium to coarse sand with gravel		10	firm, wet with 13 continual loss of fluid to 50'	
	50	•	SP 2.5Y 7/8 yellow medium to coarse sand with gravel		11	firm, wet fluid loss 20	

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Fort Stewart, GA		SHEET 1 OF 2 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT Split spoon 1 1/2" ID, Bit size			
2. LOCATION (Coordinates or Station) N. 755236.12 E. 609181.53				11. DATUM FOR ELEVATION SURVEY MSL 3 7/8"			
3. DRILLING AGENCY Pittsburgh Testing Laboratories				12. MANUFACTURER'S DESIGNATION OF DRILL Acker AD2			
4. HOLE NO. (As shown on drawing title and file number) CO-B3				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN 11			
5. NAME OF DRILLER Robert Prophet				14. TOTAL NUMBER CORE BOXES			
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 2.83' @ 24 hrs.			
7. THICKNESS OF OVERBURDEN				16. DATE HOLE STARTED 1-21-80 COMPLETED 1-21-80			
8. DEPTH DRILLED INTO ROCK 0'				17. ELEVATION TOP OF HOLE 123.4'			
9. TOTAL DEPTH OF HOLE 50'				18. TOTAL CORE RECOVERY FOR BORING			
				19. SIGNATURE OF INSPECTOR <i>Robert H. Hurney</i>			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, blow count, depth of weathering, etc. if significant)	
			SP-SM 10 YR 6/6 brownish yellow silty fine to medium sand		1	very loose, dry	Blows/ft. Pushed
	5		SP-SM 10 YR 6/6, 10 R 4/8 mixed brownish yellow, red. very slightly clayey, silty, fine to medium sand		2	soft, moist	3
	10		SM 10 R 6/8 light red clayey, silty, very fine sand		3	stiff, moist	14
	15		SM 7.5 YR 7/4 pink clayey, silty very fine sand		4	stiff, moist	14
	20		SP 7.5 YR 7/8 reddish yellow very slightly silty medium to coarse sand, poorly sorted		5	firm, moist	12
	25		SM-SP 10 YR 8/6 yellow clayey, silty fine sand		6	stiff, moist	6
	30		SP 10 YR 8/1 white, slightly silty fine sand, poorly sorted		7	dense, moist	10

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Fort Stewart, GA	SHEET 1 OF 2 SHEETS
PROJECT Fort Stewart RCRA Studies		10. SIZE AND TYPE OF BIT Split spoon 1 1/2" ID, Bit size	
LOCATION (Coordinates or Station) N. 755140.67 E. 609482.36		11. DATUM FOR ELEVATION SHOWN (T.M. or L.S.) MSL 3 7/8"	
DRILLING AGENCY Pittsburgh Testing Laboratories		12. MANUFACTURER'S DESIGNATION OF DRILL Acker AD2	
HOLE NO. (As shown on drawing title and file number) CO-B4		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN 11 UNDISTURBED	
NAME OF DRILLER Robert Prophet		14. TOTAL NUMBER CORE BOXES	
DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED DEG. FROM VERT.		15. ELEVATION GROUND WATER 4.08' @ 24 hrs.	
THICKNESS OF OVERBURDEN		16. DATE HOLE STARTED 1-22-80 COMPLETED 1-22-80	
a. DEPTH DRILLED INTO ROCK 0'		17. ELEVATION TOP OF HOLE 123.4'	
b. TOTAL DEPTH OF HOLE 50'		18. TOTAL CORE RECOVERY FROM BORING 1	
		19. SIGNATURE OF INSPECTOR <i>Robert M. Gregory</i>	

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, depth of weathered, etc. (if significant)) g
			SP-SM 10 YR 6/8 brownish yellow, slightly clayey, silty fine sand		1	firm, moist Blows/ft Pushed
	5		SP-SM 7.5 YR 6/8 reddish yellow, slightly clayey, silty fine to medium sand with pebbles and gravel		2	stiff, moist 15
	10		SP-SM 7.5 YR 7/8 reddish yellow, clayey silty fine sand with gravel		3	very stiff, moist 26
	15		SM 10 R 5/4 weak red, slightly clayey, silty fine sand		4	stiff, moist 12
	20		SM lavender-red no Munsell soil equivalent. Very slightly clayey, silty fine sand		5	stiff, moist 7
	25		SM 10 R 6/4 pale red, very slightly clayey, silty fine sand		6	loose, moist 10
	30		SP-SM 5 Y 8/2 white, slightly clayey, silty fine sand, slightly micaceous		7	stiff, moist gradual loss of drilling fluid 8

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Fort Stewart, GA		SHEET 1 OF 2 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT Split spoon 1 1/2" ID, Bit size 3 7/8"			
2. LOCATION (Coordinates or Station) N. 755140.67 E. 609482.36				11. DATE FOR ELEVATION BROWN (TIN or RED) MSL			
3. DRILLING AGENCY Pittsburgh Testing Laboratories				12. MANUFACTURER'S DESIGNATION OF DRILL Acker AD2			
4. HOLE NO. (As shown on drawing III-1 and III-2 modified) CO-B5				13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: 11			
5. NAME OF DRILLER Robert Prophet				14. TOTAL NUMBER CORE BOXES			
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED DEG. FROM VERT.				15. ELEVATION GROUND WATER 3.33' @ 24 hours			
7. THICKNESS OF OVERBURDEN				16. DATE HOLE STARTED 1-22-80 COMPLETED 1-22-80			
8. DEPTH DRILLED INTO ROCK 0'				17. ELEVATION TOP OF HOLE 137.8'			
9. TOTAL DEPTH OF HOLE 50'				18. TOTAL CORE RECOVERY FOR BORING			
				19. SIGNATURE OF INSPECTOR Robert Gregory			
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, blow count, depth of penetration, etc., if applicable)	
			SP-SM 7.5 YR 5/6 strong brown slightly clayey, silty fine to medium sand 2.0'		1	stiff, moist	Blows/ft pushed
	5		SM 2.5 YR 5/6 red, very slightly clayey, silty very fine sand (7.5')		2	very stiff, moist	21
	10		SP-SM 5 YR 6/8 reddish yellow clayey, silty medium to coarse sand (12.5')		3	hard, moist difficult drilling	31
	15		SC 5 YR 6/6 reddish yellow slightly clayey fine to medium sand, poorly sorted		4	hard, moist	17
	20		SC 7.5 YR 7/8 reddish yellow clayey fine to medium sand, poorly sorted (22.5')		5	stiff, wet	14
	25		SM 7.5 YR 7/8 reddish yellow slightly silty, medium to coarse sand with slight amount of gravel		6	firm, wet	17
	30		SM 2.5 YR 6/8 light red slightly silty medium to coarse sand		7	loose, moist	10
			32.5'				

DRILLING LOG		DIVISION		INSTALLATION		SHEET	
South Atlantic		Fort Stewart, GA		SC-B1		OF 3 SHEETS	
1. PROJECT				10. SIZE AND TYPE OF BITS S.S. 1 1/2" I.D., Bit 3 7/8"			
Fort Stewart RCRA Studies				11. DAY OF ELEVATION 3100W (7100W - 2100)			
2. LOCATION (Coordinates of Station)				MSL			
N. 687157.80 E. 660530.34				12. MANUFACTURER'S DESIGNATION OF DRILL			
DRILLING AGENCY				Acker AD2			
Pittsburgh Testing Laboratories				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN			
HOLE NO. (As shown on drawing title and title number)				SC-B1		19	
3. NAME OF DRILLER				14. TOTAL NUMBER CORE BOXES			
Robert Prophet				15. ELEVATION GROUND WATER 10.75' @ 24 hrs.			
4. DIRECTION OF HOLE				16. DATE HOLE			
☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				STARTED 2/7/80		COMPLETED 2/8/80	
7. THICKNESS OF OVERBURDEN				17. ELEVATION TOP OF HOLE 59.9'			
8. DEPTH DRILLED INTO ROCK 0'				18. TOTAL CORE RECOVERY FOR BORING			
9. TOTAL DEPTH OF HOLE 100'				19. SIGNATURE OF INSPECTOR			
				Robert Prophet			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, blow count, depth of penetration, etc., if significant)	
			SC 2.5 YR 5/6, 5 YR 7/2, 5 YR 6/1, mixed red, pinkish grey, grey clayey fine sand (2.5')		1	loose, moist	Blows/ft pushed
	5		SM10 YR 8/1 white, slightly silty fine sand, very slight amount of clay		2	loose, moist	7
	10		SM10 YR 8/2 white, slightly silty fine sand, very slight amount of clay		3	very loose, moist	2
	15		SM7.5 YR 8/2 white, silty fine sand, slight amount of clay (17.5')		4	very loose, moist	1
	20		SC 10 YR 7/8 yellow silty, clayey fine to medium sand, poorly sorted 22.75'		5	very loose, moist	2
	25		SP 7.5 YR 6/6 reddish yellow, very slightly silty micaceous medium to coarse sand, slight amount of gravel		6	very loose, moist	3
	30		SP 2.5 Y 7/4 7.5 YR 7/8 mixed pale yellow, reddish yellow, very slightly silty micaceous fine sand (32.5')		7	loose, moist	50

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No. SC-B1		
PROJECT Fort Stewart RCRA Studies			INSTALLATION Fort Stewart, GA		SHEET 2 OF 3 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVER- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
			(32.5')			
	35		SM 10 YR 7/2 light grey, silty fine sand 37.75'		8	shelby tube Pushed
	40		SP-SM 10 YR 6/1 grey, very slightly clayey, silty fine sand, partially cemented 41.5'		9	very hard, moist 52 difficult drilling
	45		SM 2.5 Y 5/1 grey, slightly silty micaceous fine to coarse sand poorly sorted (47.5')		10	very hard, moist 57 difficult drilling
	50		SP-SM 5 Y 6/2 light olive grey very slightly clayey, silty micaceous fine sand 52.0'		11	hard, moist 39 difficult drilling
	55		SM 5 Y 5/1 grey silty micaceous fine to medium sand (57.5')		12	hard, moist 53 difficult drilling
	60		SP-SM 5 Y 6/1 grey, silty fine to medium sand		13	hard, moist 50/0.54 difficult drilling
	65		SP - SM 5 Y 6/1 grey, silty fine to medium sand, with slight amount of clay		14	very stiff, moist 29 difficult drilling
	70		SP-SM 5 Y 6/1 grey, silty fine to medium sand, with slight amount of clay 72.5'		15	hard, moist 33 difficult drilling

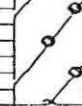
DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 59.9'		Hole No. SC-B1	
PROJECT Fort Stewart RCRA Studies			INSTALLATION Fort Stewart, GA		SHEET 3 OF 3 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVER- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc. if significant) g
			72.5'			
	75		No sample, lost sampler in hole (77.5')		16	hard, difficult 50/0.83 drilling
	80		SM 5 Y 6/2 Light olive grey, slightly silty, micaceous fine sand		17	hard, difficult 52 drilling, loose zone below 80'
	85		SM 5 Y 6/1 grey, slightly silty fine sand, poorly sorted (87.5')		18	very hard, difficult 50 drilling
	90		SP-SM 5 Y 6/1 grey, silty fine sand, poorly sorted (92.5')		19	hard, difficult 50/0.75 drilling
	95		SM 5 Y 6/1 grey, slightly silty fine sand, poorly sorted		20	hard, difficult 56 drilling
	100		SM 5 Y 5/1 grey, slightly silty fine sand, poorly sorted		21	hard, difficult 77 drilling

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Fort Stewart, GA		Hole No. SC-B2	SHEET 1 OF 2 SHEETS
1. PROJECT Fort Stewart RCRA Studies			10. SIZE AND TYPE OF BIT S.S. 1 1/2" I.D., Bit 3 7/8"			
LOCATION (Coordinates or Station) N. 687548.84 E. 660942.85			11. DATUM FOR ELEVATION SHOWN (TBM or RL) MSL			
DRILLING AGENCY Pittsburgh Testing Laboratories			12. MANUFACTURER'S DESIGNATION OF DRILL Acker AD2			
4. HOLE NO. (As shown on drawing title and file number) SC-B2			13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN 11		DISTURBED UNDISTURBED	
3. NAME OF DRILLER Robert Prophet			14. TOTAL NUMBER CORE BOXES			
4. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER 0.75' ATOB			
7. THICKNESS OF OVERBURDEN			16. DATE HOLE STARTED 1/24/80 COMPLETED 1/24/80			
8. DEPTH DRILLED INTO ROCK 0'			17. ELEVATION TOP OF HOLE 64.4'			
9. TOTAL DEPTH OF HOLE 50'			18. TOTAL CORE RECOVERY FOR BORING			
			19. SIGNATURE OF INSPECTOR <i>Robert Prophet</i>			

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water flow, depth of weathering, etc.) g	Blows/ft h
			SP 10 YR 2/1 black fine to medium sand with organics 1.5'		1	loose, moist	pushed
	5		SM 7.5 YR 7/2 pinkish grey silty fine sand, poorly sorted 5.0'		2	very firm, moist	26
	10		SM 10 YR 7/3 very pale brown, slightly silty fine to medium sand, poorly sorted		3	loose, moist	8
	15		SM 2.5 Y 7/4 pale yellow slightly silty fine to medium sand, poorly sorted, picking up clay at bottom (17.5')		4	firm, moist	9
	20		SP 10 YR 8/2 white, fine to medium sand, poorly sorted (22.5')		5	firm, moist	15
	25		SM - SC 10 YR 6/8 brownish yellow, clayey, silty fine to medium sand 25.0'		6	very loose, moist	Pushed
	30		SM 5 Y 6/1 grey, silty micaceous fine sand with slight amount of clay (32.5')		7	firm, moist	22

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 64.4'		Hole No. SC-B2	
PROJECT Fort Stewart RCRA Studies			INSTALLATION Fort Stewart, GA		SHEET 2 OF 2 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. ERY e	BOX OR SAMPLE NO. f	REMARKS g (Drilling time, water loss, depth of weathering, etc., if significant)
			(32.5')			
	35		SP-SM 5 Y 7/1 light grey clayey, silty micaceous fine sand 37.0'		8	hard, moist 50/0.58 difficult drilling
	40		SM 5 Y 7/1 light grey, slightly silty micaceous fine sand		9	hard, moist 50/0.38 difficult drilling
	45		SM 5 Y 7/1 light grey, slightly silty micaceous fine sand (47.5')		10	hard, moist 50/0.81 difficult drilling
	50		SP - SM 5 Y 7/2 light grey very slightly clayey silty fine sand		11	hard, moist 50/0.73 difficult drilling

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Fort Stewart, GA		SHEET 1 OF 2 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT S.S. 1 1/2" I.D., Bit 3 7/8"			
2. LOCATION (Coordinates or Section) N. 687929.13 E. 661144.17				11. DATUM FOR ELEVATION SHOWN (TBM or MSL)			
DRILLING AGENCY Pittsburgh Testing Laboratory				12. MANUFACTURER'S DESIGNATION OF DRILL Acker AD2			
4. HOLE NO. (As shown on drawings IIIA and IIIB number) SC-B3				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN 11			
3. NAME OF DRILLER Robert Prophet				14. TOTAL NUMBER CORE BOXES			
5. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 8.58' ATOB			
7. THICKNESS OF OVERBURDEN				16. DATE HOLE 1-24-80			
8. DEPTH DRILLED INTO ROCK 0'				17. ELEVATION TOP OF HOLE 62.6'			
9. TOTAL DEPTH OF HOLE 50'				18. TOTAL CORE RECOVERY FOR BORING 1			
				19. SIGNATURE OF INSPECTOR Robert Gregory			
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	1 CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, underflow, depth of penetration, etc., if significant)	
			SP-SM 5 YR 6/6, 5 YR 7/1, mixed light grey reddish yellow silty fine to medium sand (2.5')		1	loose, moist	Blows/ft pushed
	5		SM 2.5 Y 7/6 yellow, slightly silty fine sand		2	loose, moist	29
	10		SM 2.5 Y 8/2 white, slightly silty fine sand		3	loose, moist	18
	15		SM 10 YR 7/3 very pale brown silty fine sand		4	firm, moist	21
	20		SM 10 YR 6/3 pale brown, silty fine to medium sand, poorly sorted (22.5')		5	firm, moist	3
	25		SP-SM 5 Y 8/2 white, very slightly clayey, silty fine sand (27.5')		6	firm, moist	54/0.5'
	30		SM 5 Y 6/2 light olive grey, slightly silty fine sand (32.5')		7	hard, compacted, moist, difficult drilling	38

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 62.6'		Hole No. SC-B3	
PROJECT			INSTALLATION		SHEET 2 OF 2 SHEETS	
Fort Stewart RCRA Studies			Fort Stewart, GA			
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVER- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			32.5'			
	35		SC 5 Y 6/1 grey, slightly silty, clayey fine sand (37.5')		8	hard, moist difficult drilling 29
	40		SP-SM 5 Y 5/1 grey, very slightly clayey micaceous silty fine sand (42.5')		9	hard, moist 50/0.85 compacted, difficult drilling
	45		SC 5 Y 7/2 light grey, very slightly silty clayey micaceous fine to medium sand		10	dense, compacted 50/0.85 moist, difficult drilling
	50		SM SC 5 Y 6/1 grey, very slightly silty clayey micaceous fine to medium sand		11	dense, compacted, moist difficult drilling 39

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 2 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT S.S. 1 1/2" I.D., Bit 3 7/8"			
2. LOCATION (Coordinates or Station) N. 688417.13 E. 661633.71				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Pittsburgh Testing Laboratories				12. MANUFACTURER'S DESIGNATION OF DRILL Acker AD2			
4. HOLE NO. (As shown on drawing title and file number) SC-B4				13. TOTAL NO. OF OVER- BUREN SAMPLES TAKEN: 11			
5. NAME OF DRILLER Robert Prophet				14. TOTAL NUMBER CORE BOXES			
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 3.0' ATOB			
7. THICKNESS OF OVERBURDEN				16. DATE HOLE STARTED 1-25-80 COMPLETED 1-25-80			
8. DEPTH DRILLED INTO ROCK 0'				17. ELEVATION TOP OF HOLE 55.2'			
9. TOTAL DEPTH OF HOLE 50'				18. TOTAL CORE RECOVERY FOR BORING 1			
19. SIGNATURE OF INSPECTOR <i>Robert Prophet</i>							
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	1. CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water level, depth of material, etc. if significant)	
			SP 10 YR 7/2 light grey, slightly silty fine to medium sand, poorly sorted		1	loose, moist	Blows/ft pushed
	5		SP 10 YR 8/2 white, slightly silty fine to medium sand, poorly sorted		2	firm, moist	14
	10		SM-SC 2.5 Y 7/2 light grey, reddish brown streaks clayey, silty fine sand		3	stiff, moist	12
	15		SM 2.5 Y 7/2 light grey, very slightly clayey micaceous silty fine sand		4	soft, moist	8
	20		SM 5 Y 4/2 dark grey, very slightly clayey micaceous silty fine sand		5	firm, moist	3
	25		SC 5 Y 4/1 dark grey, clayey micaceous fine sand, with very slight amount of silt		6	very soft, moist	1
	30		SC 5 Y 5/2 olive grey, clayey micaceous fine sand		7	hard, cemented, 50/0.85 moist	
			(32.5')				

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Fort Stewart, GA		SHEET 1 OF 2 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT S.S. 1 1/2" I.D., Bit 3 7/8"			
2. LOCATION (Coordinates of Station) N. 688276.58 E. 622041.66				11. DATUM FOR ELEVATION SHOWN (TBM or LBS) MSL			
3. DRILLING AGENCY Pittsburgh Testing Laboratories				12. MANUFACTURER'S DESIGNATION OF DRILL Acker AD2			
4. HOLE NO. (As shown on drawing title and title number) SC-B5				13. TOTAL NO. OF OVER- BURDEN SAMPLES TAKEN		DISTURBED 10	
5. NAME OF DRILLER Robert Prophet				14. TOTAL NUMBER CORE BOXES		UNOBTAINED 1	
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER		1.83' ATOB	
7. THICKNESS OF OVERBURDEN				16. DATE HOLE		STARTED 2-6-80	
8. DEPTH DRILLED INTO ROCK 0'				17. ELEVATION TOP OF HOLE		51.7'	
9. TOTAL DEPTH OF HOLE 50'				18. TOTAL CORE RECOVERY FOR BORING		2	
				19. SIGNATURE OF INSPECTOR		Robert M. Gregory	

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	1 CORE RECOV- ERY	BOX OR SAMPLE NO. 1	REMARKS (Drilling time, time down, depth of material, etc. if significant)
			SP 10 YR 5/2 greyish brown slightly silty fine sand, poorly sorted		1	loose, moist Blows/ft -pushed
	5		SP 10 YR 7/1 light grey, slightly silty fine sand, poorly sorted		2	dense, moist 31 foul odor present
	7.75'					
	10		SC 2.5 Y 6/4; 2.5 Y 7/2 mixed light grey, light yellowish brown, very slightly silty clayey fine		3	stiff, moist 15
	12.5'					
	15		SM 10 YR 8/1; 5 Y 6/2, mixed white and light olive grey, silty fine sand		4	shelby tube Pushed
	17.5'					
	20		SM-SC 5 Y 6/1 grey clayey silty fine sand		5	soft, moist 4
	24.0'					
	25		ML 5 Y 4/1 grey very slightly clayey very fine sandy silt		6	very soft, moist 1
	27.5'					
	30		SM. 5 Y 5/2 olive grey slightly silty fine sand		7	very stiff, moist 24
	32.5'					

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Source: Environmental Science and Engineering 1982

DRILLING LOG (Cont Sheet)						
PROJECT Fort Stewart RCRA Studies						INSTALLATION Fort Stewart, GA
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	T. CORE RECOVER- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) R
a	b	c	d	e	f	
			32.5'			
	35		SM 5 Y 6/1 grey slightly silty fine sand		8	very stiff, moist 30
	40		SM 5 Y 5/2 olive grey slightly silty clayey fine sand 42.0'		9	hard, moist 42
	45		SP-SM 5 Y 5/2 olive grey silty micaceous medium to coarse sand 47.0'		10	hard, moist difficult drilling 51
	50		SC-SM 5 Y 7/2 light grey clayey, silty fine to medium sand		11	hard, moist, difficult drilling 50/0.33

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Fort Stewart		Hole No. 00100 SHEET 1 OF 2 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BITS 1 1/2" I.D., Bit 3 7/8"			
2. LOCATION (Coordinates or Section) N. 687382.17				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Pittsburgh Testing Laboratories				12. MANUFACTURER'S DESIGNATION OF DRILL Acker AD2			
4. HOLE NO. (As shown on drawing title and file number) SC-B6				13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN		10	
5. NAME OF DRILLER Robert Prophet				14. TOTAL NUMBER CORE BOXES			
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER		7.92' ATOB	
7. THICKNESS OF OVERBURDEN				16. DATE HOLE		STARTED 1-28-80 COMPLETED 1-30-80	
8. DEPTH DRILLED INTO ROCK 0'				17. ELEVATION TOP OF HOLE 71.8'			
9. TOTAL DEPTH OF HOLE 50'				18. TOTAL CORE RECOVERY FOR BORING			
				19. SIGNATURE OF INSPECTOR Robert H. Haverly			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling fluid used, flow, depth of weathered zone, if significant)	
			SP-SM 10 YR 7/2, 10 YR 7/6 mixed yellow, light grey very slightly clayey silty fine sand		1	loose, moist	blows/ft pushed
	5		SP-SM 2.5 Y 5/4, 10 YR 5/1, mixed grey; light olive brown, very slightly clayey silty fine sand, poorly sorted		2	loose, moist	pushed
			(7.5)				
	10		No sample taken, solid waste cell		(3)		
			12.0'				
	15		SP 2.5 Y 7/4 pale yellow, slightly silty fine sand		4	very firm, moist	24
						foul odor	
	20		SP 2.5 Y 7/4 pale yellow, slightly silty medium to coarse sand		5	firm, moist	pushed
						foul odor	
	25		SP 2.5 Y 7/2 light grey, slightly silty fine sand, poorly sorted		6	very loose, moist	2
						no odor	
			27.5'				
	30		SM 2.5 Y 8/2 white, very slightly clayey micaceous silty very fine sand		7	hard, moist	7
						difficult drilling	
			32.5'				

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Fort Stewart, GA		SHEET 1 OF 2 SHEETS
1. PROJECT Fort Stewart RCRA Studies			10. SIZE AND TYPE OF BITS. S. 1 1/2" I.D., Bit 3 7/8"		
2. LOCATION (Coordinates or Station) Location uncertain—land filled and leveled			11. OXYGEN ELEVATION SHOW (TOD or RSD) MSL		
3. DRILLING AGENCY Pittsburgh Testing Laboratories			12. MANUFACTURER'S DESIGNATION OF DRILL Acker AD2		
4. HOLE NO. (As shown on drawing IIII- and IIII- number) SC-B7			13. TOTAL NO. OF OVER- BURDEN SAMPLES TAKEN: 9		
5. NAME OF DRILLER Robert Prophet			14. TOTAL NUMBER CORE BOXES		
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER 8.83' ATOB		
7. THICKNESS OF OVERBURDEN			16. DATE HOLE STARTED 1-30-80 COMPLETED 1-30-80		
8. DEPTH DRILLED INTO ROCK 0'			17. ELEVATION TOP OF HOLE unknown		
9. TOTAL DEPTH OF HOLE 50'			18. TOTAL CORE RECOVERY FOR BORING		
			19. SIGNATURE OF INSPECTOR <i>Robert Prophet</i>		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, time, depth of material, etc., if significant)
					(1)	Blows/ft
	5		No samples solid waste cell		(2)	
			8.5'			
	10	•	SP 2.5 Y 7/2, 2.5 Y 7/4 mixed light grey, white, yellow slightly silty fine sand, poorly sorted		3	loose, moist 8
	15	•	SP 2.5 Y 8/4 pale yellow, slightly silty fine sand		4	very loose, moist 3
	20	•	SP 2.5 Y 8/2 white, slightly silty fine sand with very slight amount of clay		5	loose, moist 7
	25	•	SP 5 Y 8/1 white, very slightly silty fine sand		6	loose, moist 5
			28.0'			
	30	•	SP+SM 2.5 Y 7/1 pale yellow silty fine sand		7	loose, moist, 50/0.21' lower half of sample partially cemented
			(32.5')			

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Fort Stewart, GA		SHEET 1 OF 2 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT S.S. 1 1/2" I.D., Bit 3 7/8"			
2. LOCATION (Coordinates or Station) N. 686743.34 E. 661289.31				11. DATUM FOR ELEVATION MSL			
3. DRILLING AGENCY Pittsburgh Testing Laboratories				12. MANUFACTURER'S DESIGNATION OF DRILL Acker AD2			
4. HOLE NO. (As shown on drawing title and file number) SC-B8				13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: 11			
5. NAME OF DRILLER Robert Prophet				14. TOTAL NUMBER CORE BOXES			
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 11.83' ATOB			
7. THICKNESS OF OVERBURDEN				16. DATE HOLE STARTED 1-30-80 COMPLETED 1-30-80			
8. DEPTH DRILLED INTO ROCK 0'				17. ELEVATION TOP OF HOLE 70.1'			
9. TOTAL DEPTH OF HOLE 50'				18. TOTAL CORE RECOVERY FOR BORING			
				19. SIGNATURE OF INSPECTOR <i>Robert Prophet</i>			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, mud loss, depth of penetration, etc., if significant)	
			SM 10 YR 4/2, 2.5 Y 7/4 mixed dark greyish brown, pale yellow silty fine to medium sand		1	very loose, moist	blows/ft pushed
	5		SM 5 Y 5/2 olive grey, silty fine to medium sand, poorly sorted		2	very fine, moist	28
	10		SM 10 YR 7/6 yellow, silty fine to medium sand poorly sorted		3	firm, moist	15
	15		SM 5 Y 8/4 pale yellow, silty fine to medium sand poorly sorted		4	loose, moist	8
	20		SM 5 Y 8/4 pale yellow, silty fine to medium sand poorly sorted		5	loose, moist	5
	25		SM 2.5 Y 8/4 pale yellow slightly silty, clayey, micaceous fine sand, very poorly sorted (27.5')		6	very firm, difficult drilling	4
	30		SP 5 Y 5/1 grey very slightly silty micaceous fine to medium sand		7	hard, partially cemented, difficult drilling	3
			32.5'				

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 70.1'		Hole No. SC-B8		
PROJECT Fort Stewart RCRA Studies			INSTALLATION Fort Stewart, GA			SHEET 2 OF 2 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVER- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	
			32.5'				
	35		SC 7.5 YR 6/8 reddish yellow, very slightly silty, clayey micaceous medium to coarse sand		8	hard, partially cemented, moist, difficult drilling	44
	40		SC 10 YR 6/1 grey, silty medium to coarse sand, slightly clayey		9	hard, partially cemented moist, difficult drilling	45
	45		SC 5 Y 7/1 light grey, silty fine to medium sand, very slightly clayey		10	hard, moist, difficult drilling	28
			46.75'				
	50		SC-SM 5 Y 5/1 light grey very slightly clayey, silty fine sand		11	hard, moist difficult drilling	50/0.5'

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Fort Stewart, GA		SHEET OF 3 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT S.S. 1 1/2" I.D., Bit 3 7/8"			
2. LOCATION (Coordinates or Section) N. 686538.62 E. 662670.60				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Pittsburgh Testing Laboratories				12. MANUFACTURER'S DESIGNATION OF DRILL Acker AD2			
4. HOLE NO. (As shown on drawing title and title number) SC-B10				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN 11			
5. NAME OF DRILLER Robert Prophet				14. TOTAL NUMBER CORE BOXES			
6. DIRECTION OF HOLE ☒ CRITICAL ☐ INCLINED DEG. FROM VERT.				15. ELEVATION GROUND WATER 7.83' ATOB			
7. THICKNESS OF OVERBURDEN				16. DATE HOLE STARTED 2-1-80 COMPLETED 2-1-80			
8. DEPTH DRILLED INTO ROCK 0'				17. ELEVATION TOP OF HOLE 68.6'			
9. TOTAL DEPTH OF HOLE 50'				18. TOTAL CORE RECOVERY FROM BORING 1			
19. SIGNATURE OF INSPECTOR <i>Robert Prophet</i>							
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	1 CORE RECOVER- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, blow count, depth of weathering, etc. if applicable) g	
		○	SP 2.5 Y 7/2 light grey, very slightly clayey silty fine sand, poorly sorted 3.0'		1	loose, moist	Blows/ft pushed
	5	○	SM 10 YR 4/3 brown to dark brown, silty very fine sand		2	stiff, moist	9
	10	○	SM 10 YR 7/3 pale brown, silty fine to medium sand, poorly sorted		3	very firm, moist	25
	15	○	SM 10 YR 8/4 very pale brown, silty fine to medium sand 17.5'		4	firm, moist	23
	20	○	SC 10 YR 6/1 grey clayey fine to medium sand 21.5'		5	stiff, moist	5
	25	○	SP-SM 10 YR 6/2 light brownish very slightly clayey micaceous fine to coarse sand, poorly graded		6	very firm, moist difficult drilling	5
	30	○	SP-SM 5 Y 5/2 olive grey very slightly clayey, silty fine to coarse sand, poorly sorted 32.5'		7	very firm, moist difficult drilling	17

DRILLING LOG		DIVISION		INSTALLATION		SHEET	
		South Atlantic		Fort Stewart, GA		1 OF 2 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT S.S. 1 1/2" I.D. Bit 3 7/8"			
2. LOCATION (Coordinates or Station) N. 687186.82 E. 662733.11				11. DATUM FOR ELEVATION SHOWN MSL			
3. DRILLING AGENCY Pittsburgh Testing Laboratories				12. MANUFACTURER'S DESIGNATION OF DRILL Acker AD2			
4. HOLE NO. (As shown on drawing title and file number) SC-B11				13. TOTAL NO. OF OVER- BURDEN SAMPLES TAKEN		DISTURBED 8 UNDISTURBED 1	
5. NAME OF DRILLER Robert Prophet				14. TOTAL NUMBER CORE BOXES			
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 7.50' ATOB			
7. THICKNESS OF OVERBURDEN				16. DATE HOLE 2-5-80			
8. DEPTH DRILLED INTO ROCK 0'				17. ELEVATION TOP OF HOLE 70.26'			
9. TOTAL DEPTH OF HOLE 50'				18. TOTAL CORE RECOVERY FOR BORING 3			
				19. SIGNATURE OF INSPECTOR <i>Robert Gregory</i>			

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVER- ED	BOX OR SAMPLE NO.	REMARKS (Drilling time, water level, depth of weathering, etc. If signed record)
a	b	c	d	e	f	g
					(1)	Blows/ft
	5		No samples taken solid waste cell 7.0'		(2)	
	10		SM 10 YR 6/8 brownish yellow very slightly clayey fine to medium silty sand, poorly sorted		3	firm, moist 11
	15		SM 5 Y 7/4, 5 Y 8/2 mixed pale yellow and white, silty fine sand (17.5')		4	shelby tube pushed
	20		SP-SM 10 YR 7/1 light grey very slightly clayey silty fine sand (22.5')		5	firm, moist 7
	25		SM 10 YR 7/2 light grey very slightly clayey silty fine to medium sand (27.5')		6	loose, moist 3
	30		SP-SM 10 YR 6/1 light grey silty micaceous fine to medium sand (32.5')		7	firm, moist 9

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Source: Environmental Science and Engineering 1982

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No. SC-811		
PROJECT			INSTALLATION		SHEET 2 OF 2 SHEETS	
Fort Stewart RCRA Studies			Fort Stewart, GA			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVER- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
			(32.5')			
	35		SM 2.5 YR 7/4 pale yellow slightly silty micaceous fine sand		8	hard, dry, 28/0.17' cemented, difficult drilling
	40		SM 5 Y 6/3 pale olive slightly silty micaceous fine sand		9	hard, dry, 50/0.75' partially cemented difficult drilling
	45		SM 5 Y 5/2 olive grey, very slightly clayey silty micaceous fine sand		10	hard, dry, partially 42 cemented, difficult drilling
	50		SM 5 Y 5/1 grey, very slightly clayey silty fine sand		11	hard, dry, 50/0.92' partially cemented, difficult drilling

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Fort Stewart, GA		SHEET 1 OF 2 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT S.S. 1 1/2" I.D., Bit 3 7/8"			
2. LOCATION (Coordinates or Station) N. 687631.59 E. 662875.47				11. DATUM FOR ELEVATION SHOW (TBM - BLS)			
3. DRILLING AGENCY Pittsburgh Testing Laboratories				12. MANUFACTURE'S DESIGNATION OF GRILL Acker AD2			
4. HOLE NO. (As shown on drawing title and file number) SC-B12				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		14. TOTAL NUMBER CORE BOXES	
5. NAME OF DRILLER Robert Prophet				15. ELEVATION GROUND WATER 6.0' ATOB		16. DATE HOLE	
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				17. ELEVATION TOP OF HOLE 67.02'		18. TOTAL CORE RECOVERY FOR BORING	
7. THICKNESS OF OVERBURDEN				19. SIGNATURE OF INSPECTOR <i>Robert Prophet</i>		20. SIGNATURE OF DRILLER	
8. DEPTH DRILLED INTO ROCK 0'				21. SIGNATURE OF DRILLER		22. SIGNATURE OF DRILLER	
9. TOTAL DEPTH OF HOLE 50'				23. SIGNATURE OF DRILLER		24. SIGNATURE OF DRILLER	

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	1 CORE RECOVER- CY e	BOX ON SAMPLE NO. f	REMARKS (Drilling time, core, depth of material, etc., if applicable) g
			No samples taken solid waste cell		(1)	Blows/ft
	5				(2)	
	10		SM 10 YR 7/1 grey silty fine to medium sand, poorly sorted with very slight amount of clay (12.5')		3	firm, moist 20
	15		SP 10 YR 7/2 light grey slightly silty fine to medium sand (17.5')		4	stiff, moist 12
	20		SP-SM 2.5 Y 7/2, 10 R 8/1 mixed light grey and white silty fine sand		5	shelby tube pushed
	25		SP-SM 10 YR 7/1 light grey silty fine to medium sand poorly sorted (27.5')		6	loose, moist 9
	30		SP 10 YR 6/2 light brownish grey, slightly silty fine to coarse sand, very poorly sorted, with very slight amount of clay 32.5'		7	loose, moist 13

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No. SC-B12		
PROJECT			INSTALLATION		SHEET 2	
Fort Stewart RCRA Studies			Fort Stewart, GA		OF 2 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
			32.5'			
	35	•	SP 2.5 Y 6/2 light brownish grey, slightly silty fine sand		8	stiff, moist 11
	40	•	SP 10 YR 6/2 light brownish grey slightly silty fine sand		9	very stiff, moist 20
	45	•	SP 2.5 Y 5/2 greyish brown slightly clayey, slightly silty fine to medium sand		10	hard, moist 50/0.92' difficult drilling
	50	•	SP 2.5 Y 4/1 dark grey, silty fine to coarse sand, very poorly sorted		11	very stiff, moist 27 difficult drilling

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DRILLING LOG		DIVISION South Atlantic		INSTALLATION Fort Stewart, GA		SHEET 1 OF 2 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BITS - 5. 1 1/2 I.D., Bit 3 7/8"			
2. LOCATION (Coordinates or Station) N 688197 28 E 662979.40				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Pittsburgh Testing Laboratories				12. MANUFACTURER'S DESIGNATION OF DRILL Acker AD2			
4. HOLE NO. (As shown on drawing title and file number) SC-B13				13. TOTAL NO. OF OVER- BURDEN SAMPLES TAKEN		DISTURBED 9	
5. NAME OF DRILLER Robert Prophet				14. TOTAL NUMBER CORE BOXES			
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER		6.83' ATOB	
7. THICKNESS OF OVERBURDEN				16. DATE HOLE		STARTED 2-6-80	
8. DEPTH DRILLED INTO ROCK 0'				17. ELEVATION TOP OF HOLE		55.3'	
9. TOTAL DEPTH OF HOLE 50'				18. TOTAL CORE RECOVERY FOR BORING		1	
				19. SIGNATURE OF INSPECTOR <i>Robert Prophet</i>			
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, under force, depth of weathering, etc., if significant)	
		•	SP 10 YR 6/1 grey, very slightly silty fine sand		1	loose, moist blows/ft pushed	
	5	•			(2)		
	10		No samples taken solid waste cell		(3)		
	15	•	SM 5 Y 8/4 pale yellow silty fine sand, poorly graded		4	very loose, moist 2 foul odor present	
	20	•	SM 2.5 YR 8/2 silty fine sand, poorly sorted		5	loose, moist 2 slight odor present	
	25	•	SP 10 YR 7/3 very pale brown fine to medium sand poorly graded		6	very loose, moist 4 no odor	
	30	•	SM 10 YR 6/1 grey silty medium to coarse sand, poorly graded		7	loose, moist 13 easy drilling	
			32.5'				

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Unknown		Hole No. SC-315	
PROJECT			INSTALLATION			SHEET 2	
Fort Stewart RCRA Studies			Fort Stewart, GA			OF 3 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
a	b	c	d	e	f	g	
			(32.5')				
	35	•	SP 2.5 Y 7/6, 5 Y 6/1 mixed grey, yellow, silty fine sand, poorly sorted		8	loose, moist	6
		•	37.5'				
	40	•	SM 5 Y 5/1 grey, silty micaceous fine sand		9	soft, moist	4
	45	•	SM 5 Y 5/1 grey silty micaceous fine sand		10	very stiff, moist difficult drilling	19
	50	•	SM 5 Y 7/2 light grey slightly clayey, silty micaceous fine to medium sand		11	hard, partially cemented, moist difficult drilling	61
	55	•	SM 5 Y 5/2 olive grey slightly clayey, silty micaceous fine to medium sand with very slight amount of gravel		12	hard, partially cemented, moist difficult drilling	60
	60	•	SM 5 Y 7/1 light grey silty fine to medium sand, poorly sorted		13	firm, moist difficult drilling	34
	65	•	SM 5 Y 6/1 grey silty fine to medium sand with slight amount of coarse sand		14	very firm, moist	56
	70	•	SM 10 YR 6/1 grey silty medium to coarse sand with slight amount of gravel		15	very firm, moist	48
			72.5'				

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DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE
unknown

Hole No. SC-B15

PROJECT
Fort Stewart RCRA Studies

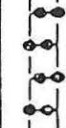
INSTALLATION
Fort Stewart, GA

SHEET 3
OF 3 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. (RY) e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			72.5'			
	75		SP 2.5 Y 6/0 grey medium to coarse sand with slight amount of gravel		16	very firm, moist 24
	80		SP 2.5 Y 5/0 grey very slightly silty fine to medium sand with very slight amount of gravel		17	very firm, moist 30
			(82.5')			
	85		SM 2.5 Y 6/2 light brownish grey silty fine to medium sand, very slight amount of gravel		18	firm, moist 32
	90		SM 2.5 Y 5/2 greyish brown silty fine to medium sand		19	firm, moist 18
	95		SM 5 Y 5/1 grey silty fine to medium sand		20	firm, moist 36
	100		SM 5 Y 6/1 grey, silty fine to medium sand		21	firm, moist 41

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Fort Stewart, GA		SHEET 1 OF 2 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT S.S. 1 1/2" I.D., Bit 3 7/8"			
LOCATION (Coordinates or Station) N. 686806.71 E. 663435.00				11. DATUM FOR ELEVATION SHOWN (TBM - BLS) MSL			
3. DRILLING AGENCY Pittsburgh Testing Laboratories				12. MANUFACTURER'S DESIGNATION OF DRILL Acker AD2			
4. HOLE NO. (As shown on drawing title and file number) SC-B16				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 10	UNDISTURBED 1
5. NAME OF DRILLER Robert Prophet				14. TOTAL NUMBER CORE BOXES 1			
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 10.17' ATOB			
7. THICKNESS OF OVERBURDEN				16. DATE HOLE		STARTED 2-1-80	COMPLETED 2-1-80
8. DEPTH DRILLED INTO ROCK 0'				17. ELEVATION TOP OF HOLE 66.34'			
9. TOTAL DEPTH OF HOLE 50'				18. TOTAL CORE RECOVERY FOR BORING 1			
				19. SIGNATURE OF INSPECTOR <i>Robert Prophet</i>			

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVER- ED	BOX OR SAMPLE NO.	REMARKS (Drilling time, water level, depth of penetration, etc. If identified)
			SP 10 YR 4/2 dark greyish brown silty fine sand, poorly sorted 2.0'		1	loose, moist blows/ft pushed
	5		SP-SM 7.5 YR 4/2 dark brown silty fine sand 7.0'		2	loose, moist 6
	10		SP 7.5 YR 3/2 dark brown silty fine sand 12.0'		3	very stiff, moist 26
	15		SC-SM 5 Y 6/2 light olive grey clayey, silty fine sand		4	firm, moist 5
	20		SC-SM 2.5 Y 7/2, 5 Y 6/1 mixed light grey and grey silty, clayey fine sand (22.5')		5	shelby tube pushed
	25		SM 5 Y 6/1 grey clayey, silty very fine sand 26.5'		6	stiff, moist 7
	30		SP-SM 5 YR 5/1 grey very slightly clayey, silty micaceous fine to medium sand (32.5')		7	stiff, moist difficult drilling 5

DRILLING LOG (Cont Sheet)				ELEVATION TOP OF HOLE 66.34'		Hole No. SC-B16	
PROJECT Fort Stewart RCRA Studies				INSTALLATION Fort Stewart, GA		SHEET 2 OF 2 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	
			SM (32.5')				
	35		SC-GM 5 Y 5/3 olive clayey silty micaceous fine sand 37.5'		8	hard, moist difficult drilling	53
	40		SP-SM 5 Y 5/1 grey very slightly clayey, silty micaceous fine sand (42.5')		9	hard, partially cemented, moist difficult drilling	50/0.33'
	45		SP 5 Y 5/3 olive very slightly silty micaceous fine sand (47.5')		10	hard, moist difficult drilling	34
	50		SC 5 Y 6/2 light olive grey very slightly silty, clayey micaceous fine sand, slight amount of coarse sand		11	hard, moist difficult drilling	50/0.42

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Fort Stewart, GA	SHEET 1 OF 2 SHEETS
1. PROJECT Fort Stewart RCRA Studies			10. SIZE AND TYPE OF BIT 9"	
2. LOCATION (Coordinates or Stationing) N761203.76 E659516.77			11. DATUM FOR ELEVATION SHOWN (TMD or MSL) MSL	
DRILLING AGENCY Paul N. Clawson			12. MANUFACTURER'S DESIGNATION OF DRILL SBICO	
HOLE NO. (As shown on drawing III-1 and III-2) TX-M1			13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN 0	
3. NAME OF DRILLER Paul N. Clawson			14. TOTAL NUMBER CORE BOXES -	
4. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED DEG. FROM VERT.			15. ELEVATION GROUND WATER 5.83' @ 24 hours	
7. THICKNESS OF OVERBURDEN			16. DATE HOLE STARTED 1/22/80 COMPLETED 1/24/80	
8. DEPTH DRILLED INTO ROCK 0'			17. ELEVATION TOP OF HOLE 76.47'	
9. TOTAL DEPTH OF HOLE 50'			18. TOTAL CORE RECOVERY FOR BORING 1	
			19. SIGNATURE OF INSPECTOR <i>Robert S. Rogers</i>	

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling tool, water loss, depth of overburden, etc. if significant)
	5.0'		Buff to grey-medium, slightly clayey sand, slight amount of plant fragments upper 2 ft.			
	14.0'		Grey to brown-silty clayey fine to medium sand, up to 15% clay			
	21.0'		Grey to brown-silty clayey fine to medium sand less clay (+ 5%) than above			
	30.0'		Olive green sandy clay and clayey sand. Sand fine to very fine grain			

2.0'

Neat Cement

38.5'

Bentonite Gravel

40.5'

41.5'

Sure-Pack

46.5'

Diagram NOT TO SCALE

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 76.47'		Hole No. TX-M1	
PROJECT Fort Stewart RCRA Studies			INSTALLATION Fort Stewart, GA			SHEET 2 OF 2 SHEETS
ANON a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVER- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			32.0'			
	35		Grey - medium to coarse sand with up to 10% clay			
	40		41.0'			
	45		Grey to medium to coarse sand with up to 5% clay to 44 ft., up to 2% clay below 44 ft.			
	50					

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1	
		South Atlantic		Fort Stewart, GA		OF 2 SHEETS	
1. PROJECT				10. SIZE AND TYPE OF BIT 9"			
Fort Stewart RCRA Studies				11. DATUM FOR ELEVATION SHOWN (TBM or MSL)			
2. LOCATION (Coordinates or Station)				MSL			
N760657.51 E659795.88				12. MANUFACTURER'S DESIGNATION OF DRILL			
DRILLING AGENCY				SIMCO			
Paul N. Clawson				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN			
4. HOLE NO. (As shown on drawing title and file number)				TX-M2		DISTURBED 0 UNDISTURBED 0	
5. NAME OF DRILLER				14. TOTAL NUMBER CORE BOXES			
Paul N. Clawson				15. ELEVATION GROUND WATER 4.6' @ 24 hrs			
6. DIRECTION OF HOLE				16. DATE HOLE			
☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				STARTED 1/31/80		COMPLETED 2/4/80	
7. THICKNESS OF OVERBURDEN				17. ELEVATION TOP OF HOLE 74.13'			
8. DEPTH DRILLED INTO ROCK 0'				18. TOTAL CORE RECOVERY FOR BORING 3			
9. TOTAL DEPTH OF HOLE 50'				19. SIGNATURE OF INSPECTOR			
				Robert G. Grewer			

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, penetration, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
	5		Buff to grey - fine to medium clayey sand			
	10		Buff to grey - medium to coarse clayey sand			
	15		Orange - coarse sand occasional clayey beds up to 1 ft. thick			
	20		Orange - clayey fine to medium sand			
	25					
	30					

Diagram NOT TO SCALE

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 74.13'	Hole No. TX-N2		
PROJECT Fort Stewart RCRA Studies			INSTALLATION Fort Stewart, GA			SHEET 2 OF 2 SHEETS
SYMBOL a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	35		White, grey - green - from 29.5 ft. to 50 ft. interbedded fine and fine to medium sand with sandy clay. Bed thickness 1 ft. to 3 ft.; most boundaries gradational			
	40					
	45					
	50					

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 2 SHEETS	
1. PROJECT Fort Stewart RCRA Studies		South Atlantic		Fort Stewart, GA			
2. LOCATION (Coordinates or Section) N760527.39 E659471.04				10. SIZE AND TYPE OF BIT 9"			
DRILLING AGENCY Paul N. Clawson				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
4. HOLE NO. (As shown on drawing title and file number) TX-M3				12. MANUFACTURER'S DESIGNATION OF DRILL SIMCO			
3. NAME OF DRILLER Paul N. Clawson				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 0 UNDISTURBED 0	
6. DIRECTION OF HOLE ☐ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				14. TOTAL NUMBER CORE BOXES			
7. THICKNESS OF OVERBURDEN				15. ELEVATION GROUND WATER 2.6' @ 24 hours			
8. DEPTH DRILLED INTO ROCK 0'				16. DATE HOLE STARTED 2/5/80 COMPLETED 2/8/80			
9. TOTAL DEPTH OF HOLE 50'				17. ELEVATION TOP OF HOLE 71.12'			
				18. TOTAL CORE RECOVERY FOR BORING		1	
				19. SIGNATURE OF INSPECTOR Robert Hughes			
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling fluid, water loss, depth of weathering, etc.) if significant g	
			Brown - medium sand, color grades to light grey with orange stringers below 1.5 ft. 4.0'				
	5		White - clayey medium to coarse sand, bed of fine sand near 5 ft. 7.0'				
	10		Grey fine to medium sand 10.0'				
	15		Orange to slightly white coarse to medium sand, very slight amount of clay (5%), variable vertically 24.0'				
	20		White - sandy clay; sand fine grades downward to silty clay at 29 ft. 30.0'				
	25					37.5' 39.5' 40.5' 45.5'	
	30					Diagram NOT TO SCALE	

APPENDIX 4.5

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 71.12'		Hole No. TX-M3		
PROJECT Fort Stewart RCRA Studies			INSTALLATION Fort Stewart, GA		SHEET 2 OF 2 SHEETS	
VATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			33.0'			
	35		Grey-green - sandy clay sand fine grain 38.0'			
	40		Light grey - fine to medium slightly clayey sand occasional thin beds of fine sand 46.0'			
	45					
	50		Grey - green - fine to medium clayey sand			

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Fort Stewart, CA		SHEET 1 OF 1 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT 9"			
2. LOCATION (Coordinates or Station) N760717.38 E659264.50				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Paul N. Clawson				12. MANUFACTURER'S DESIGNATION OF DRILL SIMCO			
4. HOLE NO. (As shown on drawing title and title number) TX-M4				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 0	
5. NAME OF DRILLER Paul N. Clawson				14. TOTAL NUMBER CORE BOXES		UNDISTURBED 0	
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 2.2' @ 24 hrs.			
7. THICKNESS OF OVERBURDEN				16. DATE HOLE		STARTED 1/25/80	
8. DEPTH DRILLED INTO ROCK 0'				17. ELEVATION TOP OF HOLE 70.46'		COMPLETED 1/30/80	
9. TOTAL DEPTH OF HOLE 50'				18. TOTAL CORE RECOVERY FOR BORING		1	
				19. SIGNATURE OF INSPECTOR <i>Robert A. Thomas</i>			

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water level, depth of weathered, etc., if significant) g
			See soil boring log TX-B4			2.0' Neat Cement Bentonite Gravel 41.5' 43.5' 44.5' Sure-Pack 49.5' DIAGRAM NOT TO SCALE

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 2 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT 2.5"			
2. LOCATION (Coordinates or Station) N751199.12 E659515.98				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
DRILLING AGENCY Paul N. Clawson				12. MANUFACTURER'S DESIGNATION OF DRILL SIMCO			
3. HOLE NO. (As shown on drawing title and file number) TX-0W1				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 0	
4. NAME OF DRILLER Paul N. Clawson				14. TOTAL NUMBER CORE BOXES		UNDISTURBED 0	
5. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER			
6. THICKNESS OF OVERBURDEN				16. DATE HOLE		STARTED 4/10/80	
7. DEPTH DRILLED INTO ROCK 0'				17. ELEVATION TOP OF HOLE 76.42'		COMPLETED 4/12/80	
8. TOTAL DEPTH OF HOLE 50'				18. TOTAL CORE RECOVERY FOR BORING		1	
				19. SIGNATURE OF INSPECTOR <i>Robert J. Mayhew</i>			
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	
	5		Dark Brown - Silty fine sand			easy drilling, loss of water till 10'	
	10			10.0'			
	15		Tan/Orange - clayey fine to medium sandy clay ≈ 30%, slight amounts of coarse material	16.5'			
	20		Orange - fine sandy silt	21.0'		easy drilling	
	25		Grey - fine sandy clay-clayey sand - hard muscovite present			difficult drilling, hard, compacted	
	30			30.0'			

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE
76.42'

Hole No. TX-0W1

PROJECT

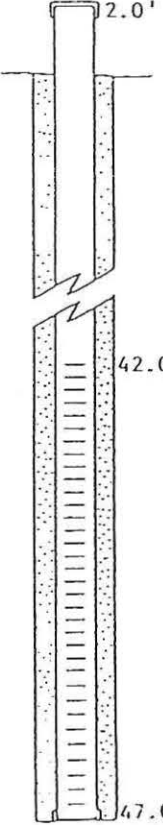
Fort Stewart RCRA Studies

INSTALLATION

Fort Stewart, GA

SHEET 2

OF 2 SHEETS

WATER	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
	35		36.5'			
	40		Light brown - clayey, fine sand - sand becoming coarser and clay diminishing in amounts to 47'			easy drilling, started losing drilling fluid
	45		46.5'			
	50		Light grey - medium to coarse sand with slight amounts of clay			loss of drilling fluid
						

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Source: Environmental Science and Engineering 1982

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 2 SHEETS	
1. PROJECT Fort Stewart RCRA Studies		South Atlantic		Fort Stewart, GA			
2. LOCATION (Coordinates or Station) N754176.22 E608888.74				10. SIZE AND TYPE OF BIT 9"			
DRILLING AGENCY Paul N. Clawson				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
4. HOLE NO. (As shown on drawing title and file number) CO-M1				12. MANUFACTURER'S DESIGNATION OF DRILL SIMCO			
3. NAME OF DRILLER Paul N. Clawson				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 0 UNDISTURBED 0	
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				14. TOTAL NUMBER CORE BOXES			
7. THICKNESS OF OVERBURDEN				15. ELEVATION GROUND WATER 12.5 @ 24 hrs.			
8. DEPTH DRILLED INTO ROCK 0'				16. DATE HOLE STARTED 2/11/80 COMPLETED 2/13/80			
9. TOTAL DEPTH OF HOLE 50'				17. ELEVATION TOP OF HOLE 151.27'			
				18. TOTAL CORE RECOVERY FOR BORING			
				19. SIGNATURE OF INSPECTOR <i>Robert M. Moore</i>			

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, maximum depth of penetration, etc., if significant)
a	b	c	d	e	f	g
	5		Rusty Brown - Clayey fine to medium sand			
	10		Light Grey - coarse slightly clayey sand			
	15		Purple - tough plastic clay. Below 15 ft. to 22 ft. with medium to coarse sand (10 to 30%)			
	20					
	25		White - sandy clay, sand very fine			
	30		White to rusty brown - sandy clay, sand very fine, makes up less than 30% of samples			

APPENDIX 4.5

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 151.27'		Hole No. CO-M1		
PROJECT Fort Stewart RCRA Studies			INSTALLATION Fort Stewart, CA.		SHEET 2 OF 2 SHEETS	
DEPTH a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. (RY) e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			33.0'			
	35		Light grey - clayey fine to medium sand 35.0'			
	40		Brown to pink - silty sandy clay. silt and extremely fine sand make up 40 to 60% of samples			
	45					
	50					

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DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS	
1. PROJECT		South Atlantic		Fort Stewart, GA			
2. LOCATION (Coordinates or Station)		N754755.01 E608897.65		10. SIZE AND TYPE OF BIT 9"			
3. DRILLING AGENCY		Paul N. Clawson		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)		MSL	
4. HOLE NO. (As shown on drawing title and file number)		CO-M2		12. MANUFACTURER'S DESIGNATION OF DRILL		SIMCO	
5. NAME OF DRILLER		Paul N. Clawson		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		0	
6. DIRECTION OF HOLE		☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.		14. TOTAL NUMBER CORE BOXES		0	
7. THICKNESS OF OVERBURDEN				15. ELEVATION GROUND WATER			
8. DEPTH DRILLED INTO ROCK		0'		16. DATE HOLE		2/14/80	
9. TOTAL DEPTH OF HOLE		50'		17. ELEVATION TOP OF HOLE		136.97'	
				18. TOTAL CORE RECOVERY FOR BORING		3	
				19. SIGNATURE OF INSPECTOR		<i>Robert McNeer</i>	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, from base, depth of underlying, etc., if significant)	
a	b	c	d	e	f	g	
			See soil boring log CO-B2			Neat Cement 2.0' Bentonite Gravel 37.5' 39.5' 40.5' Sure-Pack 45.5' DIAGRAM NOT TO SCALE	

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Fort Stewart, GA	SHEET 1 OF 1 SHEETS
1. PROJECT Fort Stewart RCRA Studies			10. SIZE AND TYPE OF BIT 9"	
2. LOCATION (Coordinates or Station) N755318.55 E609187.01			11. DATUM FOR ELEVATION SHOWN (TDW or MSL) MSL	
DRILLING AGENCY Paul N. Clawson			12. MANUFACTURER'S DESIGNATION OF DRILL SIMCO	
4. HOLE NO. (As shown on drawing title and title number) CO-M3			13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN 0	
3. NAME OF DRILLER Paul N. Clawson			14. TOTAL NUMBER CORE BOXES 0	
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER 3.25' @ 24 hrs.	
7. THICKNESS OF OVERBURDEN			16. DATE HOLE 2/18/80	
8. DEPTH DRILLED INTO ROCK 0'			17. ELEVATION TOP OF HOLE 124.55'	
9. TOTAL DEPTH OF HOLE 30'			18. TOTAL CORE RECOVERY FOR BORING 1	
			19. SIGNATURE OF INSPECTOR <i>Robert J. Hines</i>	

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, mud weight, depth of mudstone, etc., if significant) g
	5		Brown - clayey fine to medium sand, 10 to 20% clay, color changed to grey-brown at 5 ft. 6.0'			
	10		Light grey - clayey fine sand, clay 20 to 30% 14.0'			
	15		Rust brown - clayey silty fine to medium sand 19.5'			
	20		Light grey silty, sandy clay top 2 ft. plastic 23.0'			
	25		Light grey-fine to coarse sand, clay less than 5% 26.0'			
	30		Light grey - clayey silty fine to coarse sand, 20 to 30% clay			

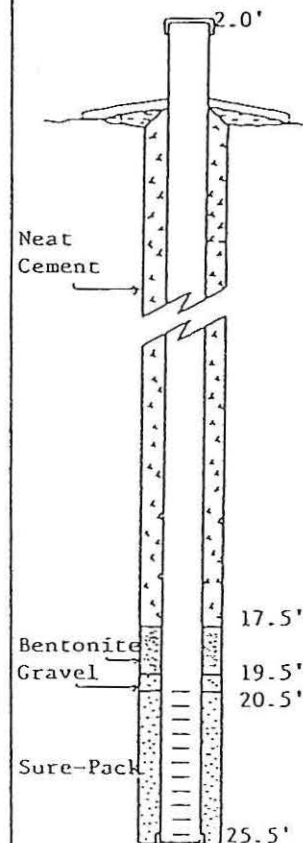
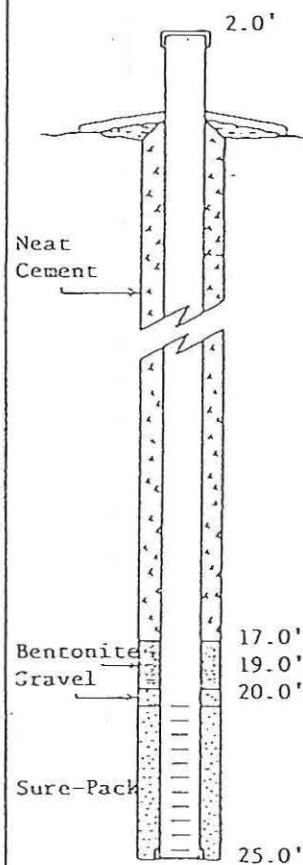


DIAGRAM NOT TO SCALE

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Fort Stewart, GA		SHEET 1 OF 1 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT 9"			
2. LOCATION (Coordinates or Station) N755137.29 E609476.96				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Paul N. Clawson				12. MANUFACTURER'S DESIGNATION OF DRILL SIMCO			
4. HOLE NO. (As shown on drawing title and file number) CO-M4				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED : 0 UNDISTURBED : 0	
5. NAME OF DRILLER Paul N. Clawson				14. TOTAL NUMBER CORE BOXES			
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 4.1' @ 24 hrs.			
7. THICKNESS OF OVERBURDEN				16. DATE HOLE		STARTED : 2/22/80 COMPLETED : 2/25/80	
8. DEPTH DRILLED INTO ROCK 0'				17. ELEVATION TOP OF HOLE 125.89'			
9. TOTAL DEPTH OF HOLE 50'				18. TOTAL CORE RECOVERY FOR BORING		2	
				19. SIGNATURE OF INSPECTOR <i>Robert H. Gregory</i>			
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g h	
			See soil boring log CO-B4				

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Fort Stewart, GA		SHEET 1 OF 1 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT 9"			
2. LOCATION (Coordinates or Station) N686890 30 E660515.96				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
DRILLING AGENCY Paul N. Clawson				12. MANUFACTURER'S DESIGNATION OF DRILL SIMCO			
4. HOLE NO. (As shown on drawing title and file number) SC-M1				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 0	
3. NAME OF DRILLER Paul N. Clawson				14. TOTAL NUMBER CORE BOXES		UNDISTURBED 0	
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 6.9' @ 24 hrs.		16. DATE HOLE STARTED 2/26/80 COMPLETED 2/29/80	
7. THICKNESS OF OVERBURDEN				17. ELEVATION TOP OF HOLE 62.31'		18. TOTAL CORE RECOVERY FOR BORING %	
8. DEPTH DRILLED INTO ROCK 0'				19. SIGNATURE OF INSPECTOR <i>Robert J. [Signature]</i>			
9. TOTAL DEPTH OF HOLE 26.5'							

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	5		Red Brown - very clayey sand, color changes to grey below 3', sand mostly medium, some fine			
	10		Light grey - silty, sandy clay, orange-red streaks, thin but frequent			
	15					
	20		Light grey - clayey medium sand, clay 5-10%			
	25		Dark grey - very silty, sandy clay, extremely hard material			
	30					



DRILLING LOG		DIVISION South Atlantic		INSTALLATION Fort Stewart, GA		SHEET 1 OF 1 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT 9"			
2. LOCATION (Coordinates or Station) N687929.13 E661144.17				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Paul N. Clawson				12. MANUFACTURER'S DESIGNATION OF DRILL SIMCO			
4. HOLE NO. (As shown on drawing title and title number) SC-M2				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 0	
5. NAME OF DRILLER Paul N. Clawson				14. TOTAL NUMBER CORE BOXES		UNDISTURBED 0	
6. DIRECTION OF HOLE ☐ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 6.1' @ 24 hrs.			
7. THICKNESS OF OVERBURDEN				16. DATE HOLE		STARTED 3/1/80	
8. DEPTH DRILLED INTO ROCK 0'				17. ELEVATION TOP OF HOLE 64.65'		COMPLETED 3/4/80	
9. TOTAL DEPTH OF HOLE 26.5'				18. TOTAL CORE RECOVERY FOR BORING		2	
				19. SIGNATURE OF INSPECTOR <i>Robert M. Brown</i>			
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVER- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	
			See soil boring log SC-B3				

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS	
1. PROJECT		South Atlantic		Fort Stewart, GA			
2. LOCATION (Coordinates or Section)		N688276.58 E622041.66		10. SIZE AND TYPE OF BIT 9"		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	
3. NAME OF DRILLER		Paul N. Clawson		12. MANUFACTURER'S DESIGNATION OF DRILL		MSL	
4. HOLE NO. (As shown on drawing title and file number)		SC-M3		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 0 UNDISTURBED 0	
5. NAME OF DRILLER		Paul N. Clawson		14. TOTAL NUMBER CORE BOXES			
6. DIRECTION OF HOLE		☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		Flowing well	
7. THICKNESS OF OVERBURDEN				16. DATE HOLE		STARTED 3/6/80 COMPLETED 3/10/80	
8. DEPTH DRILLED INTO ROCK		0'		17. ELEVATION TOP OF HOLE		53.77'	
9. TOTAL DEPTH OF HOLE		27.0'		18. TOTAL CORE RECOVERY FOR BORING		1	
				19. SIGNATURE OF INSPECTOR		Robert M. Meany	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling fluid, water loss, depth of weathered, etc., if significant)	
			See soil boring log SC-B5			2.0' Neat Cement Bentonite Gravel Sure-Pack 17.5' 19.5' 20.5' 25.5' 1 DIAGRAM NOT TO SCALE	

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT 9"			
2. LOCATION (Coordinates or Section) 688197.28 E662979.40				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Paul N. Clawson				12. MANUFACTURER'S DESIGNATION OF DRILL SINCO			
4. HOLE NO. (As shown on drawing title and title number) SC-M4				13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 0 UNDISTURBED 0			
5. NAME OF DRILLER Paul N. Clawson				14. TOTAL NUMBER CORE BOXES			
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED DEG. FROM VERT.				15. ELEVATION GROUND WATER +0.5' @ 24 hrs.			
7. THICKNESS OF OVERBURDEN				16. DATE HOLE STARTED 3/11/80 COMPLETED 3/15/80			
8. DEPTH DRILLED INTO ROCK 0'				17. ELEVATION TOP OF HOLE 57.85'			
9. TOTAL DEPTH OF HOLE 23'				18. TOTAL CORE RECOVERY FOR BORING 1			
19. SIGNATURE OF INSPECTOR <i>Robert M. M...</i>							

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	1 CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, etc. - depth of penetration, etc. - significant)
a	b	c	d	e	f	g
			Buff - fine sand	1.5'		
	5		Brown - changing to grey below 5 ft., clayey fine to medium sand, clay increases with depth, from 20% near top to 60%	9.0'		
	10		Grey-plastic sticky slightly sandy clay	16.0'		
	15		Light grey - clayey fine to medium sand	21.0'		
	20		Dark grey silty, sandy clay			
	25					
	30					

Hol. No. 5C-45

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PROJECT		ELEVATION TOP OF HOLE		Hole No.		
Fort Stewart RCRA Studies		78.53'		SC-MS		
INSTALLATION		SHEET		OF 2 SHEETS		
Fort Stewart, GA		2		2		
STATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
	35					

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS	
1. PROJECT Fort Stewart RCRA Studies		South Atlantic		Fort Stewart, GA			
2. LOCATION (Coordinates or Station) N686000.42 E662567.15				10. SIZE AND TYPE OF BIT 9"			
3. DRILLING AGENCY Paul N. Clawson				11. DATUM FOR ELEVATION SHOWN (TDH or MSL) MSL			
4. HOLE NO. (As shown on drawing title and title number) SC-M6				12. MANUFACTURER'S DESIGNATION OF DRILL SIMCO			
5. NAME OF DRILLER Paul N. Clawson				13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN		DISTURBED 0 UNDISTURBED 0	
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				14. TOTAL NUMBER CORE BOXES			
7. THICKNESS OF OVERBURDEN				15. ELEVATION GROUND WATER 6.1' @ 24 hrs.			
8. DEPTH DRILLED INTO ROCK 0'				16. DATE HOLE STARTED 3/20/80 COMPLETED 3/24/80			
9. TOTAL DEPTH OF HOLE 30'				17. ELEVATION TOP OF HOLE 71.55'			
				18. TOTAL CORE RECOVERY FOR BORING 1			
				19. SIGNATURE OF INSPECTOR <i>Robert H. Gregory</i>			
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of penetration, etc. If significant)	
			Rust brown - clayey sand 4.0'			2.0'	
	5		Buff-light grey - sandy clay clayey sand, sand mostly fine and makes up 30-70% of samples			Neat Cement	
	10						
	15		White-light grey - silty, sandy clay, few thin orange beds			Bentonite Gravel	
	20					19.5' 21.5' 22.5'	
	25		Fine to medium slightly clayey sand, clay 5% +			Sure-Pack	
	30		Dark grey - silty sandy clay, small muscovite flakes			27.5'	

DIAGRAM NOT TO SCALE
very hard, dry

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 2 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT 2.5"			
2. LOCATION (Coordinates or Station) N686551.35 E665176.50				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Paul N. Clauson				12. MANUFACTURER'S DESIGNATION OF DRILL SIMCO			
4. HOLE NO. (As shown on drawing title and fill-in number) SC-001				13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN 0			
5. NAME OF DRILLER Paul N. Clauson				14. TOTAL NUMBER CORE BOXES			
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER			
7. THICKNESS OF OVERBURDEN				16. DATE HOLE STARTED 4/13/80 COMPLETED 4/15/80			
8. DEPTH DRILLED INTO ROCK 0'				17. ELEVATION TOP OF HOLE 75.54'			
9. TOTAL DEPTH OF HOLE 50'				18. TOTAL CORE RECOVERY FOR BORING			
				19. SIGNATURE OF INSPECTOR Robert Thompson			
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	1 CORE RECOV- ERY e	BOX ON SAMPLE NO. f	REMARKS (Drilling time, core loss, depth of weathering etc.) (if significant) g	
			Yellow orange - clayey medium to coarse sand 4.0'			easy drilling	
	5		Tan/yellow - medium to coarse sandy clay 14.0'			difficult drilling	
	15		Light grey - clayey medium to coarse sand			easy drilling	
	20		Light grey/orange - clayey medium to coarse sand				
	25		Tan - clayey medium to coarse sand 31.0'				
	30						

APPENDIX 4.5

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 75.54'		Hole No. SC-0W1		
PROJECT Fort Stewart RCRA Studies		INSTALLATION Fort Stewart, GA		SHEET 2 OF 2 SHEETS		
VARIATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	35		Dark grey-fine sandy silt, muscovite present			
	39.0'					
	40		Olive - fine sandy, silty clay			compacted, very hard difficult drilling
	45					
	50					

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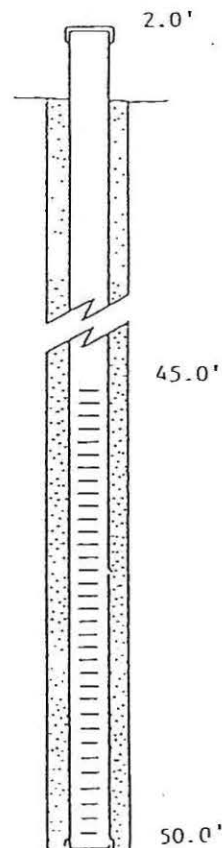
Source: Environmental Science and Engineering 1982

DRILLING LOG		DIVISION		INSTALLATION		SHEET	
		South Atlantic		Fort Stewart, GA.		1 OF 2 SHEETS	
1. PROJECT				10. SIZE AND TYPE OF BIT 2.5"			
Fort Stewart RCRA Studies				11. DATUM FOR ELEVATION SHOWN (TBM or MSL)			
2. LOCATION (Coordinates or Station)				MSL			
N686407.29 E666290.05				12. MANUFACTURER'S DESIGNATION OF DRILL			
3. DRILLING AGENCY				SIMCO			
4. HOLE NO. (As shown on drawing title and file number)				13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN			
SC-0W2				0			
5. NAME OF DRILLER				14. TOTAL NUMBER CORE BOXES			
Paul N. Clawson				15. ELEVATION GROUND WATER			
6. DIRECTION OF HOLE				16. DATE HOLE			
☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				STARTED 4/16/80 COMPLETED 4/17/80			
7. THICKNESS OF OVERBURDEN				17. ELEVATION TOP OF HOLE 76.83'			
8. DEPTH DRILLED INTO ROCK 0'				18. TOTAL CORE RECOVERY FOR BORING			
9. TOTAL DEPTH OF HOLE 50'				19. SIGNATURE OF INSPECTOR			
				Robert M. Hickey			

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, pressure, depth of penetration, etc., if significant)
a	b	c	d	e	f	g
			light brown - silty fine sand 2.0'			easy drilling
	5		Orange - clayey, fine to medium sand 9.0'			easy drilling
	10		Tan - clayey, silty fine to medium sand 11.5'			easy drilling
	15		light brown - clayey fine to medium sand with very slight amounts of coarse materials 16.0'			
	20		brown - clayey fine to medium sand with coarse sand			easy drilling
	25		light brown/tan - clayey fine to medium sand with coarse sand; percentage of clay increasing 26.5'			
	30		tan - fine to medium sandy clay 32.0'			difficult drilling

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No. SC-0W2		
PROJECT		INSTALLATION		SHEET 2 OF 2 SHEETS		
Fort Stewart RCRA Studies		Fort Stewart, GA				
VATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
	35		light/dark grey - fine to medium sandy, silty clay			
	36.5'					
	40					
	45		Olive - very slightly clayey fine to medium sandy silt with muscovite present			compacted, very hard, difficult drilling
	50					

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DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 2 SHEETS	
1. PROJECT Fort Stewart BCRA Studies		South Atlantic		Fort Stewart, GA			
2. LOCATION (Coordinates as stated) N685632.00 E666495.87				10. SIZE AND TYPE OF BIT 2.5"			
3. DRILLING AGENCY Paul N. Clawson				11. DATUM FOR ELEVATION SHOWN (TDH or MSL) MSL			
4. HOLE NO. (As shown on drawing title and file number) SC-0W3				12. MANUFACTURER'S DESIGNATION OF DRILL SIMCO			
5. NAME OF DRILLER Paul N. Clawson				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 0	
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				14. TOTAL NUMBER CORE BOXES		UNDISTURBED 0	
7. THICKNESS OF OVERBURDEN				15. ELEVATION GROUND WATER			
8. DEPTH DRILLED INTO ROCK 0'				16. DATE HOLE		STARTED 4/18/80	
9. TOTAL DEPTH OF HOLE 65'				17. ELEVATION TOP OF HOLE 77.54'		COMPLETED 4/19/80	
				18. TOTAL CORE RECOVERY FOR BORING 2			
				19. SIGNATURE OF INSPECTOR <i>Robert M. ...</i>			
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	1. CORE RECOV- ERY e	BOX ON SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of mud, etc., if significant) g	
	5		grey buff, brown-clayey medium sand; clay 5-15%				
	10						
	15		buff - fine to medium clayey sand, clay 20-30%, color white below 10 ft.				
	20						
	25		white - fine clayey sand; clay 20-30%, very slight amounts of coarse grains, few gravel sized angular quartz grains below 22.5 ft to 25 ft.				slight mud loss 20' - 25'
	30		Grey, red, brown, buff- very clayey medium sand, few coarse angular grains				

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Source: Environmental Science and Engineering 1982

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE

77.54'

Hole No. SC-0W3

PROJECT
Fort Stewart RCRA StudiesINSTALLATION
Fort Stewart, GA.SHEET
OF 2 SHEETS

ATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	7. CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	35					2.0'
	40					26.0'
	45		45.5'			
	50		Grey, red, brown, buff - large percentage very coarse and gravel size well rounded quartz grains			
	55		55.5'			
	59.5'		Dark grey - soft sandy clay. this grades into hard sandy clayey silt			
	60					
	65		Olive - sandy, clayey silt			very hard , difficult drilling

DIAGRAM NOT TO SCALE

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Source: Environmental Science and Engineering 1982

DRILLING LOG		DIVISION		INSTALLATION		SC-OW4 SHEET 1 OF 2 SHEETS	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT 2.5"			
2. LOCATION (Coordinates or Section) N684987.98 E666108.05				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Paul N. Clawson				12. MANUFACTURER'S DESIGNATION OF DRILL SLICO			
4. HOLE NO. (As shown on drawing title and title number) SC-OW4				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 0	
5. NAME OF DRILLER Paul N. Clawson				14. TOTAL NUMBER CORE BOXES		UNDISTURBED 0	
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER			
7. THICKNESS OF OVERBURDEN				16. DATE HOLE		STARTED 4/21/80	
8. DEPTH DRILLED INTO ROCK 0'				17. ELEVATION TOP OF HOLE 72.68'		COMPLETED 4/22/80	
9. TOTAL DEPTH OF HOLE 35'				18. TOTAL CORE RECOVERY FOR BORING		%	
				19. SIGNATURE OF INSPECTOR <i>Robert L. Heaven</i>			

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	1 CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, mudflow, depth of weathering, etc., if standardized)
a	b	c	d	e	f	g
			Dark brown - fine medium sand 2.0'			easy drilling
	5		light brown, grey - sandy clay, clayey sand, sand medium to coarse 6.5'			easy drilling
	10		greyish brown - alternating between clay and sandy clay, sand fine to medium 9.5'			difficult drilling
	15		tan - clayey sand, sandy clay, sand is very fine, percentage of clay about 50% 14.5'			difficult drilling
	20		tan - clayey, silty very fine sand, percentage of clay way down from last sample 19.5'			
	25		tan - same color but much greater percentage of coarse angular material			loss of drilling fluid
	30					

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 72.68'		Hole No. SCOW6	
PROJECT Fort Stewart RCRA Studies			INSTALLATION Fort Stewart, GA		SHEET 2 OF 2 SHEETS	
LOCATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			dark grey - fine to medium sandy silt 33.0'			very soft, easy drilling
	35		Olive - sandy silt, muscovite present			very hard, compacted, difficult drilling

DIAGRAM NOT TO SCALE

DRILLING LOG		DIVISION		INSTALLATION		SHEET	
		South Atlantic		Fort Stewart, GA		1 of 2 sheets	
1. PROJECT Fort Stewart RCRA Studies				10. SIZE AND TYPE OF BIT 2.5"			
2. LOCATION (Coordinates or Station) N684690.69 E664922.20				11. DATUM FOR ELEVATION SHOWN (TDW or MSL) MSL			
DRILLING AGENCY Paul N. Clawson				12. MANUFACTURER'S DESIGNATION OF DRILL SIMCO			
4. HOLE NO. (As shown on drawing title and title number) SC-0W5				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN 0			
3. NAME OF DRILLER Paul N. Clawson				14. TOTAL NUMBER CORE BOXES 0			
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 0			
7. THICKNESS OF OVERBURDEN				16. DATE HOLE 4/23/80			
8. DEPTH DRILLED INTO ROCK 0'				17. ELEVATION TOP OF HOLE 72.36'			
9. TOTAL DEPTH OF HOLE 35'				18. TOTAL CORE RECOVERY FOR BORING 2			
13. SIGNATURE OF INSPECTOR <i>Paul N. Clawson</i>							

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVER- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, mud loss, depth of penetration, etc. if significant) g
			Dark brown - fine to medium sand 2.0'			easy drilling
			Dark brown-peaty fine to medium sand 4.0'			easy drilling
	5		Pale yellow-clayey fine to medium sand with coarse sand 6.5'			easy drilling
			Orange-yellow - sandy (fine to medium) clay 8.5'			difficult drilling
	10					
	15		light grey - fine sandy silty clay; percentage of clay increasing up to 18 ft. 18.0'			easy drilling
	20		light grey - medium to coarse sandy clay, alternating amounts of standard clay with coarse angular material			
	25		light grey - fine to medium sandy clay; percentage of coarse material increasing with depth up to 30' 30.0'			
	30		dark grey - medium to coarse sandy silt, muscovite present			

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE

68.62'

Hole No. SC-0336

PROJECT

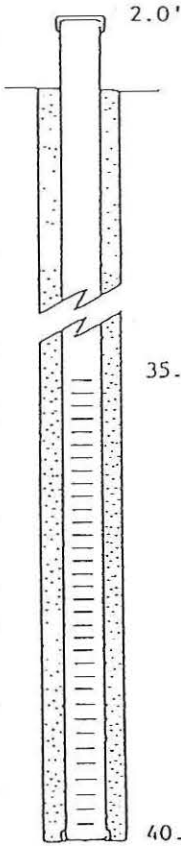
Fort Stewart RCRA Studies

INSTALLATION

Fort Stewart, GA

SHEET 2

OF 2 SHEETS

VARON a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVER. (RY) e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	35		35.5'			
			Dark grey - slightly silty clayey medium to coarse sand 37.5'			
	40		Dark grey-clayey fine sandy silt			very hard, difficult drilling
						

DRAWN NOT TO SCALE

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Source: Environmental Science and Engineering 1982

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 2 SHEETS	
1. PROJECT		South Atlantic		Fort Stewart, GA			
2. LOCATION (Coordinates or Station)		N685459.00 E663601.93		10. SIZE AND TYPE OF BIT 2.5"			
3. DRILLING AGENCY		Paul N. Clawson		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)		MSL	
4. HOLE NO. (As shown on drawing title and title number)		SC-0W7		12. MANUFACTURER'S DESIGNATION OF DRILL		SIMCO	
5. NAME OF DRILLER		Paul N. Clawson		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 0 UNDISTURBED 0	
6. DIRECTION OF HOLE		☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.		14. TOTAL NUMBER CORE BOXES			
7. THICKNESS OF OVERBURDEN				15. ELEVATION GROUND WATER			
8. DEPTH DRILLED INTO ROCK 0'				16. DATE HOLE		STARTED 4/28/80 COMPLETED 4/29/80	
9. TOTAL DEPTH OF HOLE 35'				17. ELEVATION TOP OF HOLE 68.12'			
				18. TOTAL CORE RECOVERY FOR BORING		1	
				19. SIGNATURE OF INSPECTOR		Robert McQueen	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	1 CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of mudstone, etc., if significant)	
			Tan - very slightly clayey fine to medium sand 3.0'				
	5		dark brown very slightly clayey medium to coarse sand 7.0'			slight loss of drilling fluid	
			Tan-clayey medium to coarse sand, about 40% clay 9.0'			difficult drilling	
	10		Orange-clayey medium to coarse sand 11.5'			difficult drilling	
	15		Light grey-fine to medium sandy clay with very slight amount of coarse angular material				
	20		Light grey - clayey medium to coarse sand with very slight amount of angular gravel				
	25		light grey-clayey medium to coarse sand with very slight amount of coarse material, amount of clay increasing 25.0'				
	30		light grey-fine to medium sandy clay, amount of clay increasing 30.0'				
			Dark grey-fine to medium clayey silt, muscovite present 32.5'			very soft, easy drilling	

APPENDIX 4.25

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Hole No. A-23

DRILLING LOG		DIVISION <u>SOUTH ATLANTIC</u>		INSTALLATION <u>FT. STEWART</u>		SHEET / OF 1 SHEETS	
1. PROJECT <u>WATER POLLUTION CONTROL</u> <u>WRIGHT AAF SEWAGE PLANT</u>				10. SIZE AND TYPE OF BIT <u>4" HAND AUGER</u>			
2. LOCATION (Coordinates or Section) <u>SEE PLAN</u>				11. DATUM FOR ELEVATION SHOWN (TBM = 131)			
3. DRILLING AGENCY <u>SAVANNAH DISTRICT</u>				12. MANUFACTURER'S DESIGNATION OF DRILL <u>N.A.</u>			
4. HOLE NO. (As shown on drawing title and file number) <u>A-23</u>				13. TOTAL NO. OF OVER- BURDEN SAMPLES TAKEN		DISTURBED <u>3</u>	
5. NAME OF DRILLER <u>T.W. SCOTT</u>				14. TOTAL NUMBER CORE BOXES			
6. DIRECTION OF HOLE ☒ CENTRAL ☐ INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER <u>20.9</u>			
7. THICKNESS OF OVERBURDEN				16. DATE HOLE STARTED <u>3 MAY 1976</u> COMPLETED <u>3 MAY 1976</u>			
8. DEPTH DRILLED INTO ROCK				17. ELEVATION TOP OF HOLE <u>26.4</u>			
9. TOTAL DEPTH OF HOLE <u>10.0'</u>				18. TOTAL CORE RECOVERY FOR BORING			
				19. SIGNATURE OF INSPECTOR <u>Charles H. Deaver</u>			

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	WATER CONTENT % Moisture Content	BOX OR SAMPLE NO.	REMARKS (Drilling time, water level, depth of underdrift, etc., if significant)
			SM - DARK GREY AND BLACK FINE SILTY SAND.		1	
	5		SC - GREY AND TAN FINE CLAYEY SAND.	24.5	2	
	10			20.3	3	
			NOTE: Soils are classified in accordance with the Unified Soil Classification System. W.T. <u>5.5'</u> Date <u>3 MAY 1976</u> Depth to water during drilling W.T. <u>5.5'</u> Water table reading <u>2.4</u> min. after hole completed.			

Source: Fort Stewart 1990

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DRILLING LOG		DIVISION		INSTALLATION		Hole No. A-22	
1. PROJECT WATER POLLUTION CONTROL		SOUTH ATLANTIC		F.T. STEWART		SHEET 1 OF 1 SHEETS	
2. LOCATION (Coordinates or Station)		WRIGHT AAF SEWAGE PLANT		10. SIZE AND TYPE OF BIT 4" HAND AUGER		11. DATUM FOR ELEVATION (BOM - MSL)	
3. DRILLING AGENCY		SEE PLAN		12. MANUFACTURER'S DESIGNATION OF DRILL		MSC	
4. HOLE NO. (As shown on drawing title and file number)		SAVANNAH DISTRICT		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 3 UNDISTURBED	
5. NAME OF DRILLER		A-22		14. TOTAL NUMBER CORE BOXES		15. ELEVATION GROUND WATER 22.0	
6. DIRECTION OF HOLE		T.W. SCOTT		16. DATE HOLE		STARTED 3 MAY 1976 COMPLETED 3 MAY 1976	
7. THICKNESS OF OVERBURDEN		VERTICAL ☒ INCLINED ☐ DEC. FROM VERT.		17. ELEVATION TOP OF HOLE		25.0	
8. DEPTH DRILLED INTO ROCK		10.0'		18. TOTAL CORE RECOVERY FOR BORING		19. SIGNATURE OF INSPECTOR	
9. TOTAL DEPTH OF HOLE		10.0'		G. M. Deaver			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	7-BOXE ACCORD-TOY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
			SM-DARK GREY FINE SILTY SAND.	7.9	1		
	5		SC-GREY AND TAN FINE CLAYEY SAND.	18.5	2		
	10			19.9	3		
			NOTE: Soils listed classified in accordance with the Unified Soil Classification System.				
					W.T. - 3.0'		
					Exp. 3 MAY 1976		
					Depth - 3.0'		
					24		

Source: Fort Stewart 1990

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APPENDIX 4.25

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DRILLING LOG		DIVISION		INSTALLATION		Hole No. CS-3	
1. PROJECT WATER POLLUTION CONTROL		SOUTH ATLANTIC		FT. STEWART		SHEET 1 OF 1 SHEETS	
2. LOCATION (Coordinate or Station)		SEE PLAN		10. SIZE AND TYPE OF BIT 1 1/2" ID. SPUR FLUTE		11. DATUM FOR ELEVATION (SHOW TYPE - MSL)	
3. DRILLING AGENCY		SAVANNAH DISTRICT		12. MANUFACTURER'S DESIGNATION OF DRILL		CME-45	
4. HOLE NO. (As shown on drawing title and file number)		CS-3		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		6	
5. NAME OF DRILLER		T.W. SCOTT		14. TOTAL NUMBER CORE BOXES		1	
6. DIRECTION OF HOLE		☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		23.7	
7. THICKNESS OF OVERBURDEN				16. DATE HOLE		STARTED 3 MAY 1976 COMPLETED 3 MAY 1976	
8. DEPTH DRILLED INTO ROCK				17. ELEVATION TOP OF HOLE		25.7	
9. TOTAL DEPTH OF HOLE		25.5'		18. TOTAL CORE RECOVERY FOR BORING		1	
				19. SIGNATURE OF INSPECTOR		Schubert M. Davis	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	MOORE BOX OR RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
			SM - BROWN AND BLACK SILTY FINE SAND, SLIGHTLY CLAYEY.	10.0	1	9	
			SC - GREY SILTY CLAYEY SAND, SATURATED, GIVES OFF SULFURIOUS ODOR.	21.5	2	Lab Classification	
			SOFT ZONE FROM 3' TO 6'.			Sample No. 1 SM	
						2 SC-H	
			CLAY CONTENT DECREASES.	16.6	3	30	
			SP - GREY FINE TO MEDIUM SAND, SATURATED.	16.4	4	29	
			SC - GREY CLAYEY SAND.	19.1	5	17	
			TAN AND RED.		6	19	
						17	
						9	
						11	
						9	
						20	
						15	
						27	
						26	
BLOWS PER FOOT:							
Number required to drive 1 1/2" ID split spoon with 14 lb. hammer falling 30".							
NOTE: Soils listed classified in accordance with the Unified Soil Classification System.							
				W.T. 2.0'			
				Water table reading			
				4 hrs. after hole completed.			

Source: Fort Stewart 1990

FST-020

APPENDIX 4.25

DRILLING LOG		DIVISION		INSTALLATION		Hole No. <u>A-21</u>	
PROJECT <u>WATER POLLUTION CONTROL</u>		<u>SOUTH ATLANTIC</u>		<u>FT. STEWART</u>		SHEET <u>1</u>	
LOCATION <u>WRIGHT AAF SEWAGE PLANT</u>						OF 1 SHEETS	
1. LOCATION (Coordinates as Station)		2. DRILLING AGENCY		10. SIZE AND TYPE OF BIT		11. DATUM FOR ELEVATION (SHOW HOLE NO.)	
<u>SEE PLAN</u>		<u>SAVANNAH DISTRICT</u>		<u>4" HAND AUGER</u>		<u>M.S.L.</u>	
3. HOLE NO. (As shown on drawing title and file number)		4. NAME OF DRILLER		12. MANUFACTURER'S DESIGNATION OF DRILL		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	
<u>A-21</u>		<u>T.W. SCOTT</u>		<u>N.A.</u>		<u>5</u>	
5. DIRECTION OF HOLE		6. THICKNESS OF OVERBURDEN		14. DATE HOLE		15. ELEVATION GROUND WATER	
☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				<u>3 MAY 1976</u>		<u>23.0</u>	
7. TOTAL DEPTH OF HOLE		8. DEPTH DRILLED INTO ROCK		16. ELEVATION TOP OF HOLE		17. TOTAL CORE RECOVERY FOR BORING	
<u>10.0'</u>				<u>29.0</u>		<u>1</u>	
9. SIGNATURE OF INSPECTOR		10. SIGNATURE OF INSPECTOR		11. SIGNATURE OF INSPECTOR		12. SIGNATURE OF INSPECTOR	
<u>Charles M. Dwyer</u>		<u>Charles M. Dwyer</u>		<u>Charles M. Dwyer</u>		<u>Charles M. Dwyer</u>	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	WATER RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of water table, etc., if significant)	
			SM - BROWN AND BLACK FINE SILTY SAND.	9.5	1	NOTE: DRILLED ON EXISTING DIKE OF OXIDATION POND.	
			SC - TAN AND GREY CLAYEY FINE SAND.	20.0	2	Lab Classification Sample No. 1 SM-SC 2 SC-H	
			SM - DARK GREY FINE SILTY SAND.	8.1	3		
			NOTE: Soils field classified in accordance with the Unified Soil Classification System.		T.T. <u>6.0'</u> Date <u>3 MAY 1976</u> Depth to water during drilling W.T. <u>6.0'</u> Water table reading <u>24</u> hrs. after hole completed.		

Source: Fort Stewart 1990

FST-020

FST-020

DRILLING LOG		DIVISION	INSTALLATION	Hole No. OW-7	SHEET 1
1. PROJECT WRIGHT AAF SEWAGE TREATMENT PLANT		34D	FT. ST. WARE, GA.	OF 1 SHEETS	
2. LOCATION (Coordinate as Station)					
3. DRILLING AGENCY Savannah District					
4. HOLE NO. (As shown on drawing title and file number)		OW-7			
5. NAME OF DRILLER P. RAVNTHRE					
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.					
7. THICKNESS OF OVERBURDEN					
8. DEPTH DRILLED INTO ROCK					
9. TOTAL DEPTH OF HOLE 18.0'					
10. SIZE AND TYPE OF BIT 1 3/8" SPLIT SPOON					
11. DATUM FOR ELEVATION SHOWN (TBM or BSL)					
12. MANUFACTURER'S DESIGNATION OF DRILL					
13. TOTAL NO. OF OVER- : DISTURBED : UNDISTURBED BURDEN SAMPLES TAKEN : 4 : 0					
14. TOTAL NUMBER CORE BOXES					
15. ELEVATION GROUND WATER					
16. DATE HOLE : STARTED : COMPLETED 19 APR. 79 : 19 APR. 79					
17. ELEVATION TOP OF HOLE + 28.8					
18. TOTAL CORE RECOVERY FOR BORING					
19. SIGNATURE OF INSPECTOR C. Smith					

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	TO CORRECTION	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
28.8			SH- DARK GRAY FINE TO MEDIUM SAND WITH ROOTS AND OCCASIONAL TAN GRAVEL. SC SANDS, SL. MIST.	5.4	1	Sample Lab No. Class LL PL PT 1 SP-SAT Non Plastic
21.7			MIET LG- 8.5' 9.5	20.4	2	2 SC-H 89 32 57
20.2			CL- MISTY LG. SAND AND TAN SANDY CLAY, STIFF, SL. MIST. 5.0	13.2	3	3 SC-H 84 20 64
			SC- TAN AND GRAY CLAY SAND, MEDIUM TO COARSE WITH OCCASIONAL GRAVEL, SL. MIST. GRAY, WHITE AND TAN BELOW 8.0'		4	4 SP-SAT Non Plastic
			NOT WITH INCREASE IN GRAVEL BELOW 9.0'. DECREASE IN CLAY BELOW 10.5' 11.5			W.T. 9.0'
13.7			SW- TAN AND YELLOW W/LL CLAYED SAND, SL. CLAYY, SATURATED WITH FINE GRAVEL AND OCCASIONAL TAN SANDS OF FINE GRAVEL			Date 17 APR. 79
			TAN AND GRAVEL BELOW 17.0' BOTTOM AT 18.0'			Depth to water during drilling
7.2						* With a trace of roots and rock fragments.
			NOTE: Soils field classified in accordance with the Unified Soil Classification Systems.			BLOWS PER FOOT: Number required to drive 1 3/8" ID splitspoon w/140 lb. hammer falling 30".
						Also: Finetailed to 18.0' with "RIGID" MOTOR EXTENSION AND SET 20.0' 0" C MC CASING - BOTTOM AT 16.5 AFTER PLUGGING WITH CLEAN WATER.

APPENDIX 4.25

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DRILLING LOG		DIVISION	INSTALLATION	Hole No. OW-4	SHEET 1 OF 1 SHEETS	
1. PROJECT		340	FT. STEWART, GA.			
2. LOCATION (Coordinates or Section)		10. SIZE AND TYPE OF BIT 1 1/2" SPLIT SPOON				
3. DRILLING AGENCY		11. DATE FOR ELEVATION SHOWN (1000 = MSL)				
4. HOLE NO. (As shown on drawing (1110) and file number)		MSL				
5. NAME OF DRILLER		12. MANUFACTURER'S DESIGNATION OF DRILL				
6. DIRECTION OF HOLE		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN				
7. THICKNESS OF OVERBURDEN		14. TOTAL NUMBER CORE BOXES				
8. DEPTH DRILLED INTO ROCK		15. ELEVATION GROUND WATER				
9. TOTAL DEPTH OF HOLE		16. DATE HOLE				
		17. ELEVATION TOP OF HOLE				
		18. TOTAL CORE RECOVERY FOR BORING				
		19. SIGNATURE OF INSPECTOR				
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	FOOT-CORE RECOVERY (%)	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of overburden, etc., if significant)
25.7			SH-CLAY, BROWN SILTY FINE TO MEDIUM SAND WITH SC SANDS AND ROOTS, MOIST.	8.2	1	Sample Lab No. CLASS LL PL PE B
22.7			CL-CLAY, BROWN AND TAN VERY SANDY CLAY, MOIST.	18.1	2	1 SMT Not Performed
19.7			SC-CLAY CLAYEY SAND, MEDIUM TO COARSE WITH OCCASIONAL GRAY CL. POCKETS, MOIST.	14.0	3	2 SC-H 59 20 39
			CLAY-WHITE BELOW 9.0'			3 SC-H 73 23 50
			TAN-WHITE WITH SAND CAUSAL BELOW 10.5'	18.1	4	5 SC-H
			TAN-ORANGE, FINE TO MEDIUM, NOT DECAHED CLAY BELOW 15.5'			W.T. 11.0'
8.7			SP-TENACIOUS FINE TO MEDIUM BOLDY GRADED SAND, SUBGRADED	13.6	5	Date 18 APR 79
7.7			BOTTOM AT 18.0'			Depth to water during drilling
			NOTE: Soils field classified in accordance with the Unified Soil Classification Systems.			* with roots + Lab Visual/Class only
						BLOWS PER FOOT:
						required to drive 1 3/8" ID splitspoon #140 lb. falling 30".
						NOTE: Casing 100.0' and "POWER" AFTER SALVAGE AND SET 200' OF C- AND CASING - BOTTOM AT 17.5 WITH 1.7" SPIKE-UP AFTER PUSHING WITH CLEAN WATER.

APPENDIX 4.25

Hole No. OW-5

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS		
1. PROJECT WRIGHT AAF SEWAGE TREATMENT PLANT		SAO	FT. STEWART, GA.			
2. LOCATION (Coordinates as Station)			10. SIZE AND TYPE OF BIT 1 1/2" SOLID SPDR			
3. DRILLING AGENCY SCE PLAN			11. DATUM FOR ELEVATION SHOWN (TBM or MSL)			
4. HOLE NO. (As shown on drawing title and file marked)		OW-5	12. MANUFACTURER'S DESIGNATION OF DRILL FALLING 3H			
5. NAME OF DRILLER P. ROUNTREE			13. TOTAL NO. OF OVER- BURDEN SAMPLES TAKEN	DISTURBED 4 UNDISTURBED 0		
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.			14. TOTAL NUMBER CORE BOXES	1		
7. THICKNESS OF OVERBURDEN			15. ELEVATION GROUND WATER			
8. DEPTH DRILLED INTO ROCK			16. DATE HOLE	STARTED 18 APR. 79 COMPLETED 18 APR. 79		
9. TOTAL DEPTH OF HOLE 18.0'			17. ELEVATION TOP OF HOLE	+ 24.1'		
			18. TOTAL CORE RECOVERY FOR BORING	5		
			19. SIGNATURE OF INSPECTOR	Clad Smith		
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	CORE RECOVERY % e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of mudstone, etc., if applicable) g
24.1			SP - GRAY-BROWN SILTY FINE TO MEDIUM SAND WITH RAFTS, SL. MUDST.	11.1	1	Sample Lab
22.1			SC - MOTTLED TAN, ORANGE AND GRAY, MEDIUM TO COARSE CLAYEY SAND WITH OCCASIONAL GRAVEL.	17.5	2	ch Class LL PL PI
	5		GRAY BELOW 4.5'			2 50#
			TAN-GRAY WITH OCCASIONAL ORGANIC TRACES BELOW 6.0'			3 50#
	10		GRAVEL SANDS 7.0-12.0'			4 50# Non Plastic
			LIANT GRAY-TAN AND NOT BELOW 10.5'	16.6	3	W.T. 10.5'
10.6			SP - TAN-ORANGE FINE TO MEDIUM POSSIBLY GRADED SAND, SL. CLAYEY, SATURATED.	13.5	4	Date 18 APR. 79
	15		- MEDIUM TO COARSE SAND 15.0'			Depth to casing during drilling
6.1			BOTTOM AT 18.0'			
	10		NOTE: Field classified in accordance with the Unified Classification Systems.			
				5		
						BLANKS Per FOOT: Number of blows to drive 1 3/8" 10 S.W. 1/2" 10" w/140 lb. hammer falling 30".
						NOTE: RISE TANG TO 18.0' WITH "REVERT" AFTER EXITS FROM AND SET 200' OF 4" PVC CASING - BOTTOM AT 18.0' WITH 1.5" APPLICATOR PLUSSING WITH CLEAR WATER.

Source: Fort Stewart 1990

FST-020

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DRILLING LOG		DIVISION		INSTALLATION		Hole No. OW-2	
1. PROJECT		2. LOCATION (Coordinates or Station)		10. SIZE AND TYPE OF BIT		11. DAY OF ELEVATION SHOWN (TBM - WCL)	
3. DRILLING AGENCY		4. HOLE NO. (As shown on drawing title and file number)		12. MANUFACTURER'S DESIGNATION OF DRILL		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	
5. NAME OF DRILLER		6. DIRECTION OF HOLE		14. DATE HOLE		15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN		8. DEPTH DRILLED INTO ROCK		16. DATE HOLE		17. ELEVATION TOP OF HOLE	
9. TOTAL DEPTH OF HOLE				18. TOTAL CORE RECOVERY FOR BORING		19. SIGNATURE OF INSPECTOR	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	LOCAL RECORD NO.	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of penetration, etc., if significant)	
27.1			LT. GRAY BROWN SILTY FINE SAND WITH ROOTS, SL. MOIST.	10.6	1		
28.6	5		SC. MOTTLED CLAY, TAN AND RED CLAYEY SAND, MODERATE TO COARSE. NOT OCCASIONAL FINE GRAVEL, MOIST.	14.7	2	W.T. 17.0'	
	10		TAN BROWN T.S.			Date 16 APR 79	
	15		TAN-ORANGE, WET BELOW 12.0'		3	Depth to water during drilling	
	20		GRAY-TAN, DECREASE CLAY BELOW 15.5'			Sample Lab	
7.1	20		BOTTOM AT 18.0'	12.7	4	No. CLASS LL PL PI	
			BOYS PER FOOT: Number required to drive 1 3/8" ID splitspoon w/140 lb. hammer falling 30".			1st SH New Plastic	
						2 SH H 73 26 47	
						4 SH Not performed	
						NOTE: Soils field classified in accordance with the Unified Soil Classification Systems.	
						NOTE: FLUTTERED TO 18.0' WITH "ROCK" AFTER 30' DOWN.	
						NOTE: THIS HOLE WAS Cased WITH 20.0' OF PVC PIPE WITH 2.0" STICK-UP - BOTTOM AT 17.8' AFTER FLUSHING WITH CLEAR WATER.	
						* With a trace of roots / rock fragments	

Source: Fort Stewart 1990

FST-020

APPENDIX 4.25

DRILLING LOG		DIVISION		INSTALLATION		Hole No. OW-3		SHEET 1	
1. PROJECT		3AD		FT. STEWART, GA.		OF 1 SHEETS			
2. LOCATION (Coordinates or Station)				10. SIZE AND TYPE OF BIT 1 3/8" SPLIT SPOON					
3. DRILLING AGENCY		SAVANNAH DISTRICT		11. DATUM FOR ELEVATION SHOWN (TBM - MSL)		MSL			
4. HOLE NO. (As shown on drawing title and file number)		OW-3		12. MANUFACTURER'S DESIGNATION OF DRILL		FALLING 811			
5. NAME OF DRILLER		P. BOUTREE		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN		5		UNOBTAINED 0	
6. DIRECTION OF HOLE		☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.		14. TOTAL NUMBER CORE BOXES		—			
7. THICKNESS OF OVERBURDEN				15. ELEVATION GROUND WATER		1			
8. DEPTH DRILLED INTO ROCK				16. DATE HOLE		17 APR. 79		COMPLETED 10 APR. 79	
9. TOTAL DEPTH OF HOLE		10.0'		17. ELEVATION TOP OF HOLE		+ 25.4'			
				18. TOTAL CORE RECOVERY FOR BORING		2			
				19. SIGNATURE OF INSPECTOR		Card Smith			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	— CORE — RECON. COR.	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of penetration, etc., if applicable)			
25.4			SM - GRAY AND TAN SILTY SAND WITH ROOTS, SL. MOIST.	10.0	1	Sample Lab	4		
23.4			SC - MOTTLED GRAY, TAN, ORANGE CLAYEY SAND, MEDIUM TO COARSE MOIST.	19.0	2	NE CLARK LL PL PL	4		
	5		GRAY BELOW 4.5'	14.1	3	2 SP-H 57 25 22	10		
	10		OCCASIONAL CHANNEL BELOW 7.5'			3 SC-H 92 29 63	35		
	15		DEGRADED CLAY BELOW 9.0'			4 SP-SH Non Plastic	40		
	20		GRAY AND TAN, FINE TO MEDIUM BELOW 10.5'			5 SM Not Performed	57		
13.4			SW - GRAY AND TAN W/CL LADDS SAND WITH SOME CHANNEL, SATURATED	15.0	4	W.C. 11.5'	39		
10.4			SC - TAN-ORANGE CLAYEY SAND, FINE TO MEDIUM, WET.	16.2	5	Date 17 APR. 79	23		
7.4			BOTTOM AT 10.0'			Depth to water during drilling	36		
	20		NOTE: Soils field classified in accordance with the Unified Soil Classification System.				37		
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US ARMY ENVIRONMENTAL HYGIENE AGENCY

APPENDIX 4.17

DRILLING LOG

(The proponent of this form is HSHB-ES)

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PROJECT 37-26-0127 DATE 31 March 1987
 LOCATION Ft Stewart, GA DRILLERS Hoddinott, Smithson,
FST-014 Maners
 DRILL RIG Acker ADII BORE HOLE BH 9

DEPTH	SAMPLE TYPE	DESCRIPTION	REMARKS
	BLOWS PER 6 IN		
	061	Brown (10yr4/3) medium to fine sand	Water encountered @ 5'
		Yellowish brown (10yr5/8) medium to fine sand	
		Very pale brown (10yr8/3) medium sand	
5	062	Light gray (10yr7/2) medium sand	
		BOH	
10			063 is Quality Control sample on the SP washing

AEHA Form 130, 1 Nov 82

Replaces HSHB Form 18, 1 Jun 80, which will be used.

Source: U. S. Army Environmental Hygiene Agency 1987

APPENDIX 4.25

DRILLING LOG		DIVISION		INSTALLATION		Hole No. 04-1	
PROJECT		3AD		FT STEWART, GA		SHEET 1 OF 1 SHEETS	
1. LOCATION (Consideration of Station)				10. SIZE AND TYPE OF BIT 1 1/2" SPLITSPON			
2. DRILLING AGENCY				11. DATE FOR ELEVATION SHOWN (TSS - MSL)			
SAVANNAH DISTRICT				N.S.L.			
3. HOLE NO. (A - when an existing hole and (H) - new hole)				12. MANUFACTURER'S DESIGNATION OF DRILL			
OW-1				FALLING 3M			
4. NAME OF DRILLER				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN			
P. ROUATRE				DISTURBED 4 UNDISTURBED 0			
5. DIRECTION OF HOLE				14. TOTAL NUMBER CORE BOXES			
☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER			
6. THICKNESS OF OVERBURDEN				16. DATE HOLE			
7. DEPTH DRILLED INTO ROCK				STARTED 15 APR 79 COMPLETED 15 APR 79			
8. TOTAL DEPTH OF HOLE				17. ELEVATION TOP OF HOLE + 37.6'			
16.5'				18. TOTAL CORE RECOVERY FOR BORING			
				19. SIGNATURE OF INSPECTOR			
				Cord Smith			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	COND. RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of penetration, etc., if significant)	
27.6			SM - GRAY-BROWN SHY FINE TO MEDIUM SAND WITH ROOTS AND OCCASIONAL COARSE SAND, SL. MOIST.	12.0	1	Sample Lab No. CLS 11 PL PL 7	
22.6	5		SC - GRAY, TAN AND ORANGE CLAYEY SAND, MEDIUM TO COARSE WITH FINE GRAVEL, MOIST. GRAY AND TAN BELOW 6.0'	15.5	2	1st SC 30 21 9	
	10		TAN-YELLOW WITH DECREASE IN CLAY BELOW 9.0'			2nd SC-H 74 25 49	
	15		TEN-YELLOW, AND WHITE BELOW 10.5'	18.1	3	3 SC 4th performed	
11.1	20		BOTTOM AT 16.5'		4		
			BLOWS PER FOOT: Number required to drive 1 5/8" ID split spoon w/140 lb. hammer falling 30".			NOTE: Soils field classified in accordance with the Unified Soil Classification System. NOTE: FIRST 140 TO 170 WIND "REVERT" AFTER SPLITSPON. NOTE: THIS HOLE WAS Cased WITH 18.0" OF 6" DUC PIPE - AFTER SETTING Casing HOLE WAS WASHED TO 17.0' TO ALLOW FOR PILING OF SAND - 1.0' STICK-UP OF DUC. BOTTOM AT 17.0' AFTER FLUSHING WITH CLEAN WATER. * With a trace of rock fragments. ** With a trace of roots and rock fragments	

Source: Fort Stewart 1990

FST-020

US ARMY ENVIRONMENTAL HYGIENE AGENCY

APPENDIX 4.17

DRILLING LOG

(The proponent of this form is HSHB-ES)

341

PROJECT 37-26-0127 DATE 31 March 1987
 LOCATION Ft Stewart, GA DRILLERS Hoddinott, Smithson,
FST-014 Maners
 DRILL RIG Acker ADII BORE HOLE BH 7

DEPTH	SAMPLE TYPE	DESCRIPTION	REMARKS
	BLOWS PER 6 IN		
	057	Black fine sand	
		Yellow (10yr6/7) fine sand	
		White (10yr8/2) fine sand	
		Gray (10yr7/1) fine sand	
5	058	BOH	Water encountered 4' Black subsurface layer in bottom of SP
10			

AEHA Form 130, 1 Nov 82

Replaces HSHB Form 18, 1 Jun 80, which will be used.

Source: U. S. Army Environmental Hygiene Agency 1987

US ARMY ENVIRONMENTAL HYGIENE AGENCY

APPENDIX 4.17

DRILLING LOG

(The proponent of this form is HSHB-ES)

PROJECT 37-26-0127 DATE 31 March 1987
 LOCATION Ft Stewart, GA DRILLERS Hoddinott, Smithson,
FST-014 Maners
 DRILL RIG Acker ADII BORE HOLE' BH 8

DEPTH	SAMPLE TYPE	DESCRIPTION	REMARKS
	BLOWS PER 6 IN		
	059	Black sand	Water encountered @ 5'
		Yellow (10yr7/6) medium sand	
		Light gray (10yr7/2) medium sand	
5	060		
		BOH	
10			

AEHA Form 130, 1 Nov 82

Replaces HSHB Form 78, 1 Jun 80, which will be used.

Source: U. S. Army Environmental Hygiene Agency 1987

US ARMY ENVIRONMENTAL HYGIENE AGENCY

APPENDIX 4.17

DRILLING LOG

(The proponent of this form is HSHB-ES)

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PROJECT 37-26-0127 DATE 31 March 1987
 LOCATION Ft Stewart, GA DRILLERS Hoddinott, Smithson,
FST-014 Maners
 DRILL RIG Acker ADII BORE HOLE BH 5

DEPTH	SAMPLE TYPE	DESCRIPTION	REMARKS
	BLOWS PER 6 IN		
5	050/051	Ash + burn residue + sand.	052 is a sample of the burn residue
		Brown (10yr5/3) medium sand	
		Strong brown(7.5yr5/8)loamy sand	
		Light yellowish brown(10yr6/4)medium sand	
		White (10yr8/2) medium sand	
10		Black medium sand	
	053/054	BOH	

AEHA Form 130, 1 Nov 82

Replaces HSHB Form 78, 1 Jun 80, which will be used.

Source: U. S. Army Environmental Hygiene Agency 1987

US ARMY ENVIRONMENTAL HYGIENE AGENCY

APPENDIX 4.17

DRILLING LOG

(The proponent of this form is HSHB-ESI)

PROJECT 37-26-0127 DATE 31 March 1987
 LOCATION Ft Stewart, GA DRILLERS Hoddinott, Smithson,
EFT-014 Maners
 DRILL RIG Acker ADII BORE HOLE BH 6

DEPTH	SAMPLE TYPE	DESCRIPTION	REMARKS
	BLOWS PER 6 IN.		
5	055	Dark grayish brown(10yr4/2)medium sand	1"thick layer of black residue 6" Below surface
		Yellow (10yr 7/6) fine sand	
		White (10yr8/2) very fine sand	
		Brownish yellow (10yr6/8) fine sand	
		White (10yr8/2)medium sand	Water encountered @5' black sand was found at the extreme lower end of the SP.
	056	BOH	
10			

AEHA Form 130, 1 Nov 82

Replaces HSHB Form 78, 1 Jun 80, which will be used.

Source: U. S. Army Environmental Hygiene Agency 1987

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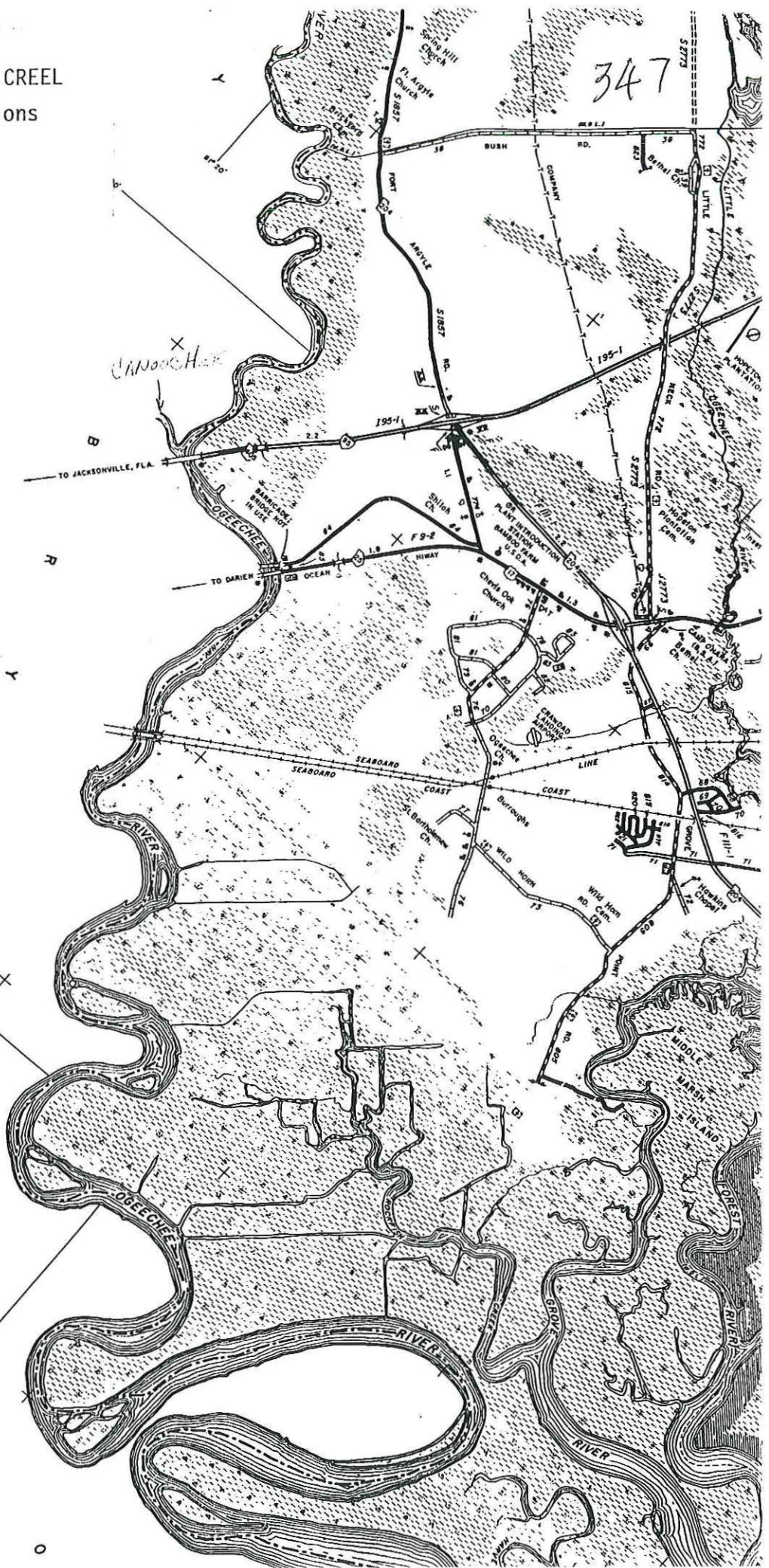
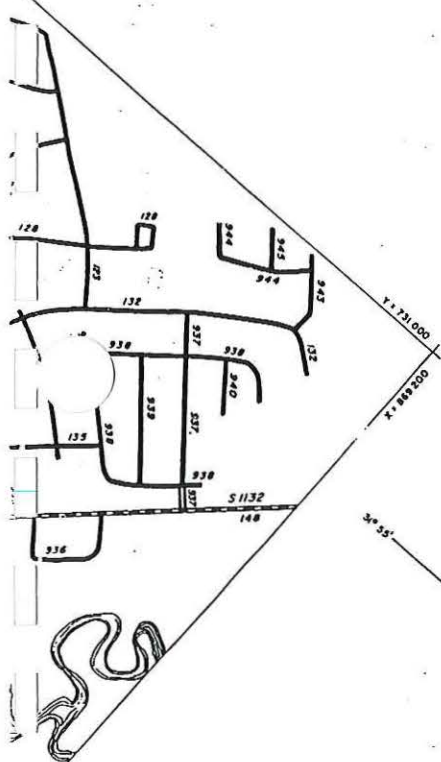
APPENDIX E
OGEECHEE RIVER CREEL REPORT

OCFEECHEE RIVER ROVING CREEL

Upper and Lower Sections
Combined

1989-90

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STUDY XIII: Savannah and Ogeechee River Creel Surveys

Study Objectives: To estimate current levels of angler harvest and compare to previous creel information and evaluate the effects of legislative/regulatory changes regarding the harvest of striped bass.

A. ACTIVITY

Roving creel designs, species lists and route maps were prepared for Savannah and Ogeechee river estuarine surveys. A creel clerk was located, interviewed and hired for each river. Clerks were supervised during the five-month creel data collection period scheduled from October to March. Data were reviewed and summarized periodically throughout the collection period to identify and correct problems that might be occurring. Expansion of the data was conducted shortly after the completion of the creel data collection period. Tables and a summary report were prepared for this document.

B. TARGET DATES FOR ACHIEVEMENT AND ACCOMPLISHMENTS

The Savannah and Ogeechee river estuarine creel surveys were conducted on schedule between the months of October 1989 and March 1990. Data were summarized and prepared for expansion throughout the duration of the creel survey. Creel data expansion was accomplished shortly after completion of the data collection in March 1990. Tables and a brief summary of the results were to be included in this report. A full year access creel survey of the Ogeechee River freshwater fishery is scheduled to begin January 1, 1991.

C. SIGNIFICANT DEVIATIONS

None.

D. REMARKS

Both the Savannah River and Ogeechee River estuarine fisheries were surveyed from October 8, 1989 through March 10, 1990. Each river was surveyed by one roving creel clerk 5 days per week. Each river had two roving sections that were scheduled equally on a random basis. Survey area on the Savannah River extended from river kilometer 11 upstream to kilometer 44 and on the Ogeechee River from kilometer 20 to kilometer 61. The major emphasis of these surveys was to monitor striped bass fished-for effort and harvest. Other species of interest were included in each survey (Tables 2 and 3).

This was the first in a series of seasonal roving creel surveys to be repeated every third year in an attempt to monitor changes in the estuarine fisheries of each river. Angler harvest on the Savannah River during the 5-month period totaled an estimated 6,572 fish compared with an estimated 9,372 fish harvested from the Ogeechee River. The top three species harvested from the Savannah River were silver perch, spotted seatrout, and channel catfish (Table 2). These three species represented nearly 75% of the total number of fish harvested from the Savannah River

Table 2. Savannah River roving creel survey harvest estimates for the period from October 8, 1989 to March 10, 1990. T(trace) equals values less than .05 percent, .005 No/h, .005 kg/h, .005 No/ha, or .005 kg/ha.

Species	Number			Weight (kg)			Average Weight (kg)	Harvest rate ^b	
	Total	SE ^a	Percent	Total	SE ^a	Percent		No/h	kg/h
Striped bass	24	25	0.4	5	6	0.2	0.23	T	T
Spotted seatrout	1,649	1,326	25.1	743	597	28.4	0.45	0.16	0.07
Flounder	7	6	0.1	1	1	T	0.12	T	T
Silver perch	1,667	871	25.4	108	55	4.1	0.06	0.16	0.01
Red drum	905	554	13.8	670	452	25.6	0.74	0.09	0.06
Croaker/Spot	27	20	0.4	3	2	0.1	0.12	T	T
White catfish	161	56	2.5	136	46	5.2	0.84	0.02	0.01
Channel catfish	1,576	562	24.0	770	405	29.5	0.49	0.15	0.07
Redbreast sunfish	27	20	0.4	3	2	0.1	0.12	T	T
Others	528	219	8.0	176	76	6.7	0.33	0.05	0.02
Totals	6,572	3,161	100.0	2,615	1,285	100.0	0.40	0.63	0.25

^a Approximate standard errors

^b Rates based on estimated total fishing effort of 10,375 hours

Table 3. Ogeechee River roving creel survey harvest estimates for the period from October 8, 1989 to March 10, 1990. T(trace) equals values less than .005 No/h or .005 kg/h.

Species	Number			Weight (kg)			Average Weight (kg)	Harvest rate ^b	
	Total	SE ^a	Percent	Total	SE ^a	Percent		No/h	kg/h
Striped bass	255	133	2.7	265	122	13.3	1.04	0.02	0.02
Largemouth bass	155	96	1.7	98	56	4.9	0.63	0.01	0.01
Redbreast sunfish	1,718	503	18.3	210	64	10.5	0.12	0.12	0.01
Spotted sunfish	90	45	1.0	9	4	0.5	0.10	0.01	T
Bullheads	41	39	0.4	5	5	0.3	0.13	T	T
Channel catfish	2,498	970	26.7	289	76	14.5	0.12	0.17	0.02
White catfish	3,588	684	38.3	741	176	37.1	0.21	0.25	0.05
Red drum	47	39	0.5	39	31	1.9	0.82	T	T
Spotted seatrout	75	44	0.8	37	20	1.9	0.50	0.01	T
Others	905	330	9.7	303	81	15.2	0.34	0.06	0.02
Totals	9,372	1,343	100.0	1,996	259	100.0	0.21	0.66	0.14

^a Approximate standard errors

^b Rates based on estimated total fishing effort of 14,289 hours

estuary in this creel. The top three species harvested from the Ogeechee River were white catfish, channel catfish, and redbreast sunfish (Table 3). These three species represented over 83% of the total Ogeechee River estuarine harvest during this 5-month period. Fish harvested from the Savannah River were generally larger (0.40 kg) than those harvested from the Ogeechee River (0.21 kg).

Striped bass harvest was greater from the Ogeechee River as expected. Although the striped bass fishery was closed on the Georgia side of the Savannah River, some harvest was recorded. It is likely that most of this harvest was from South Carolina waters, but some illegally creeled fish were also included. The majority of the fish observed in the Savannah River creel were age I+ fish as indicated by the average weight (0.23 kg). Most, if not all, of these fish were from a special stocking of approximately 5,000 advanced-sized striped bass fingerlings released into the Savannah Back River in February of 1989. Although some striped bass harvest did occur on the Savannah River, 94% of the total catch of this species was released (Table 4). Protection of the Savannah River striped bass population apparently has been accomplished despite the failure of South Carolina officials to enact a fishing moratorium on striped bass harvest as Georgia did in 1989.

Striped bass size and creel limits for the other coastal rivers in Georgia were also revised in 1989. Anglers are now limited to only two striped bass of a minimum size of 22 inches per day. These new limits were in effect on the Ogeechee River during this creel survey. The percentage of striped bass caught and released in the Ogeechee River creel (69%) seems to indicate that these new limits are being observed by at least some anglers (Table 5). However, the average weight of a striped bass harvested from the Ogeechee River was only 1.04 kilograms (Table 3) while the average weight of a fish 22 inches in length is well over 2.0 kilograms. Greater public awareness of the new regulations and enforcement of the same is needed on the Ogeechee River and other coastal rivers of Georgia having fishable populations of striped bass.

The Ogeechee River experienced a higher level of sport fishing pressure with an estimated 14,375 hours expended over the five month creel survey period compared with 10,375 hours on the Savannah River. Forty-four percent of the effort expended on the Ogeechee River was directed toward a particular species. Of this "fished-for" effort, 47 percent was expended fishing for striped bass (Table 6). This was significantly higher than the 8.7 percent of fished-for effort directed toward striped bass on the Savannah River (Table 7). Anglers on the Savannah River, instead directed most of their fished-for effort (74%) toward spotted seatrout and red drum. The most successful anglers were those fishing for spotted seatrout in the Savannah River. Seventy-one percent of the total harvest of this species was caught by anglers fishing for them (Table 7).

E. RECOMMENDATIONS

1. Continue the Georgia moratorium on the harvest of striped bass from the Savannah River despite South Carolina's lack of action.

Table 4. Savannah River roving creel survey estimates for the period from October 8, 1989 to March 10, 1990. T(trace) equals values less than 0.005 No/h and kg/h.

Species	Fish harvested		Fish released		Total catch		Total catch rates ^b	
	No	kg	No	kg ^a	No	kg	No/h	kg/h
Striped bass	24	5.3	355	81.7	379	87.0	0.04	0.01
Spotted seatrout	1,649	742.6	195	87.6	1,844	830.2	0.18	0.08
Flounder	7	0.9	0	0	7	0.9	T	T
Silver perch	1,667	107.8	68	4.1	1,735	111.9	0.17	0.01
Red drum	905	669.8	41	30.6	946	700.3	0.09	0.07
Croaker/spot	27	3.1	32	3.9	59	7.0	0.01	T
White catfish	161	135.7	0	0	161	135.7	0.02	0.01
Channel catfish	1,576	770.2	45	21.8	1,621	792.0	0.16	0.08
Redbreast sunfish	27	3.2	0	0	27	3.2	T	T
Others	528	176.1	77	25.5	605	201.6	0.06	0.02
Totals	6,571	2,614.7	813	255.2	7,384	2,869.8	0.71	0.28

^a Estimated weight based on the average weight of harvested fish.

^b Catch rates based on estimated fishing effort of 10,375 hours.

Table 5. Ogeechee River roving creel survey estimates for the period from October 8, 1989 to March 10, 1990. T(trace) equals values less than .005 No/h and kg/h.

Species	Fish harvested		Fish released		Total catch		Total catch rate ^b	
	No	kg	No	kg ^a	No	kg	No/h	kg/h
Striped bass	255	265.1	565	587.2	820	852.3	0.06	0.06
Largemouth bass	155	98.1	407	256.4	562	354.5	0.04	0.02
Redbreast sunfish	1,718	209.5	913	109.5	2,631	319.1	0.18	0.02
Spotted sunfish	90	9.1	49	4.9	139	13.9	0.01	T
Bullheads	41	5.5	9	1.1	50	6.6	T	T
Channel catfish	2,498	289.1	1,215	145.8	3,713	434.9	0.26	0.03
White catfish	3,588	740.7	1,363	286.3	4,951	1,027.0	0.35	0.07
Red drum	47	38.6	10	8.5	58	47.1	T	T
Spotted seatrout	75	37.3	58	28.8	132	66.1	0.01	T
Others	905	303.5	540	183.7	1,445	487.1	0.10	0.03
Totals	9,372	1,996.4	5,128	1,612.2	14,500	3,608.6	1.01	0.25

^a Estimated weight based on the average weight of harvested fish.

^b Catch rates based on estimated total fishing effort of 14,289 hours.

Table 6. Ogeechee River roving creel fished-for estimates for the period from October 8, 1989 through March 10, 1990. NA = Not Any.

Species	Fished-For				Percent of fished-for total harv.	Percent of species' total harv.	Average weight (kg)
	Effort		Success				
	Hours	% Total	No	Kg			
Striped bass	2,960	47.0	95	115.5	8.2	37.3	1.22
Largemouth bass	200	3.2	0	0.0	0.0	0.0	NA
Redbreast sunfish	637	10.1	212	19.0	18.4	12.3	0.09
Spotted sunfish	0	0.0	0	0.0	0.0	0.0	NA
Bullheads	0	0.0	0	0.0	0.0	0.0	NA
Channel catfish	766	12.2	335	75.4	29.1	13.4	0.23
White catfish	575	9.1	76	9.8	6.6	2.1	0.13
Red drum	117	1.9	0	0.0	0.0	0.0	NA
Spotted seatrout	271	4.3	12	6.7	1.0	16.0	0.56
Others	766	12.2	423	123.2	36.7	46.7	0.29
Totals	6,293	100.0	1,153	349.6	100.0	12.3	0.30

Table 7. Savannah River roving creel fished-for estimates for the period from October 8, 1989 through March 10, 1990. NA = Not Any.

Species	Fished-For		Success		Percent of fished-for total harv.	Percent of species' total harv.	Average weight (kg)
	Effort	% Total	No	Kg			
	Hours						
Striped bass	316	8.7	0	0.0	0.0	0.0	NA
Spotted seatrout	2,286	62.8	1,178	505.5	98.8	71.4	0.43
Red drum	421	11.6	3	12.7	0.3	0.3	4.23
Croaker/Spot	0	0.0	0	0.0	0.0	0.0	NA
White catfish	0	0.0	0	0.0	0.0	0.0	NA
Channel catfish	99	2.7	3	1.0	0.3	0.2	0.33
Flounder	0	0.0	0	0.0	0.0	0.0	NA
Silver perch	0	0.0	0	0.0	0.0	0.0	NA
Redbreast sunfish	0	0.0	0	0.0	0.0	0.0	NA
Others	516	14.2	7	7.2	0.6	1.3	1.03
Totals	3,638	100.0	1,191	526.4	100.0	18.1	0.44

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APPENDIX F
DAILY MEAN DISCHARGE VALUES FOR AREA SURFACE WATER

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To: John McGowin

From: Tim Stamey, USGS, WRD, Georgia

Daily mean discharges for the following sites:

02203000 Canoochee Creek nr. Claxton
02202500 Ogeechee River nr. Eden
02202600 Black Creek nr. Blitchton
02226000 Altamaha River at Doctortown

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UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY - USGS GEORGIA DISTRICT

09/25/91

STATION NUMBER 02202600 BLACK CREEK NEAR BLITCHTON, GA. STREAM SOURCE AGENCY USGS
 LATITUDE 321004 LONGITUDE 0812918 DRAINAGE AREA 232.00 DATUM 30.00 STATE 13 COUNTY 029

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	263	8.5	48	27	45	63	61	25	1.7	107	113	81
2	201	8.5	42	29	42	64	46	33	1.6	138	183	84
3	174	8.2	33	29	42	94	36	50	1.5	145	306	65
4	218	9.0	26	28	43	130	31	65	1.4	163	275	61
5	226	17	23	27	41	174	34	48	1.3	199	266	97
6	251	32	21	33	37	202	27	46	1.5	358	209	177
7	237	34	19	42	35	196	19	55	1.7	717	132	181
8	217	32	17	42	33	177	15	50	1.7	666	87	162
9	176	41	16	39	29	158	13	39	1.8	385	96	127
10	134	44	15	34	25	142	30	57	1.7	247	194	104
11	107	40	18	29	23	120	114	139	1.5	205	263	90
12	90	34	29	27	22	102	165	197	1.5	155	321	91
13	74	28	29	28	20	91	275	218	1.3	185	263	77
14	58	24	27	29	19	81	321	189	1.2	144	208	69
15	46	21	29	28	19	73	300	150	1.3	95	204	192
16	39	20	37	30	17	68	275	106	1.4	123	287	316
17	33	18	52	32	15	65	228	71	1.5	176	354	288
18	29	15	49	37	13	56	200	45	1.6	178	738	242
19	25	14	48	49	12	49	155	30	1.8	242	820	179
	21	16	54	51	13	44	118	19	2.5	219	653	124
22	21	16	52	48	16	42	95	13	2.3	160	366	114
23	23	14	47	45	39	41	81	8.7	84	158	210	617
24	19	14	45	44	51	61	71	6.8	270	205	139	1570
25	16	19	45	42	59	95	61	5.8	251	309	106	2480
	14	22	42	38	74	116	57	4.6	159	607	107	2170
26	12	28	39	33	78	143	49	3.8	120	814	101	1540
27	11	48	35	32	74	135	37	3.0	101	707	92	1170
28	10	61	32	31	68	111	25	2.5	97	632	165	907
29	11	61	31	29	---	100	17	2.1	89	434	129	689
30	11	54	29	29	---	86	13	2.1	80	243	97	528
31	10	---	28	41	---	75	---	1.9	---	147	73	---
TOTAL	2777	801.2	1057	1082	1004	3154	2969	1686.3	1284.8	9263	7557	14592
MEAN	89.6	26.7	34.1	34.9	35.9	102	99.0	54.4	42.8	299	244	486
MAX	263	61	54	51	78	202	321	218	270	814	820	2480
MIN	10	8.2	15	27	12	41	13	1.9	1.2	95	73	61
FSM	.39	.12	.15	.15	.15	.44	.43	.23	.18	1.29	1.05	2.10
N.	.45	.13	.17	.17	.16	.51	.48	.27	.21	1.49	1.21	2.34

UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY - USGS GEORGIA DISTRICT

09/25/91

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STATION NUMBER 02202600 BLACK CREEK NEAR BLITCHTON, GA. STREAM SOURCE AGENCY USGS
 LATITUDE 321004 LONGITUDE 0812918 DRAINAGE AREA 232.00 DATUM 30.00 STATE 13 COUNTY 029

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	393	96	127	305	506	331	146	5.6	1.5	.45	.37	.97
2	376	87	115	313	479	265	158	4.5	1.6	.36	1.1	1.2
3	370	82	104	367	465	243	150	3.9	1.9	.40	1.6	.99
4	390	87	92	404	430	226	126	3.4	1.6	.45	1.0	.94
5	344	82	82	374	424	200	96	3.0	1.5	.40	.85	.85
6	271	75	76	331	513	188	79	2.7	1.5	.33	.80	.84
7	223	73	71	462	572	173	64	2.4	1.2	.28	.80	.76
8	177	71	136	1440	453	152	54	2.1	1.2	.27	.97	.71
9	129	74	478	4910	381	136	48	2.1	1.0	.23	1.5	.70
10	98	73	1070	4060	354	125	48	2.1	.95	.24	1.1	.65
11	91	68	1560	2420	486	118	43	1.9	1.1	.26	1.1	.63
12	92	64	1500	1590	634	113	36	1.9	.92	.29	.96	.61
13	93	58	1230	1180	766	106	28	1.9	.80	.32	.80	.57
14	96	52	1010	929	695	101	21	1.9	.63	.34	1.5	.58
15	92	52	867	732	567	93	21	1.8	1.1	.27	1.8	.56
16	84	76	741	577	455	86	19	1.6	1.2	.29	2.0	.55
17	79	86	625	477	427	83	14	1.8	.74	.35	9.3	.50
18	230	105	530	408	453	105	11	1.7	.70	.49	3.3	.49
19	738	133	545	348	632	131	8.9	1.5	.68	.49	2.2	.48
20	1000	122	681	302	790	170	7.5	1.3	.55	.56	1.7	.48
21	1600	97	980	289	980	171	6.8	1.2	.50	.50	1.4	.46
22	1390	83	1190	280	1000	144	6.0	1.4	.49	.46	1.3	.43
23	1000	93	1130	285	941	117	5.2	1.5	.59	.50	1.4	.42
24	702	108	989	304	818	95	4.6	1.3	.55	.50	1.4	.38
25	450	113	844	316	714	82	4.1	1.3	.49	.46	1.4	.39
26	282	130	621	464	643	70	3.2	1.3	.53	.37	1.5	.40
27	215	135	515	732	534	61	2.7	1.2	.53	.24	1.2	.39
28	174	131	453	947	425	52	2.5	1.7	.58	.28	1.1	.40
29	142	127	405	829	---	50	4.3	2.4	.57	.30	1.0	.50
30	119	134	356	681	---	55	6.3	1.7	.55	.31	1.0	.53
31	105	---	308	588	---	116	---	1.5	---	.25	.97	---
TOTAL	11545	2767	19431	27644	16537	4158	1224.1	65.6	27.75	11.24	48.42	18.36
MEAN	372	92.2	627	892	591	134	40.8	2.12	.92	.36	1.56	.61
MAX	1600	135	1560	4910	1000	331	158	5.6	1.9	.56	9.3	1.2
MIN	79	52	71	280	354	50	2.5	1.2	.49	.23	.37	.38
CFSM	1.61	.40	2.70	3.84	2.53	.58	.18	.01	.00	.00	.01	.00
IN.	1.85	.44	3.12	4.43	2.65	.67	.20	.01	.00	.00	.01	.00

UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY - USGS GEORGIA DISTRICT

09/25/91

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STATION NUMBER 02202600 BLACK CREEK NEAR BLITCHTON, GA. STREAM SOURCE AGENCY USGS
LATITUDE 321004 LONGITUDE 0812918 DRAINAGE AREA 232.00 DATUM 30.00 STATE 13 COUNTY 029

PROVISIONAL DATA

SUBJECT TO REVISION

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.47	5.5	14	73	3070	117	296	1590	1660	17	---	---
2	.48	4.7	16	110	2650	206	442	1580	5020	21	---	---
3	.46	4.2	26	158	1890	712	480	1430	3690	19	---	---
4	.50	4.2	29	191	1370	2110	378	1040	2550	16	---	---
5	.50	3.9	24	187	1060	4020	265	744	1680	17	---	---
6	.48	3.7	26	160	847	3100	338	643	1130	24	---	---
7	.49	3.3	28	135	678	1960	459	521	757	23	---	---
8	.48	3.2	41	120	594	1380	502	474	473	24	---	---
9	.48	6.3	49	110	561	1050	522	407	306	20	---	---
10	6.6	64	40	101	560	806	477	310	230	19	---	---
11	37	104	33	128	492	619	465	261	177	22	---	---
12	84	128	31	223	408	465	450	245	134	61	---	---
13	60	116	29	464	336	358	403	274	106	39	---	---
14	59	91	27	634	280	292	333	291	90	22	---	---
15	49	72	25	465	244	263	279	478	170	17	---	---
16	23	57	22	334	211	253	246	1130	221	61	---	---
17	12	43	21	270	184	241	250	1400	152	244	---	---
18	7.6	33	20	243	167	239	245	1250	123	---	---	---
19	5.9	25	41	242	155	237	229	999	127	---	---	---
20	4.7	20	107	620	147	237	226	805	213	---	---	---
21	3.9	16	204	1150	143	227	290	711	283	---	---	---
22	14	14	292	1350	138	208	506	1180	179	---	---	---
23	27	13	285	1060	135	186	527	1670	114	---	---	---
24	33	12	216	907	132	165	492	1730	79	---	---	---
25	37	11	164	947	131	146	424	1460	58	---	---	---
26	28	10	127	1160	139	130	339	1110	46	---	---	---
27	18	9.5	104	1250	139	109	266	813	37	---	---	---
28	13	13	91	1220	127	96	449	552	30	---	---	---
29	9.7	17	79	1220	---	91	1050	444	23	---	---	---
30	7.6	16	74	1650	---	132	1490	541	19	---	---	---
31	6.4	---	72	2640	---	183	---	797	---	---	---	---
TOTAL	550.74	923.5	2357	19522	16988	20338	13116	26880	19879	---	---	---
MEAN	17.8	30.8	76.0	630	607	656	437	867	643	---	---	---
MAX	84	128	292	2640	3070	4020	1490	1730	5020	---	---	---
MIN	.46	3.2	14	73	127	91	226	245	19	---	---	---
CFSM	.08	.13	.33	2.71	2.62	2.83	1.88	3.74	2.86	---	---	---
IN.	.09	.15	.38	3.13	2.72	3.26	2.10	4.31	3.19	---	---	---

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UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY - USGS GEORGIA DISTRICT

09/25/91

STATION NUMBER 02203000 CANOOCHEE RIVER NEAR CLAXTON, GA. STREAM SOURCE AGENCY USGS
 LATITUDE 321105 LONGITUDE 0815320 DRAINAGE AREA 555.00 DATUM 80.50 STATE 13 COUNTY 109

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	585	57	172	126	132	288	458	186	20	323	338	129
2	437	77	152	159	129	305	354	198	16	213	310	148
3	404	70	144	179	130	493	276	220	13	169	320	213
4	622	85	138	196	131	693	225	277	12	271	280	429
5	700	217	129	213	126	843	194	276	11	451	242	482
6	637	355	123	215	120	985	181	258	14	665	202	524
7	529	425	123	200	115	1100	170	277	14	816	147	611
8	436	448	118	193	113	1110	147	282	17	759	121	591
9	362	426	110	190	112	1060	133	255	23	524	134	530
10	363	365	106	177	110	987	192	317	35	422	128	468
11	314	291	109	163	107	824	515	567	61	352	95	370
12	242	236	132	153	105	673	800	687	82	379	70	276
13	183	203	156	147	103	552	1090	718	82	407	52	203
14	142	195	163	144	99	466	1520	618	94	364	40	172
15	119	188	163	140	95	411	2160	476	71	305	36	136
16	103	179	167	167	96	364	2280	326	44	242	36	109
17	92	167	183	186	92	318	1910	220	32	253	29	111
18	82	125	190	185	87	286	1520	181	62	336	46	127
19	74	92	192	175	84	290	1300	154	162	324	119	251
	66	89	195	162	81	257	1070	122	481	274	272	224
22	60	87	186	150	88	226	920	96	678	316	432	158
23	60	82	174	140	151	239	828	89	825	359	512	605
24	57	86	161	132	201	260	765	83	1160	418	461	958
25	50	165	153	126	250	402	704	61	1470	558	368	1410
	48	290	164	121	326	548	651	46	1460	647	258	2060
26	43	373	145	115	343	661	575	36	1200	736	180	1890
27	39	372	135	111	335	708	464	30	925	854	145	2190
28	42	324	128	107	317	686	332	39	748	883	115	2100
29	53	248	124	103	---	646	235	39	624	745	86	1630
30	54	201	119	104	---	596	192	29	490	586	71	1240
31	50	---	117	123	---	550	---	24	---	446	84	---
TOTAL	7048	6518	4575	4802	4178	17827	22161	7187	10926	14397	5729	20345
MEAN	227	217	148	155	149	575	739	232	364	464	185	678
MAX	700	448	195	215	343	1110	2280	718	1470	883	512	2190
MIN	39	57	106	103	81	226	133	24	11	169	29	109
FSM	.41	.39	.27	.28	.27	1.04	1.33	.42	.66	.84	.33	1.22
N.	.47	.44	.31	.32	.28	1.19	1.49	.48	.73	.96	.38	1.36

UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY - USGS GEORGIA DISTRICT

09/25/91

STATION NUMBER 02203000 CANOOCHEE RIVER NEAR CLAXTON, GA. STREAM SOURCE AGENCY USGS
 LATITUDE 321105 LONGITUDE 0815320 DRAINAGE AREA 555.00 DATUM 80.50 STATE 13 COUNTY 109

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	911	190	514	837	1000	948	460	49	32	1.8	1.2	1.3
2	751	181	451	898	950	852	567	35	40	1.8	1.4	1.8
3	723	169	363	964	889	769	641	27	31	1.6	2.4	1.6
4	689	156	318	1050	841	672	675	27	22	1.5	2.0	1.4
5	650	152	295	1060	831	613	699	30	17	1.7	2.1	1.2
6	604	145	266	1080	754	607	640	30	13	1.7	2.0	1.1
7	532	132	240	1630	706	594	569	27	9.6	1.7	1.8	.82
8	476	138	402	5400	678	548	486	24	7.5	1.7	3.0	1.0
9	451	146	985	7470	629	507	371	22	11	1.5	6.6	1.1
10	440	146	1370	5670	620	481	300	20	6.9	1.9	14	1.1
11	425	137	1650	4020	810	482	251	20	7.3	2.0	8.5	1.0
12	373	136	1780	3250	931	448	229	19	7.8	2.9	4.6	.94
13	309	136	1670	2760	1010	421	214	19	6.2	2.0	3.1	.90
14	260	135	1610	2270	965	401	192	18	5.8	2.4	2.3	.75
15	229	161	1620	1860	848	387	169	16	5.1	2.2	2.0	.76
16	212	280	1640	1570	765	377	147	14	4.8	2.1	2.1	.79
17	227	288	1570	1370	828	396	131	13	4.1	2.2	3.7	.86
18	395	263	1470	1180	897	546	117	11	5.8	2.8	3.3	.77
19	1020	321	1440	1100	1090	623	105	10	3.4	3.6	2.3	.78
20	1300	363	1580	1010	1300	686	94	9.1	2.8	2.8	1.9	.87
21	1340	370	1770	980	1450	669	85	9.0	2.5	2.0	1.5	1.1
22	1180	352	1810	1030	1540	579	76	9.4	2.5	1.9	1.2	1.3
23	923	357	1660	1050	1550	547	69	8.8	2.5	1.9	1.1	1.5
24	711	419	1480	1080	1510	502	60	8.1	2.4	1.9	1.0	1.7
25	558	468	1330	1090	1490	444	50	7.5	2.3	1.9	.98	1.6
26	469	571	1220	1110	1410	360	41	7.2	2.2	2.5	.99	1.5
27	389	601	1130	1110	1250	281	33	6.6	2.2	2.5	1.3	1.5
28	316	555	1020	1160	1070	231	30	7.5	2.0	1.9	1.3	1.7
29	269	548	879	1160	---	203	47	16	1.9	1.5	1.2	1.9
30	234	525	797	1090	---	212	57	41	1.9	1.6	1.2	2.1
31	207	---	766	1050	---	303	---	32	---	1.7	1.1	---
TOTAL	17573	8541	35096	58359	28612	15689	7605	593.2	263.5	63.2	83.17	36.74
MEAN	567	285	1132	1883	1022	506	253	19.1	8.78	2.04	2.68	1.22
MAX	1340	601	1810	7470	1550	948	699	49	40	3.6	14	2.1
MIN	207	132	240	837	620	203	30	6.6	1.9	1.5	.98	.75
FSM	1.02	.51	2.04	3.39	1.84	.91	.46	.03	.02	.00	.00	.00
IN.	1.18	.57	2.35	3.91	1.92	1.05	.51	.04	.02	.00	.01	.00

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UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY - USGS GEORGIA DISTRICT

09/25/91

STATION NUMBER 02203000 CANOOCHEE RIVER NEAR CLAXTON, GA. STREAM SOURCE AGENCY USGS
LATITUDE 321105 LONGITUDE 0815320 DRAINAGE AREA 555.00 DATUM 80.50 STATE 13 COUNTY 109

PROVISIONAL DATA

SUBJECT TO REVISION

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	473	124	308	4750	552	1220	1620	2130	116	1940	---
2	2.0	362	122	396	4800	714	1300	1730	2830	83	2750	---
3	2.1	282	128	436	5200	1480	1040	1630	2660	165	3840	---
4	2.2	214	135	463	4510	3790	884	1780	1920	265	4630	---
5	2.4	172	129	470	3210	5740	986	1610	1430	173	4130	---
6	2.2	147	132	460	2410	5640	1040	1450	961	113	3600	---
7	2.0	132	153	446	1960	5940	934	1310	656	198	2710	---
8	2.4	121	165	429	1680	4700	835	1220	475	308	1970	---
9	3.7	121	203	427	1550	3250	735	1100	352	403	1460	---
10	23	274	203	438	1550	2350	623	937	263	328	1110	---
11	61	449	198	534	1490	1800	679	816	194	230	833	---
12	118	589	206	732	1380	1460	771	798	151	226	656	---
13	164	674	212	871	1240	1260	757	746	124	217	564	---
14	193	670	235	1000	1150	1130	692	874	106	226	502	---
15	371	665	226	1080	1070	1000	576	895	137	182	670	---
16	383	582	199	1080	975	988	509	809	243	334	978	---
17	322	539	183	1040	874	1190	447	737	364	600	1510	---
18	559	523	177	1040	785	1400	410	733	448	917	1580	---
19	711	449	205	1130	726	1420	413	793	436	1270	1400	---
20	613	371	317	1400	706	1330	520	730	596	1460	1150	---
21	414	312	524	1690	699	1200	639	615	844	1360	952	---
22	277	261	660	2120	670	1090	673	699	935	1030	768	---
23	225	218	750	2070	644	939	773	827	617	735	774	---
24	239	206	703	1990	630	829	838	903	407	550	1800	---
25	330	192	626	2170	629	799	814	879	312	934	2380	---
26	423	177	579	2540	619	728	849	722	255	1080	3770	---
27	526	165	508	2710	584	618	845	639	226	922	6110	---
28	650	150	426	2490	565	556	870	865	175	1110	---	---
29	673	136	374	2390	---	539	941	1430	220	1310	---	---
30	645	129	356	3020	---	863	1050	1930	178	1590	---	---
31	585	---	326	4100	---	1060	---	1820	---	1750	---	---
TOTAL	8526.0	9755	9484	41470	47056	56355	23663	33647	20645	20185	---	---
EAN	275	325	306	1338	1681	1818	789	1085	688	651	---	---
AX	711	674	750	4100	5200	5940	1300	1930	2830	1750	---	---
IN	2.0	121	122	308	565	539	410	615	106	83	---	---
FSH	.50	.59	.55	2.41	3.03	3.28	1.42	1.96	1.24	1.17	---	---
N.	.57	.65	.64	2.78	3.15	3.78	1.59	2.26	1.38	1.35	---	---

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UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY - USGS GEORGIA DISTRICT 09/25/91

STATION NUMBER 02202500 OGEECHEE RIVER NEAR EDEN, GA. STREAM SOURCE AGENCY USGS
LATITUDE 321129 LONGITUDE 0812458 DRAINAGE AREA 2650.00 DATUM 19.64 STATE 13 COUNTY 103DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2540	457	691	637	854	1100	2300	2860	644	1750	2730	1010
2	2310	449	679	647	825	1200	2520	2740	584	1700	2610	986
3	2160	442	666	686	801	1370	2330	2580	527	1660	2450	1020
4	2010	444	651	722	785	1560	2340	2330	473	1630	2360	1080
5	1770	461	637	755	775	1810	2400	2120	426	1550	2320	1110
6	1630	492	624	788	769	2130	2480	2000	406	1550	2290	1130
7	1560	557	615	819	769	2480	2620	1900	386	1550	2230	1200
8	1490	610	608	849	769	2840	2770	1800	355	1580	2130	1340
9	1390	650	610	881	765	3200	2820	1740	343	1510	2020	1490
10	1270	681	619	914	758	3520	2770	1850	340	1350	1830	1620
11	1180	703	637	959	754	3700	2710	1990	350	1190	1560	1710
12	1120	729	653	1010	749	3690	2630	2070	371	1070	1360	1680
13	1060	761	664	1070	744	3530	2760	2080	417	957	1250	1550
14	1000	788	666	1130	739	3350	3060	2000	490	875	1270	1370
15	964	806	655	1190	734	3220	3530	1930	583	900	1350	1190
16	948	807	648	1250	728	3140	4020	1950	691	927	1470	1030
17	963	787	648	1300	726	3080	4330	2030	824	844	1530	907
18	999	759	662	1330	725	2980	4440	2070	999	778	1580	817
19	1050	734	678	1310	722	2880	4450	2040	1190	826	1540	777
	1080	708	685	1250	718	2740	4500	1970	1360	935	1490	764
22	1070	675	689	1190	710	2580	4540	1900	1410	961	1420	784
23	948	640	688	1160	716	2440	4640	1860	1250	944	1330	1630
24	754	622	687	1130	746	2320	4970	1850	1020	1030	1260	2190
25	628	643	688	1120	797	2240	5480	1830	935	1220	1280	2760
26	571	686	689	1100	846	2150	5590	1770	1030	1550	1470	3370
27	538	709	686	1070	899	2090	5150	1690	1300	1990	1360	3820
28	509	713	679	1040	958	2040	4500	1550	1620	2370	1230	4160
29	488	716	672	996	1020	2030	3850	1330	1850	2630	1210	4330
30	481	712	660	953	---	2070	3300	1050	1910	2820	1130	4250
31	478	702	652	916	---	2160	3000	851	1850	2940	1030	4010
	467	---	646	890	---	2250	---	724	---	2900	991	---
TOTAL	35426	19643	20432	31062	21901	77890	106600	58455	25934	46487	51081	55085
1AN	1143	655	659	1002	782	2513	3553	1886	864	1500	1648	1836
1X	2540	807	691	1330	1020	3700	5590	2860	1910	2940	2730	4330
1N	467	442	608	637	710	1100	2300	724	340	778	991	764
1SM	.43	.25	.25	.38	.30	.95	1.34	.71	.33	.57	.62	.69
1.	.50	.28	.29	.44	.31	1.09	1.50	.82	.36	.65	.72	.77

UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY - USGS GEORGIA DISTRICT

09/25/91

STATION NUMBER 02202500 OGEECHEE RIVER NEAR EDEN, GA. STREAM SOURCE AGENCY USGS
 LATITUDE 321129 LONGITUDE 0812458 DRAINAGE AREA 2650.00 DATUM 19.64 STATE 13 COUNTY 103

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DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3630	1330	1720	3970	3680	4710	3150	850	534	190	274	236
2	3470	1240	1700	3690	3660	4610	3400	848	492	190	236	227
3	3220	1160	1640	3480	3660	4630	3370	849	482	152	227	210
4	3030	1080	1570	3340	3690	4740	3160	842	491	146	218	172
5	2840	1010	1520	3240	3750	4830	2940	827	493	140	197	152
6	2670	957	1470	3180	3710	4740	2790	809	469	134	184	152
7	2520	922	1450	3420	3620	4470	2720	805	444	128	172	152
8	2390	893	1540	4550	3460	4070	2670	816	416	122	184	146
9	2270	874	1870	6480	3280	3660	2620	832	396	116	210	146
10	2250	864	2190	8980	3180	3320	2540	861	397	114	254	140
11	2470	861	2570	9240	3220	3030	2430	877	435	114	294	134
12	2940	864	2890	8540	3170	2780	2270	862	424	116	301	128
13	3650	865	3140	7840	3170	2600	2130	806	393	111	288	128
14	4640	865	3270	7410	3150	2470	2020	747	373	106	274	128
15	5480	875	3420	7400	3080	2420	1930	711	372	116	281	122
16	5530	919	3620	7490	2990	2460	1830	702	381	134	301	122
17	5020	943	3870	7310	2950	2590	1750	712	397	160	314	116
18	4760	1000	4200	6850	2910	2730	1690	732	412	172	320	116
19	4620	1080	4620	6320	2980	2800	1630	751	406	197	267	111
20	4060	1140	5080	5840	3120	2830	1550	762	370	218	274	111
21	3750	1180	5440	5530	3320	2790	1470	761	330	227	245	116
22	3400	1210	5820	5340	3600	2700	1390	751	298	236	227	116
23	2970	1260	6200	5150	3950	2620	1310	729	275	236	218	e120
24	2580	1290	6370	4920	4310	2570	1240	686	257	245	210	e120
25	2280	1320	6270	4670	4700	2520	1190	632	239	254	197	e120
26	2050	1390	6000	4540	4940	2460	1120	580	222	274	184	e120
27	1890	1480	5630	4320	4980	2390	1050	529	208	281	172	e120
28	1750	1560	5250	4080	4870	2320	981	505	203	307	160	e120
29	1620	1640	4900	3920	---	2300	940	555	190	288	160	e120
30	1520	1700	4590	3790	---	2410	880	633	197	274	184	e120
31	1430	---	4270	3720	---	2760	---	618	---	254	227	---
TOTAL	96700	33772	114090	168550	101100	98330	60161	22980	10996	5752	7254	4141
MEAN	3119	1126	3680	5437	3611	3172	2005	741	367	186	234	138
MAX	5530	1700	6370	9240	4980	4830	3400	877	534	307	320	236
MIN	1430	861	1450	3180	2910	2300	880	505	190	106	160	111
FSM	1.18	.42	1.39	2.05	1.36	1.20	.76	.28	.14	.07	.09	.05
N.	1.36	.47	1.60	2.37	1.42	1.38	.84	.32	.15	.08	.10	.06

e Estimated

UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY - USGS GEORGIA DISTRICT 09/25/91

STATION NUMBER 02202500 OGEECHEE RIVER NEAR EDEN, GA. STREAM SOURCE AGENCY USGS
 LATITUDE 321129 LONGITUDE 0812458 DRAINAGE AREA 2650.00 DATUM 19.64 STATE 13 COUNTY 103
 SIONAL DATA SUBJECT TO REVISION

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	122	4850	1520	1740	11300	2740	3300	4920	4000	1430	4620	15000
2	116	4390	1460	1840	12700	2920	3270	4780	4820	1360	5850	12900
3	111	3990	1400	1930	14900	3430	3230	4790	5320	1280	7580	---
4	106	3580	1350	2030	18200	4150	3290	5240	5360	1230	9130	---
5	101	3250	1310	2110	20800	5560	3820	5610	4900	1190	8940	---
6	96	3000	1280	2150	21100	7870	5520	5880	4230	1130	9160	---
7	106	2840	1270	2150	19200	10400	7710	5840	3590	1080	10700	---
8	106	2740	1280	2110	16300	16400	8410	5540	3130	1080	11600	---
9	116	2680	1310	2050	13900	22100	7700	5110	2750	1060	10900	---
10	146	2810	1360	2000	12600	22500	7040	4820	2410	1040	9200	---
11	254	2700	1400	2090	11800	19900	6520	5000	2120	1050	7390	---
12	353	2550	1420	2260	10900	16900	6110	5570	1850	1030	5840	---
13	626	2380	1420	2400	9870	15000	5800	5890	1600	1040	4780	---
14	873	2270	1420	2550	9060	13500	5440	5690	1490	1070	4120	---
15	1210	2280	1440	2690	8330	11800	4980	5260	1510	1090	3740	---
16	1620	2390	1460	2820	7550	10200	4590	4760	1520	1170	3510	---
17	2560	2510	1490	2880	6770	8820	4250	4440	1460	1540	3400	---
18	6180	2570	1520	2870	6070	7740	3980	4400	1350	1740	3300	---
19	23200	2610	1580	2920	5420	6910	3980	4690	1250	2050	3290	---
20	26300	2630	1690	3420	4830	6280	4660	4890	1210	2200	3710	---
21	23000	2610	1800	3830	4370	5690	5330	5330	1240	2120	4590	---
22	17600	2530	1820	4330	3960	5170	6090	5480	1320	1910	5330	---
23	12800	2400	1870	4750	3620	4750	6380	4750	1480	1790	5670	---
24	9330	2260	1900	5210	3370	4410	6200	4110	1680	1850	5780	---
25	7050	2160	1910	5910	3170	4070	6130	3640	1920	2350	5910	---
26	5790	2060	1870	6400	3000	3780	5990	3370	2010	2750	7610	---
27	5160	1960	1830	6930	2870	3560	5600	3290	1880	3100	11300	---
28	5300	1840	1790	7570	2790	3410	5380	3310	1670	3560	14900	---
29	6040	1710	1760	7960	---	3270	4770	3320	1540	3870	13800	---
30	6060	1590	1730	9020	---	3270	4650	3290	1470	3960	13700	---
31	5480	---	1710	10100	---	3250	---	3490	---	4000	15600	---
TOTAL	167912	80140	48370	119020	268750	259750	160120	146500	72080	57120	234950	---
EAN	5417	2671	1560	3839	9598	8379	5337	4726	2403	1843	7579	---
AX	26300	4850	1910	10100	21100	22500	8410	5890	5360	4000	15600	---
IN	96	1590	1270	1740	2790	2740	3230	3290	1210	1030	3290	---
FSM	2.04	1.01	.59	1.45	3.62	3.16	2.01	1.78	.91	.70	2.86	---
4.	2.36	1.12	.68	1.67	3.77	3.65	2.25	2.06	1.01	.80	3.30	---

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UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY - USGS GEORGIA DISTRICT

09/25/91

STATION NUMBER 02226000 ALTAMAHA RIVER AT DOCTORTOWN, GA. STREAM SOURCE AGENCY USGS
 LATITUDE 313916 LONGITUDE 0814941 DRAINAGE AREA 13600.00 DATUM 24.48 STATE 13 COUNTY 305

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4990	2600	3460	3480	4400	10700	15600	14700	4290	17700	19300	6200
2	4520	2570	3410	3690	4480	11000	15700	12300	4010	17700	18800	7000
3	4320	2560	3380	3700	4380	10600	14800	9990	3760	16800	17900	7950
4	4470	2620	3470	3680	4250	10200	13500	8580	3550	15500	16800	8440
5	4870	2750	3730	3870	4160	10800	12500	8130	3380	14400	15800	7730
6	5110	3000	4020	4490	4140	11900	11600	8810	3270	14000	15300	6800
7	5100	3360	4220	5270	4170	13100	10400	9880	3220	14100	14800	6490
8	5060	3660	4320	5960	4280	14300	9120	10600	3180	14200	14000	6390
9	5220	3790	4380	6290	4280	15400	8610	10900	3210	14300	13000	6240
10	5560	3750	4350	6340	4180	16400	8910	11000	3260	14300	11100	6020
11	5870	3700	4180	6350	4080	17200	9870	10600	3500	13600	9160	5800
12	5960	3770	3970	6250	4080	17900	11000	9810	4150	13000	7680	5420
13	5810	3970	3820	6130	4070	18100	12400	9670	5270	12800	6730	4880
14	5450	4070	3810	6250	3970	17800	14200	10300	6280	12600	6050	4490
15	4930	3960	3830	6230	3850	16800	16300	11000	6900	11900	5560	4340
16	4390	3780	3830	5870	3720	15300	18600	11600	7310	11300	5320	4180
17	3940	3690	3780	5500	3610	13500	21300	12000	7440	10700	5220	3990
18	3620	3650	3730	5330	3520	12200	24600	12100	6900	10400	5030	3890
19	3410	3620	3710	5270	3450	11300	27400	11100	6030	10300	4880	3810
20	3240	3580	3690	5230	3400	9990	29200	9470	5590	10300	4910	3630
21	3090	3500	3640	5510	3400	8800	30500	8540	6120	10700	5020	3540
22	2970	3400	3610	5700	3540	8220	31400	8060	7080	11400	5230	3670
23	2890	3420	3670	5590	3720	7740	31800	7640	8310	12300	5210	3840
24	2840	3560	3750	5360	4200	7540	31700	7160	9590	13200	5020	3970
25	2770	3700	3700	5010	5570	8020	30900	6450	10900	14200	4870	4140
26	2670	3780	3550	4640	7190	9070	29500	5750	12200	15200	4910	4840
27	2600	3810	3450	4370	8520	10600	26800	5380	13200	16400	5080	e6000
28	2590	3770	3400	4150	9730	11900	23200	5120	14400	17600	4970	e6600
29	2590	3640	3370	3970	---	12900	19900	4710	15600	18700	4730	6740
30	2610	3520	3330	3910	---	14000	17200	4500	17100	19400	4930	6950
31	2620	---	3330	4130	---	15000	---	4450	---	19600	5550	---
TOTAL	126080	104550	115890	157520	126340	388280	578510	280300	209000	438600	272860	163980
MEAN	4067	3485	3738	5081	4512	12530	19280	9042	6967	14150	8802	5466
MAX	5960	4070	4380	6350	9730	18100	31800	14700	17100	19600	19300	8440
MIN	2590	2560	3330	3480	3400	7540	8610	4450	3180	10300	4730	3540
QSM	.30	.26	.27	.37	.33	.92	1.42	.66	.51	1.04	.65	.40
LI	.34	.29	.32	.43	.35	1.06	1.58	.77	.57	1.20	.75	.45

e Estimated

UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY - USGS GEORGIA DISTRICT

09/25/91

STATION NUMBER 02226000 ALTAMAHA RIVER AT DOCTORTOWN, GA. STREAM SOURCE AGENCY USGS
 ALTITUDE 313916 LONGITUDE 0814941 DRAINAGE AREA 13600.00 DATUM 24.48 STATE 13 COUNTY 305

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7500	5440	7490	17800	27500	45000	66800	7370	4580	2600	4510	2690
2	8330	5090	7470	17000	27800	48700	59700	7370	4630	2530	3980	2940
3	8950	4770	7310	16800	27800	50500	51400	7400	5140	2490	3690	2910
4	9470	4550	6930	17100	27700	50700	43700	7530	5440	2430	3410	2690
5	9990	4460	6580	17900	27500	49300	37500	7730	5560	2360	3100	2510
6	10600	4450	6470	19000	27500	46500	32700	7910	5710	2280	2890	2450
7	11300	4490	6150	20800	27900	42700	28700	7700	5580	2200	2780	2650
8	12200	4690	6070	23300	28700	38300	25000	7210	5130	2130	2740	2900
9	13300	4840	6770	27300	29700	34000	21800	6930	4900	2100	2760	3020
10	15300	4940	8070	37900	30600	30000	19200	6680	4940	2080	2740	2990
11	18700	5580	9390	48200	30800	26700	17300	6340	5050	2050	2950	2900
12	26800	6250	11300	51500	29400	23900	15900	6230	4780	2060	3230	2910
13	38200	6630	13000	52100	27900	21800	14300	6370	4560	2070	3320	2930
14	43300	6880	14300	51000	26500	20300	13200	6810	4390	2060	3360	2860
15	43600	6970	15500	48800	25000	19300	12900	7210	4190	2060	3290	2700
16	42400	6730	16900	46200	23600	18600	12800	7290	3940	2080	3180	2540
17	40100	6480	18200	43800	22900	18300	12800	6830	3690	2050	3210	2510
18	38500	6590	19900	41500	22600	18100	12800	6350	3500	2080	3290	2650
19	34900	6690	21700	39300	23100	17800	12500	6260	3350	2080	3330	2680
20	29800	6860	23000	37000	24400	17700	11600	6310	3240	2150	3240	2600
21	26100	7180	23600	34200	25900	17700	10700	6200	3180	2310	3070	2610
22	21900	7310	24300	31000	27700	18000	10400	6040	3090	2330	2960	2790
23	16600	7030	25600	28200	29500	18600	10300	5730	3050	2400	2840	3060
24	12000	6910	26500	26400	31100	19300	10000	5250	3090	2550	2680	3280
25	9300	7710	26600	25200	32800	20400	9170	4810	3050	2650	2580	3400
26	7730	8640	26100	24700	34700	23500	8250	4700	2940	2860	2460	3300
27	6670	9140	25000	24200	37000	32600	7500	4830	2860	3500	2390	3030
28	6190	9360	23600	24300	40500	46700	7410	5090	2800	4250	2340	2790
29	5970	9220	22100	25100	---	58800	7470	5330	2720	4780	2360	2590
30	5740	8340	20500	26100	---	67000	7410	5250	2640	5050	2490	2460
31	5640	---	18900	27000	---	70000	---	4850	---	4940	2520	---
ITAL	587080	194220	495400	970700	798100	1030800	611210	197910	121720	81560	93690	84340
AN	18940	6474	15980	31310	28500	33250	20370	6384	4057	2631	3022	2811
X	43600	9360	26600	52100	40500	70000	66800	7910	5710	5050	4510	3400
N	5640	4450	6070	16800	22600	17700	7410	4700	2640	2050	2340	2450
SM	1.39	.48	1.18	2.30	2.10	2.44	1.50	.47	.30	.19	.22	.21
	1.61	.53	1.36	2.66	2.18	2.82	1.67	.54	.33	.22	.26	.23

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UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY - USGS GEORGIA DISTRICT

09/25/91

STATION NUMBER 02226000 ALTAMAHA RIVER AT DOCTOR TOWN, GA. STREAM SOURCE AGENCY USGS
 LATITUDE 313916 LONGITUDE 0814941 DRAINAGE AREA 13600.00 DATUM 24-48 STATE 13 COUNTY 305
 ORIGINAL DATA SUBJECT TO REVISION
 DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
 DAILY MEAN VALUES

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DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2370	9790	3860	6180	47100	14400	15300	19800	16000	9730	16200	---
2	2280	8650	3860	6160	49700	15700	16000	20400	15400	9750	17100	---
3	2220	7660	4100	6390	50700	18300	16900	20800	14700	9870	18500	---
4	2160	6680	4420	6790	54300	22700	17800	21100	14600	10300	22600	---
5	2120	5920	4290	7030	59800	32400	18900	21300	14800	10700	28700	---
6	2090	5730	4060	7120	62700	46500	20500	21300	14300	10700	---	---
7	2100	5760	4000	7190	63200	58300	23200	21100	13900	10600	---	---
8	2130	5370	4370	7340	62200	71100	26700	21200	13700	10500	---	---
9	2110	4940	4950	7550	60700	78800	29200	21600	13700	10600	---	---
10	2370	5540	5370	7520	59400	80200	30500	22100	13500	10900	---	---
11	2810	6720	5700	7620	58000	78500	31300	22500	12700	11200	---	---
12	3010	8030	5720	8020	55900	76000	31900	22700	11700	11300	---	---
13	3560	9130	5410	9360	53000	73200	32100	22500	10200	11300	---	---
14	4310	10100	5200	11300	50100	69200	31700	22500	8690	11300	---	---
15	6120	10500	5180	12900	46300	64200	30800	22500	7520	11200	---	---
16	8010	10300	5300	14700	41300	58500	29400	22400	7070	13000	---	---
17	10200	9500	5340	16100	35900	53000	27900	22600	7110	14900	---	---
18	13300	8450	5170	17200	31100	47500	26500	23000	7340	15500	---	---
19	16500	7520	5030	18400	27400	42100	25400	23700	7660	16400	---	---
20	17300	6890	5010	20300	24400	37300	24700	24700	7740	17900	---	---
21	14500	6460	5400	21900	21800	33400	23900	26300	7950	19500	---	---
22	10600	5830	6300	24000	19500	30300	22600	27600	8100	20600	---	---
23	8010	5210	6920	26500	17600	27900	21100	27300	8390	20600	---	---
24	6740	4770	7130	29300	16100	25600	19600	26000	8880	20200	---	---
25	6150	4490	7060	32200	15000	23500	18600	24100	9060	20100	---	---
26	6010	4370	6990	34300	14300	21500	18300	22400	9320	19700	---	---
27	6670	4360	6990	36000	13900	19600	18400	20900	9730	18800	---	---
28	7950	4320	7090	38100	14000	17900	18700	19200	9900	17900	---	---
29	9120	4190	7030	38900	---	16400	18800	18000	9930	16700	---	---
30	10000	4000	6740	40800	---	15800	19000	17300	9820	16100	---	---
31	10400	---	6410	43500	---	15100	---	16600	---	16300	---	---
TOTAL	203220	201180	170400	570670	1125400	1284900	705700	685500	323410	444150	---	---
AN	6555	6706	5497	18410	40190	41450	23520	22110	10780	14330	---	---
X	17300	10500	7130	43500	63200	80200	32100	27600	16000	20600	---	---
N	2090	4000	3860	6160	13900	14400	15300	16600	7070	9730	---	---
SM	.48	.49	.40	1.35	2.96	3.05	1.73	1.63	.79	1.05	---	---
	.56	.55	.47	1.56	3.08	3.51	1.93	1.88	.88	1.21	---	---

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APPENDIX G
FORT STEWART WELL DATA

ENDIX 2.1

CHARACTERISTICS OF WELLS AT FORT STEWART, GEOR

Well No.	Location	Casing Diameter (Inches)	Depth of Casing/Well (Feet)	Pump Types	Main Pump Rating (GPH)	Motor (HP)	Water Storage Facilities Type	Water Storage Capacity (Gallons)	Appurtenances and Notes
1	Bldg. P00333, 1st St. and Wilson Ave, Main Post	14	451/816	10" vertical Turbine, Jacuzzi Booster	1750	125	---	---	A, B, C, D, E, F, G
2	Bldg. P00456, Herd Road, Main Post	12	470/808	10" vertical Turbine, Jacuzzi Booster	1400	125	---	---	A, D, C, D, E, F, H
3	Bldg. 1345, 15th St. and Wilson Ave, Main Post	12	436/750	10" vertical Turbine, Peabody Booster	1400	125	---	---	A, B, C, D, E, F, H
4	Bldg. T09961, 12th St. and Bultman Ave, Main Post	12	464/802	10" vertical Turbine, Jacuzzi Booster	1400	125	---	---	A, B, C, D, E, F, H
5	Bldg. T07731, E. Lowe Circle, Wright AAF	10	374/472	8" Peabody Vertical, Turbine, Aurora Booster	500	50	Pressure	0,000	A, D, E, F, H
6	Bldg. T07732, W. Lowe Circle, Wright AAF	10	393/500	8" Vertical Turbine, Jacuzzi Booster	500	50	---	---	A, D, C, E
7	T16009, Taylors Creek	10	360/468	8" Vertical Turbine, Jacuzzi Booster	500	50	Pressure	0,000	B, C, E, H
8	Bldg. T15003, Camp Oliver	8	451/706	6" Vertical Turbine, Aurora Booster	400	30	Pressure	12,000	A, D, C, D, E, H
9	Bldg. S19222 TNC-K	6	403/360	4" Vertical Turbine	175	10	Pressure	5,000	B, C, D, E, H, I
10	T 19107 Evans Army Helipad	6	404/600	4" Vertical Turbine, Jacuzzi Booster	135	10	Elevated	150,000	B, C, D, E, H, I
--	P17006 Ammunition Supply Point	4	---/500	3" Vertical Turbine, Jacuzzi Booster	75	5	Pressure	600	A, C, E
--	Bldg. P08330, Skeetrange Holbrook Pond	3 and 4	---/605	Submersible at 80' depth	80	3	Pressure	315	J, K
--	Bldg. P08331 Campground Holbrook Pond	3 and 4	---/605	Submersible at 80' depth	80	3	Pressure	315	J, K

- H. Totalizer and recording flow meter
- I. Water level gauges
- J. Automatic control system
- K. Platform for chlorine tanks
- L. Wallace and Tieman V-notch clarinator, model V-75
- M. Wallace and Tieman fluoridation pump, model RF47
- N. Standby gas engine
- O. Standby diesel engine
- P. Pump timer
- Q. Wallace and Tieman 94 series solution metering pump, hypochlorinator
- R. No flow meter, no pump timer

Source: U. S. Army Environmental Hygiene Agency 1988

APPENDIX 2.2

CHARACTERISTICS OF POTABLE WELLS AT THE MAIN
CANTONMENT AREA

Well	Diameter Inches	Depth Feet	Casing Depth Feet	Flow (GPM)*	Standby Power Flow (GPM)
1	14	816	451	1,750	950
2	12	508	393	1,400	1,400
3	12	750	436	1,400	1,400
4	12	805	439	1,400	1,400
11	16	779	560	1,000	1,000

*GPM = Gallons per minute

No well characteristics such as diameter, well depth and casing setting are presented for the outlying wells in reference 2, except for the well's rated pump rates (Table D-4).

TABLE D-4. PUMP RATED FLOW IN THE OUTLYING POTABLE WELLS

Well	Area	Total Rated Flow Capacity	Standby Power
5	Wright Army Airfield	500 GPM	Yes
6	Wright Army Airfield	500 GPM	No
7	Taylor's Creek	500 GPM	Yes
8	Camp Oliver	400 GPM	Yes
9	TAC-X	175 GPM	Yes
10	Evans Basefield	190 GPM	Yes
-	Ammunition Supply Point	75 GPM	No
-	Holbrook Pond (Skeet Range)	80 GPM	No
-	Holbrook Pond (Campground)	80 GPM	No

APPENDIX H
FORT STEWART MONITORING WELL LOCATIONS

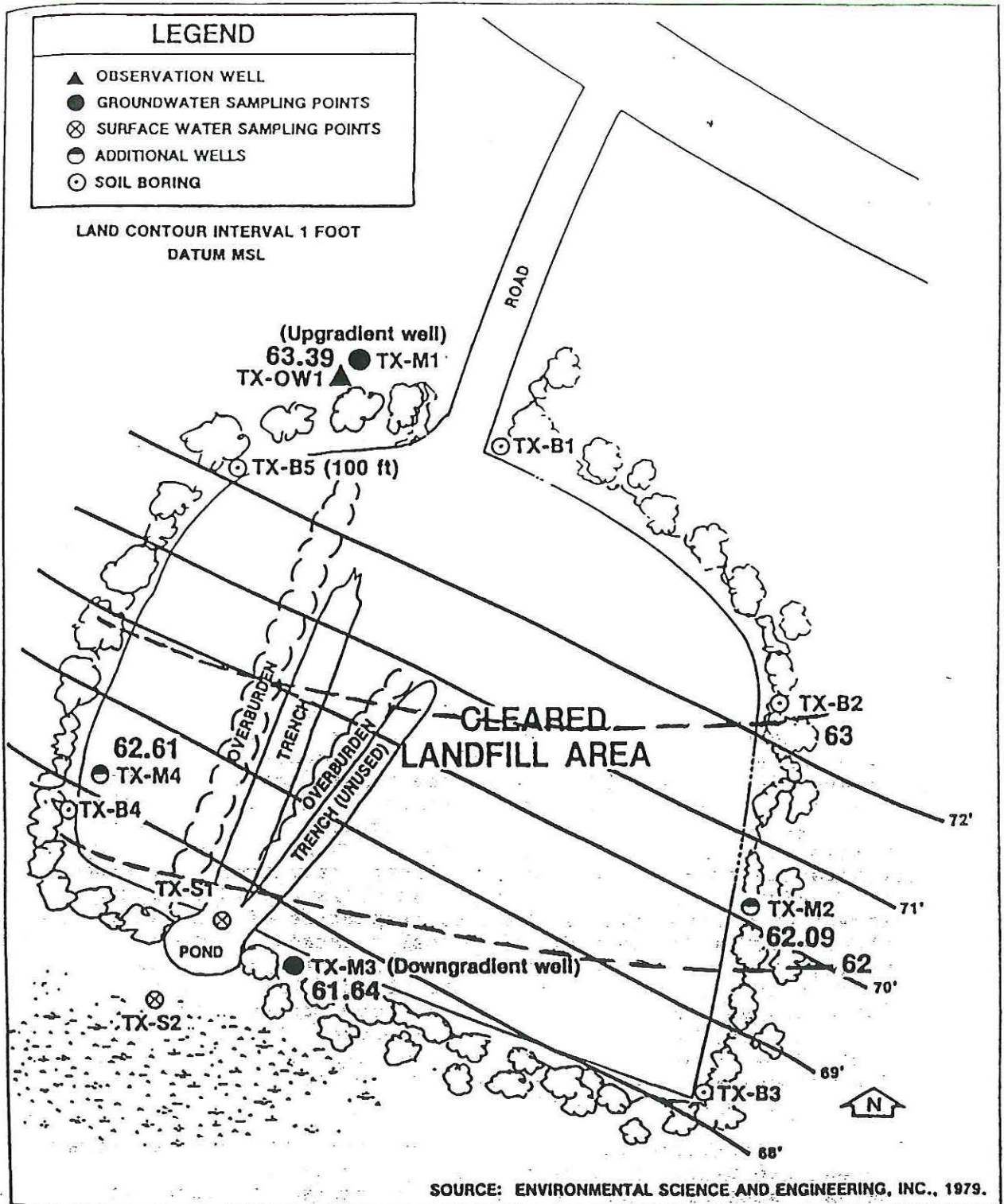


FIGURE D-10. SURFACE ELEVATION AND WATER TABLE CONTOUR MAP OF THE TAC-X LANDFILL SHOWING LOCATION OF TWO GROUND-WATER MONITORING WELLS AND TWO WELLS DRILLED FOR ADDITIONAL WATER LEVEL DATA

Source: Army Environmental Hygiene Agency, August 1988

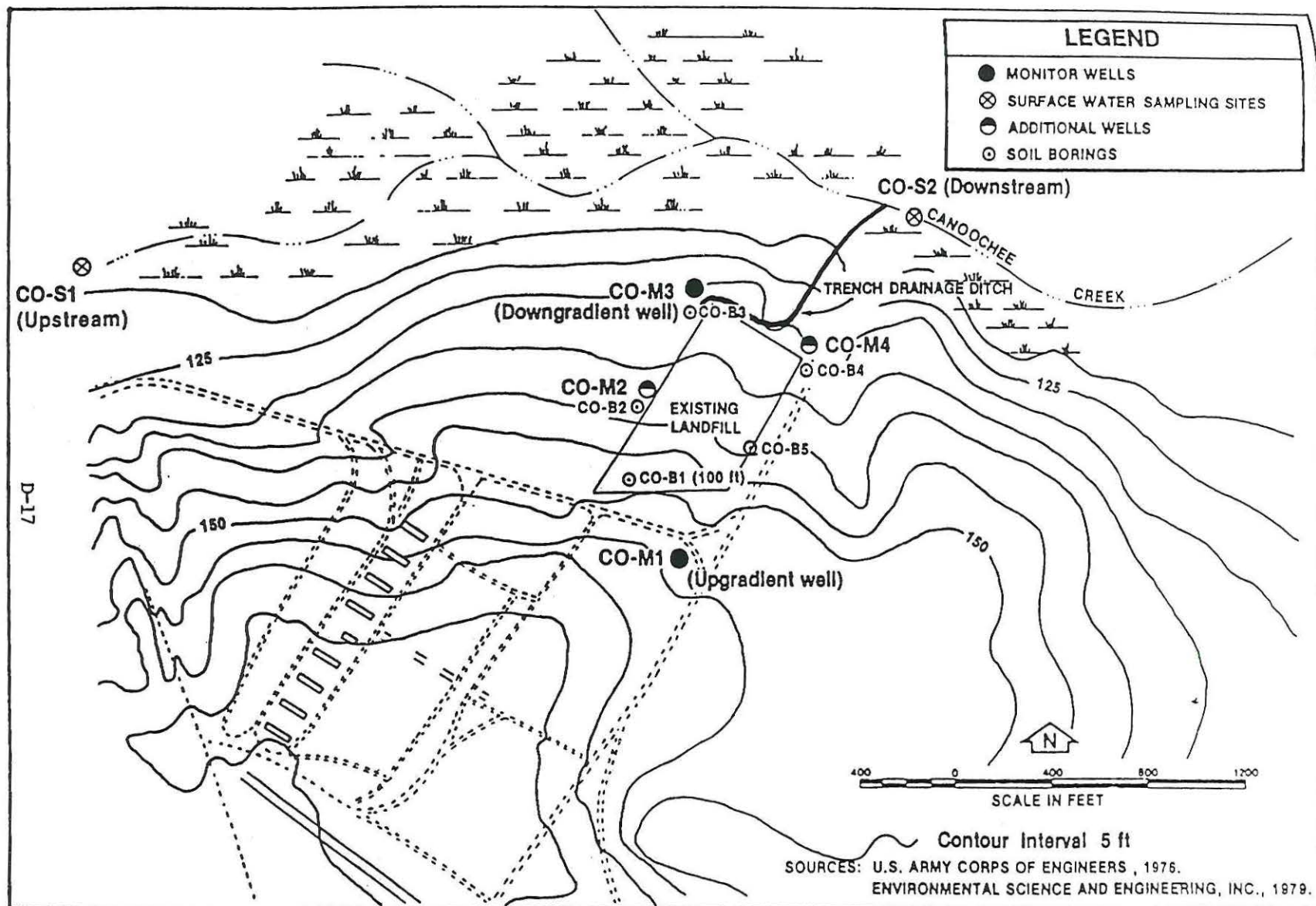


FIGURE D-8. SURFACE ELEVATION CONTOUR MAP OF THE CAMP OLIVER LANDFILL SHOWING LOCATIONS OF TWO GROUND-WATER MONITORING WELLS AND TWO WELLS DRILLED FOR ADDITIONAL WATER LEVEL DATA

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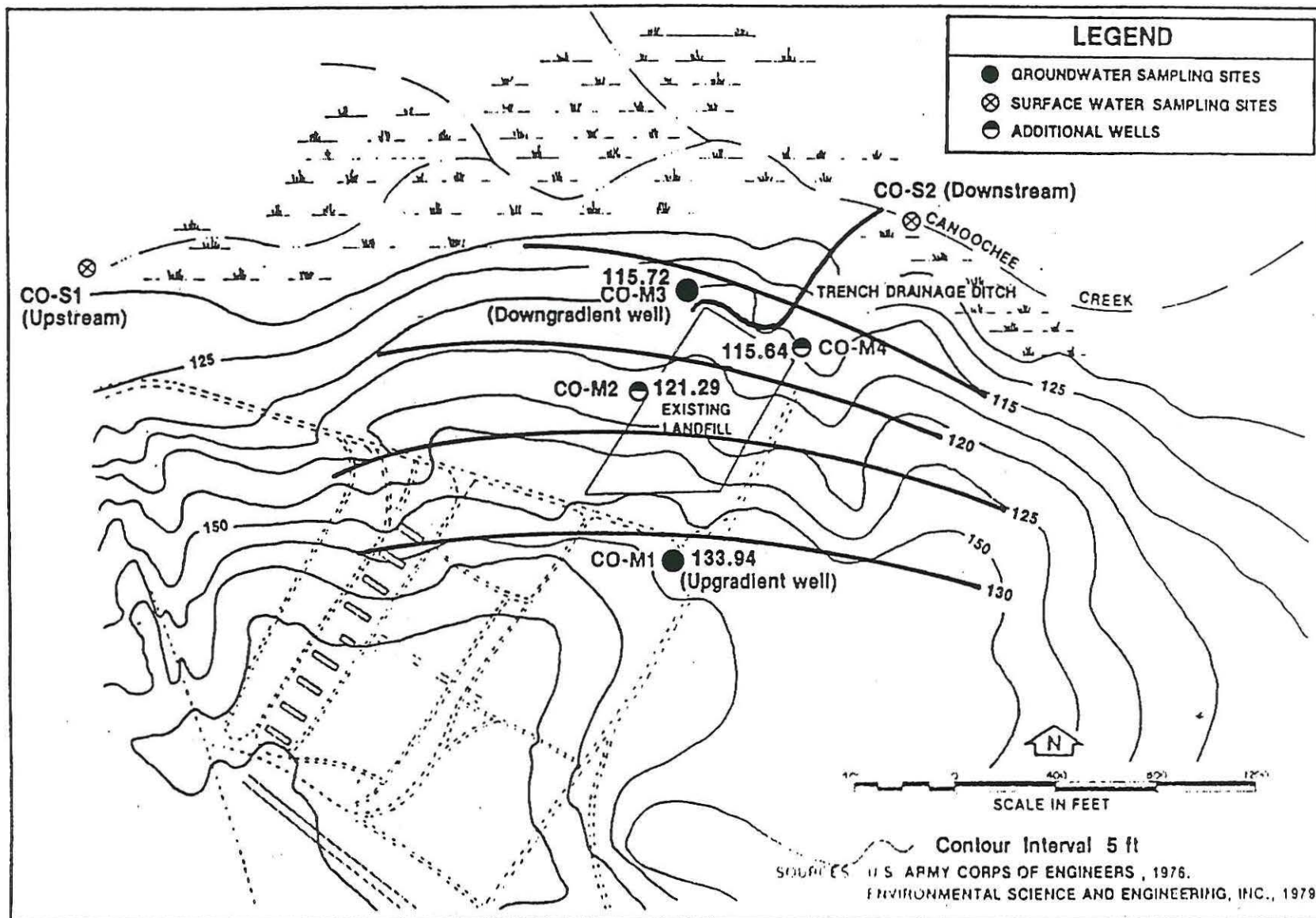


FIGURE D-9. WATER TABLE CONTOUR MAP OF THE CAMP OLIVER LANDFILL AT FORT STEWART, GA.

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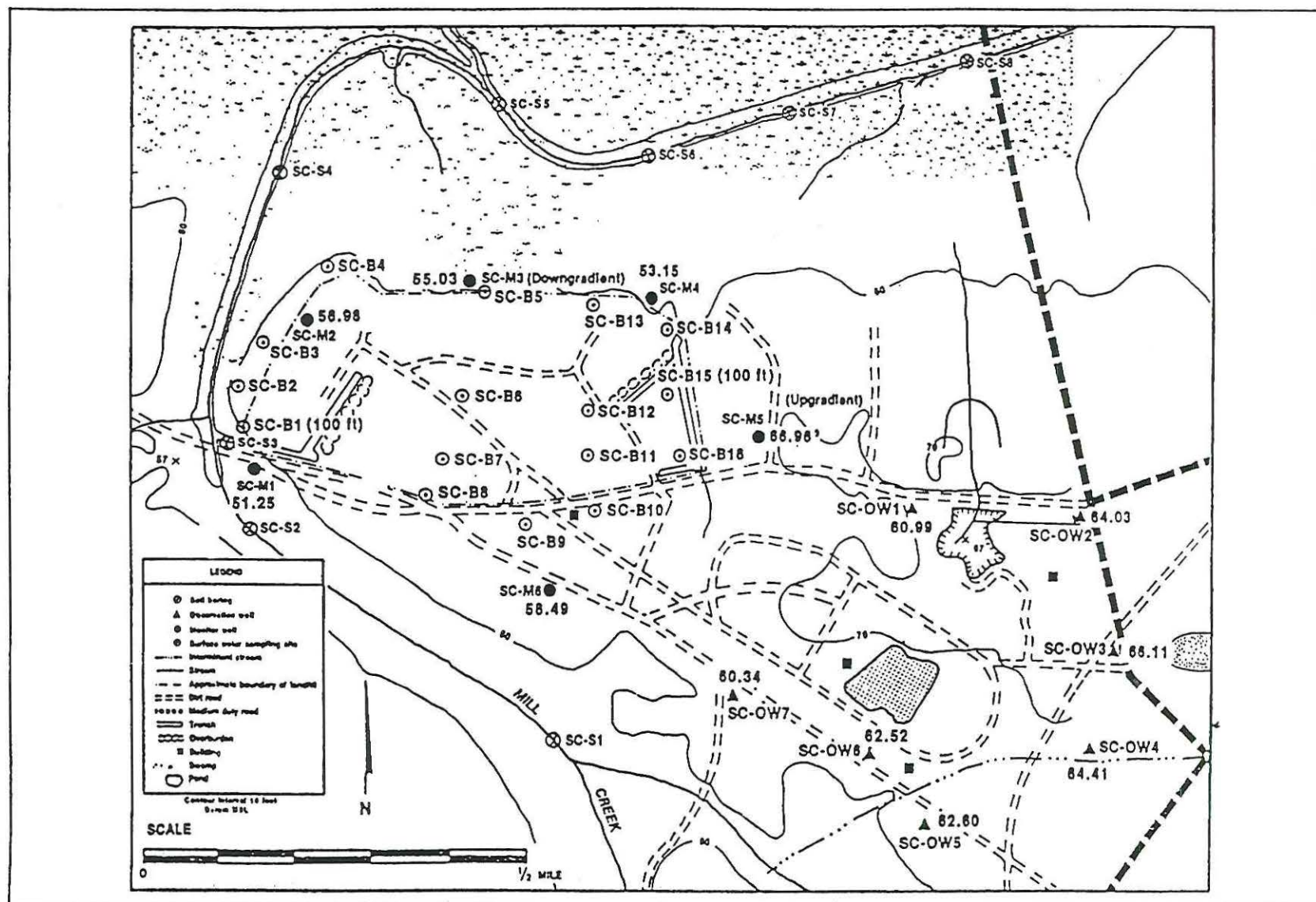


FIGURE D-6. MAP OF SOUTH - CENTRAL LANDFILL SHOWING LOCATIONS OF SIX GROUND-WATER MONITORING WELLS AND SEVEN OBSERVATION WELLS

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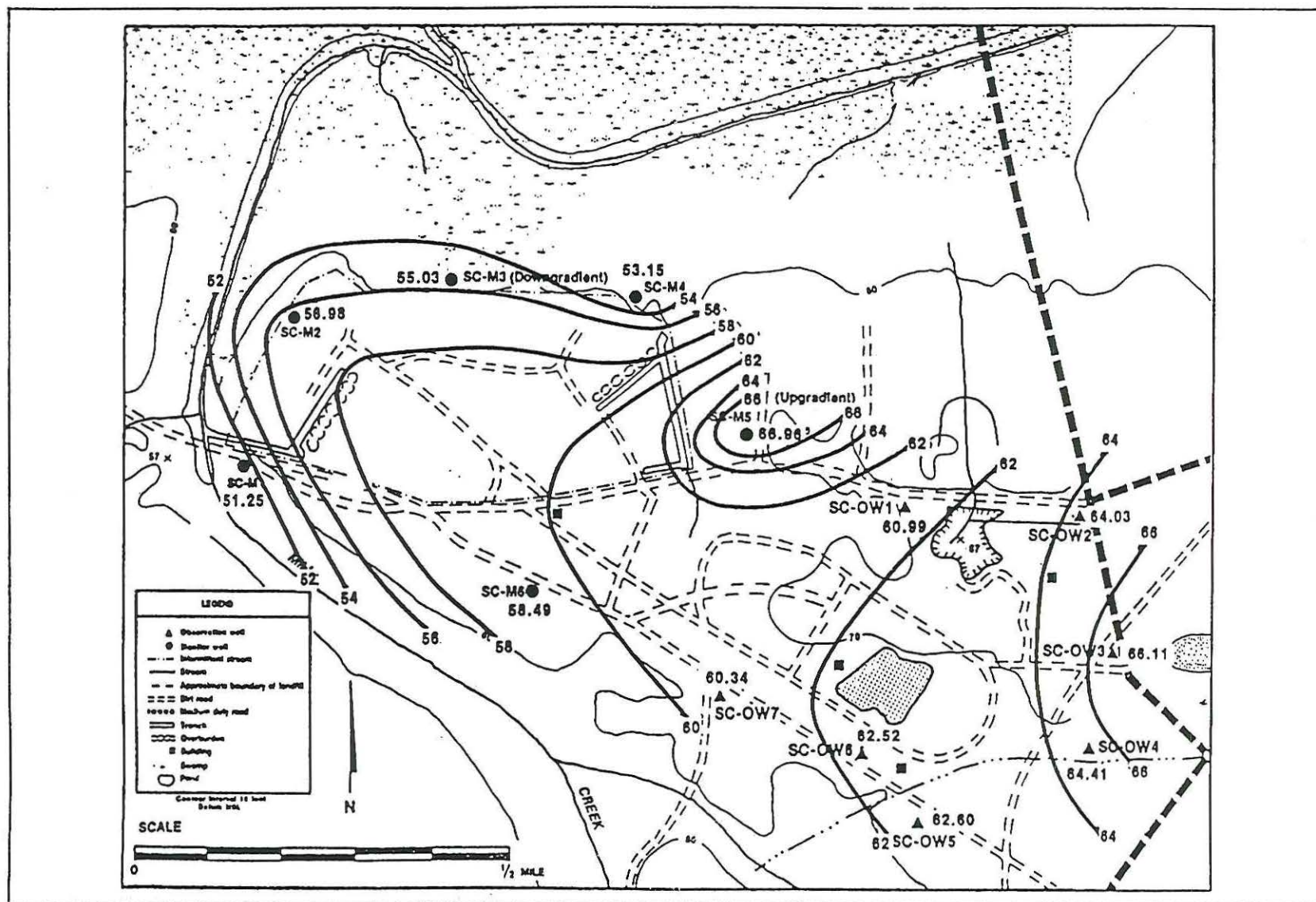


FIGURE D-7. WATER TABLE CONTOUR MAP OF THE SOUTH-CENTRAL LANDFILL AT FORT STEWART, GA.