MIC ENVIRONMENTAL SCIENCES
(CO./DIV./DEPT./LOCATION)

SPECIAL STUDY REPORT
(TYPE OF REPORT)

REPORT NO.: ES-83-SS-13

JOB/PROJECT NO.: 43-000-760.56-8700094

DATE: September 28, 1983

TITLE: CONCENTRATION OF POLYCHLORINATED BIPHENYLS IN SAMPLES FROM CHOCCOLOCCO CREEK

AUTHORS: P. R. Michael and R. G. Kuehnel

ABSTRACT: Composite sediment samples were collected from eight different sites along a 1-3/4 mile segment of Choccolocco Creek. Sediments were extracted and analyzed by gas chromatography/mass spectrometry (GC/MS). PCB concentrations ranged from 2.1 µg/g to 19.2 µg/g and averaged 9.9 µg/g.

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TITLE: CONCENTRATION OF POLYCHLORINATED BIPHENYLS IN SAMPLES FROM CHOCCOLOCCO CREEK
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26
4-1-98
PENGAD-Bayonne, N.J.

NEV 093668

FGL 0422895

CONCENTRATION OF POLYCHLORINATED BIPHENYLS IN SAMPLES FROM CHOCCOLOCCO CREEEK

INTRODUCTION

At the request of state and federal authorities to the Monsanto plant in Anniston, Alabama, Monsanto Company agreed to provide assistance for collecting and analyzing sediments from Choccolocco Creek. This report describes the results of the analysis of the sediments for polychlorinated biphenyls (PCB's).

SUMMARY

Composite sediment samples were collected from eight different sites along a 1-3/4 mile segment of Choccolocco Creek. Sediments were extracted and analyzed by gas chromatography/mass spectrometry (GC/MS). PCB concentrations ranged from 2.1 ug/g to 19.2 ug/g and averaged 9.9 ug/g.

DETAILS

Sampling - Samples were collected on September 20, 1983 as described in the attached Sampling Plan (Appendix I) by a team composed of representatives from Monsanto, the Alabama Department of Environmental Management, and the United States Department of Agriculture Soil Conservation Service. By mutual agreement of the sampling team members, minor deviations were made from the Sampling Plan. They consist of:

1. Samples were collected in reverse order; i.e., beginning at the confluence of Snow and Choccolocco Creeks and working downstream on Choccolocco Creek to the Highway 21 bridge.

2. At one site, sampling was done in duplicate instead of triplicate.

3. Two field blanks were prepared instead of one.

4. Sample labeling was slightly different from that described in the Sampling Plan.

Copies of all quality assurance forms associated with sample collection are contained in Appendix II.

Analysis - Samples were analyzed according to method ES-80-M-28, "Determination of Polychlorinated Biphenyls in Soil and Sediment". Briefly, after sieving through a two millimeter sieve, 10 g portions of each sample were extracted with 10 mL isooctane using a Polytron® Ultrasonic Homogenizer. The phases were separated by centrifugation and the extracts were analyzed using GC/MS in the selected ion monitoring mode. The GC/MS was calibrated with standard solutions containing monochlorobiphenyl, Aroclor® 1242, Aroclor 1254, and Aroclor 1260. Monochlorobiphenyl, not included in method ES-80-M-28, was measured by starting the GC temperature program at a lower temperature (100°C) and monitoring m/z 188 and 153.

Results - Results of the analyses are listed in Table 1. Concentrations are calculated on a wet weight basis. The samples are listed in order of collection. The first sample, 9-20-83-1-A, was at the confluence of Snow and Choccolocco Creeks and the last sample, 9-20-83-8-A, was at the Highway 21 bridge. The detection limits listed in Table 1 are equivalent to the lowest calibration standard. In all cases, they produced signal to noise ratios much greater than 2:1.

Quality Assurance - Results of the two duplicate samples collected at site #6 agree very closely, 5.8 vs 5.4 ug/g, which indicates representative sampling. The sample collected at site #4 was subdivided into three portions in the analytical lab to assess method precision. The relative standard deviation of the analyses (assuming the three subsamples were identical) was 32%. An additional portion of the sample from site #4 was spiked with Aroclor 1254 at 30 ug/g. Recovery was 112%. A sample of Florissant/Ray soil (used for field blanks) was spiked with Aroclor 1254 at 6 ug/g and gave a recovery of 74%. No PCB's were detected in either of the field blanks or in the laboratory blank.

REFERENCES

All raw data can be found on the following notebook pages and in the associated file folders.

	Notebook Pages
P. R. Michael	2431085
R. G. Kuehnel	2550087
W. J. Adams	1835103-33

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Table 1. Concentration of Polychlorinated Biphenyls in Sediment Samples from Choccolocco Creek

Environ. Science Log Number	Sample ID	Chlorobiphenyl Concentration (µg/g) Mono	Di	Tri	Tetra	Penta	Hexa	Hepta	Total
3092201	9-20-83-1-A	(0.038)	0.49	3.1	5.8	4.1	3.2	2.5	19.2
3092202	9-20-83-2-A	0.60	3.6	4.8	3.1	1.4	1.2	0.73	15.4
3092203	9-20-83-3-A	(0.016)	0.21	0.44	0.49	0.61	0.34	ND	2.1
3092204	9-20-83-4-A	0.13	0.66	1.6	1.7	1.2	0.99	0.58	6.9
3092205	9-20-83-5-A	0.50	3.3	5.0	3.6	1.6	1.3	0.90	16.2
3092206	9-20-83-6-A	0.17	1.1	1.4	1.3	0.62	0.54	0.64	5.8
3092207	9-20-83-6-C	(0.087)	0.57	1.2	1.3	0.89	0.78	0.53	5.4
3092208	9-20-83-7-A	0.48	2.8	3.5	1.9	0.92	0.80	0.54	10.9
3092209	9-20-83-7-FB-1	ND	ND	ND	ND	ND	ND	ND	ND
3092210	9-20-83-7-FB-2	ND	ND	ND	ND	ND	ND	ND	ND
3092211	9-20-83-8-A	0.32	1.8	2.6	1.3	0.53	0.43	ND	7.0
	Detection Limit	0.1	0.08	0.2	0.2	0.3	0.1	0.4	

ND = None Detected
( ) Represent positive detections but are less than the lowest calibration standard.

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HARTOLDMON0034586

Submitted by:

Monsanto Industrial Chemicals Company
Environmental Sciences Section - NIE
800 North Lindbergh Boulevard
St. Louis, Missouri 63167

Prepared by:

Paul R. Michael
Research Group Leader

Approved by:

William E. Gledhill
Manager, Environmental Sciences

NEV 093672

FGL 0422899

HARTOLDMON0034587

APPENDIX I

SAMPLING PLAN

NEV 093673

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CHOCCOLOCCO CREEK

SAMPLING PLAN

I. PURPOSE

At the request of the Alabama Department of Environmental Management (ADEM) and the United States Department of Agriculture Soil Conservation Service (USDA-SCS) to the Monsanto Anniston plant, Monsanto Company has agreed to provide technical assistance in collecting and characterizing sediments from Choccolocco Creek. This assistance was requested to assure proper disposal of sediment dredged from the creek. The section of Choccolocco Creek under study extends from the Alabama Highway 21 bridge upstream to the confluence with Snow Creek. The characterization will concern the identification of any possible polychlorinated biphenyl (PCB) content which might be present in the sediment to be dredged and removed from this stream segment.

II. SAMPLE COLLECTION STRATEGY

Eight stream width/depth composites will be collected along the approximate 1.75 mile stream segment study area. Composites will be collected beginning at the Highway 21 bridge and at approximately 0.25 mile intervals, ending at the confluence of Choccolocco Creek and Snow Creek. (See Figure 1 for approximate location of sampling sites.) Each width/depth composite will be made up on three individual depth cores taken at three equidistant locations across the width of the stream. Each depth core will represent a maximum 30 inch depth composite of bottom sediment dredge material.

NEV 093674

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III. COLLECTION EQUIPMENT

Sediment cores will be collected in 3 foot coring tubes with a tube diameter of 1 inch. These coring tubes will be made up of 3 - 1 foot sections threaded together. The coring tubes will be driven into the sediment via a driving pipe; the pipe will also screw onto the top of the 3 foot coring tube. A small sledge hammer will be used to drive the driving tube/coring tube assembly. The coring tubes will be constructed of cast iron as will the driving tube. The coring front edge of each tube will be sharpened to affect easier sample collection. A horizontal hole will be drilled through the top of the driving tube. A metal rod will be placed through the hole to facilitate removal of the driving tube/coring tube assembly from the sediment.

A stainless steel tray will be used to composite the three individual 30 inch sample cores collected at each sampling site. If necessary, an 18 inch long, 1 inch diameter plunger rod will be used to evacuate the core from the three 1 foot coring tube sections.

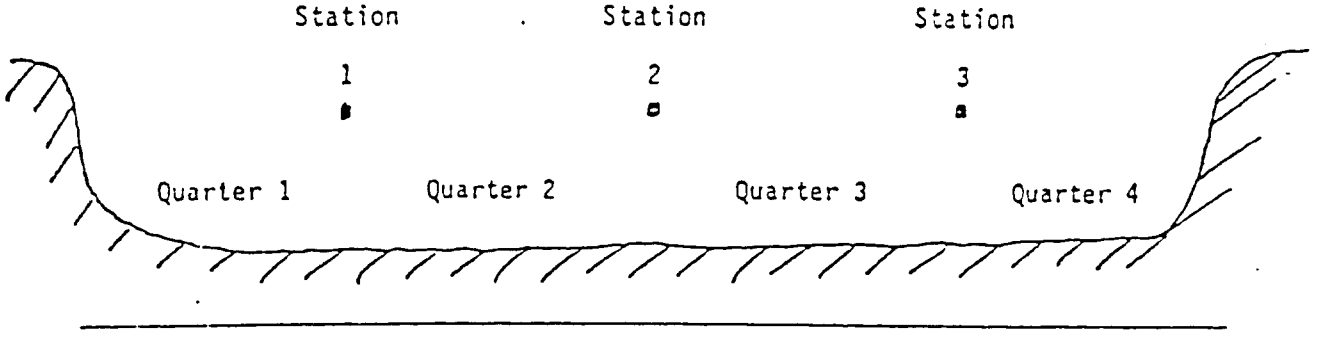
IV. COLLECTION PROCEDURES

The following collection procedure will be utilized at each of the eight sampling sites. Separate coring tubes will be used at each site to avoid cross contamination between sites. Each coring tube will have been detergent washed and distilled water and acetone rinsed before use in the field.

Upon reaching the sampling site, a marker will first be placed on a suitable landmark (tree, power/phone pole, etc.) to serve as a semi-permanent benchmark for future references. Next, the creek area will be visually surveyed to identify the most representative creek width

in view of the landmark. The selected river width will then be physically surveyed to determine the ability to collect the required samples. Bottom sediment will be examined for sand/soil/rock content. If deemed suitable for coring, the creek width will then be visually quartered. The borders of the first and second, second and third, and third and fourth quarters will be the three coring stations for the sampling site. This is shown in Figure 2. Station 1 will always be the left most station facing upstream. Compass bearings will be taken from Station 1 to the landmark and to the center of the stream facing upstream

Figure 2.



To Fix the Station for Future Reference.

The core at Station 1 will be taken by again facing upstream, assembling the three 1 foot coring sections and the driving tube and hammering the apparatus to a maxmium of 30 inches or as deep as is physically possible. The rod will be placed through the driving tube and the entire assembly removed. A rubber stopper will be placed over the top of the driving tube which will assist in retaining the sediment in the coring tube.

NEV 093676

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After removal, the driving tube will be removed and the coring tube placed in the stainless steel compositing tray. The three 1 foot coring tube sections will be separated and the sediment removed from each section. If the sediment does not readily fall out of the tubes, the rod plunger will be used to force the sediment into the tray. A stainless steel spatula will be used to completely mix the sediment in the tray for a minimum time of 1 minute. It is extremely important that the sediment be as homogeneous as possible in order that reproducible/identical samples can be taken from the tray.

After removal of the sample, the coring assembly will be cleaned in creek water, reassembled, and moved to Station 2. The collection and mixing procedure will be repeated at this Station and Station 3. The same coring assembly will be used at all three stations; new coring assemblies will be used at each sampling site.

V. SAMPLE HANDLING

After all three cores from a site have been composited in the mixing tray, large rocks, twigs, etc., will be discarded and the sediment mixed for an additional 1 minute. A stainless steel spatula will be used to transfer the homogenized sediment to two, precleaned 16 oz wide mouth jars, filling each approximately two thirds full. (The jars will have been precleaned by washing in warm soapy water followed by rinsing with deionized water and acetone and heating at 175°C for 24 hours.) Acetone rinsed aluminum foil will be placed over the mouth of the jar and the jar will be sealed with a polyethylene lined plastic cap. Additional sediment remaining in the tray will be discarded. The tray and all utensils will be washed with creek water and rinsed liberally with acetone.

Each sample will be labeled with a unique identification code using a waterproof label and waterproof marking pen. The sample identification code will be patterned after the following example:

6-8-83-1-A-I

where

6-8-83 = date of sample collection

1 = site #

A = designation for half of the composited sediment from a site. The other half of the sediment would be designated B.

I = sediment replicate number when applicable. As described in the Quality Assurance section, sediment will be collected in triplicate at one site.

The field blank (see Quality Assurance section) will also use the above code except the A or B will be followed by "BLANK". The site number in the field blank code will be the site at which the field blank is prepared.

After labeling, the samples will be placed in a waterproof polyethylene bag and stored on ice in an insulated cooler. When the field work is completed, "A" samples will be sent by overnight carrier to the following address for PCB analysis.

Monsanto Company
800 North Lindbergh Blvd.
St. Louis, Mo. 63167
Attn: Paul R. Michael
Mail Zone - N1E

NEV 093678

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The "B" samples will be retained by the USDA Soil Conservation Service (SCS) and the Alabama Department of Environmental Management (ADEM) for analysis by Dr. Patrick Morgan at the Auburn Pesticide Laboratory. To maintain sample identity, the samples should be analyzed as soon as possible and should be kept refrigerated or frozen at all times prior to analysis.

VI. QUALITY ASSURANCE - SAMPLING

To assess precision, sampling at one mutually agreed upon site will be conducted in triplicate. At this site, three traverses of the stream will be made and the composited sediment from each traverse will be treated as an entirely separate sample.

A field blank will be taken at approximately the halfway point of the sampling operation. The field blank will consist of soil previously analyzed and shown not to be contaminated with PCB's. The soil will be carried into the field, placed in the mixing tray and stirred, transferred to a container, and preserved and shipped with the rest of the samples.

At each site, quality assurance Form #1 will be completed to describe the site and the conditions at the site at the time of sampling. At each site, after the sediment cores have been composited, the sample code and description of the sediment will be entered on Quality Assurance Form #2. To provide for chain of custody, Quality Assurance Form #3 will be used by the sampling personnel to demonstrate sample transmittal to and receipt by the appropriate analytical laboratory.

VII. ANALYSIS

Sediment samples sent to Monsanto will be analyzed by method ES-80-M-28, "Determination of Polychlorinated Biphenyls in Soil and Sediment.

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In this method, PCB's are extracted from the sample and measured by selected ion monitoring gas chromatography/mass spectrometry. The average recovery of di- through heptachlorobiphenyl is 76% and the precision (relative standard deviation) is 20%. The quality assurance steps in sample analysis will include analyzing 10% of the samples in triplicate to determine precision, spiking 10% of the samples with known levels of PCB's to determine accuracy, and analyzing laboratory blanks to demonstrate the absence of laboratory contamination.

VIII. PERSONNEL/EQUIPMENT RESPONSIBILITY

A six person team will be used to complete the sampling. Monsanto Company, the USDA SCS, and the ADEM will each provide two individuals. Each individual is responsible for his/her own personal gear such as gloves, boots, hip waders, etc. The SCS will supply a work boat suitable for carrying field equipment and supplies. Monsanto will supply the collection equipment including sample containers, shipping containers, chain-of-custody forms, preservatives, etc. ADEM will be responsible for first aid supplies. A complete list of needed equipment and provision responsibility is given in Table I.

IX. SCHEDULING

It is imperative that sampling be done at or near low flow stream conditions since access to the sampling sites is by walking/wading only. In addition, sample collection will be most easily accomplished at low flow conditions. For this reason, a two week "window of time" will be established by the team members during which sampling can be done by all members. ADEM and SCS members will be responsible for calling the best two day sampling period within this "window" based on stream flow and predicted weather conditions. This two week "window" is tentatively identified as September 12-23, 1983.

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Once the two day sampling period is identified, Monsanto, SCS, and ADEM personnel will be on site and ready to begin within two days of notification. Members will meet at the Holiday Inn, Anniston, Alabama, at the scheduled time. Although sampling should be completed in one day, the sampling period will be established as two days to allow for any potential collection decisions/problems.

IX. REPORTING

Monsanto will prepare a final report describing collection, analysis, QA/QC, and shipping procedures including results and all applicable field and QA/QC forms. SCS and ADEM will provide Monsanto with a report describing analytical results obtained on their portion of the split samples.

Table I. Equipment List (Tentative)

Boat	SCS
Coring Tubes	MON
Driving Tube	MON
Sample Containers	MON
Shipping Containers	MON
Compass	MON
Chain-of-Custody Forms	MON
Labels	MON
Collection Tray	MON
Spatula	MON
Landmark Markers	SCS
First Aid	ADEM
Waders	ALL
Gloves	ALL
Boots	ALL
Etc.	
Etc.	
Etc.	

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PERSONNEL SAMPLING _____

RIVER STAGE _____ FLOW RATE _____ TIDE CONDITIONS _____

SAMPLE SITE NAME _____ SAMPLE SITE NUMBER _____

SAMPLE COLLECTION METHOD USED _____ DATE OF METHOD _____

Drawing of transect at each site and station 1 identification.
(Record prominent landmarks and compass bearings).

Comments (weather conditions, problems with sampling, etc.)

NEV 093683

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QUALITY ASSURANCE FORM #2

SEDIMENT SAMPLES

Sample Description Code	Date	Time	Water Depth(m)	Comments*

*Comments are required on the physical appearance of the sediment, i.e., color, coarsenes sand, clay, silt, gravel, etc., and on the presence or absence of benthic organisms and if possible, which type of organisms are present.

NEV 093684

FGL 0422911

HARTOLDMON0034599

QUALITY ASSURANCE FORM #3

SAMPLE TRANSMITTAL LETTER

Client _____ Project Title _____

Date shipped _____ Shipped by _____

Shipped from _____

Shipped to _____ Attention of _____

Additional shipping information or comments _____

Sample description code _____ Comments _____

Samples received by _____

Date samples received _____

Return letter received _____ Date _____

NEV 093685

FGL 0422912

HARTOLDMON0034600

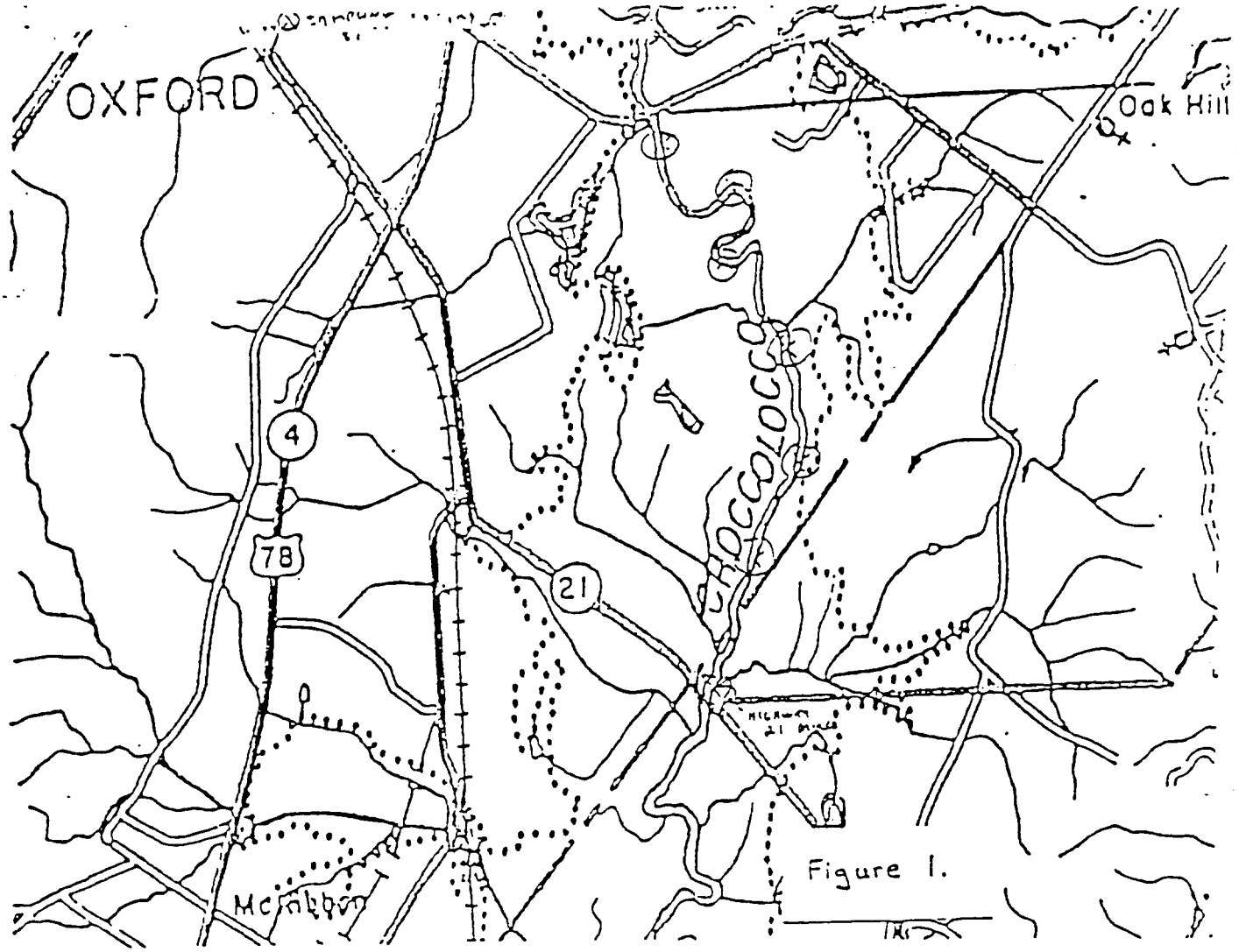

Figure 1.

NEV 093686

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APPENDIX II

SAMPLE COLLECTION QUALITY ASSURANCE FORMS

MONSANTO COMPANY

№ 1835103

SUBJECT: Choccolocco Creek PCB Sampling

JOB NO.:

PREPARED BY (SIGNATURE): [signature]

DATE: 7-20-

QUALITY ASSURANCE FORM #1 - MIC-NATIONAL AQUATIC MONITORING PROGRAM

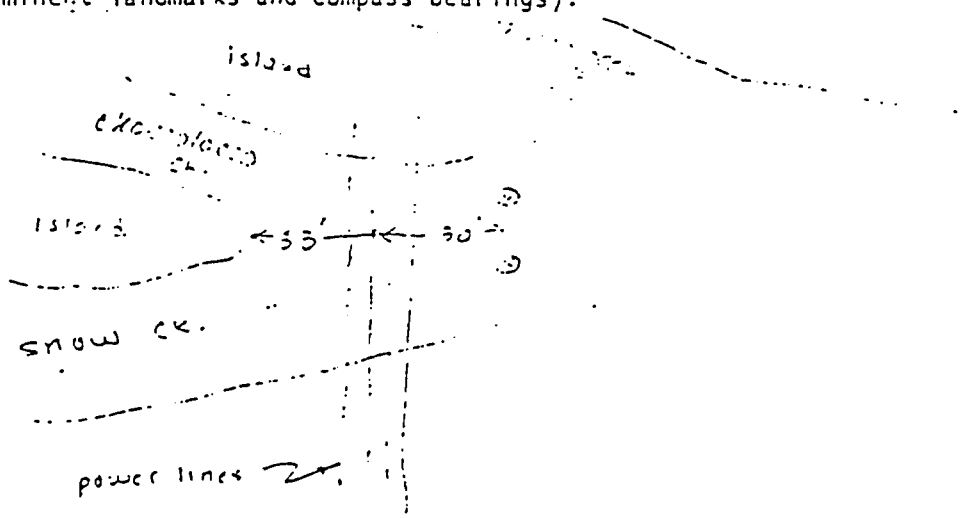
PERSONNEL SAMPLING: Tom Hoogheem, Bill Adams, [illegible]

RIVER STAGE: 1.5' FLOW RATE: _____ TIDE CONDITIONS: N/A

SAMPLE SITE NAME: # 1 Choccolocco Creek SAMPLE SITE NUMBER: 1

SAMPLE COLLECTION METHOD USED (NUMBER): C DATE OF METHOD: _____

Drawing of transect at each site and station 1 identification. Time 9:15am
(Record prominent landmarks and compass bearings).



Comments (weather conditions, problems with sampling, etc.)

Drove pipe 4 times; approx. 500 g. collected
muddy water in Choccolocco Ck., silt [illegible] in snow.
Pipe driven down 3ft

NEV 093688

READ AND UNDERSTOOD BY: [signature]

DATE: 7-20-8

FGL 0422915

HARTOLDMON0034603

MONSANTO COMPANY

Nº 1835105

SUBJECT: Choccolocco Creek Sampling for PCB

JOB NO. | PREPARED BY (SIGNATURE): W J Adams | DATE: 9-20-83

QUALITY ASSURANCE FORM #3 - MIC-NATIONAL AQUATIC MONITORING PROGRAM

SEDIMENT SAMPLES

Sample Description Code	Date	Time	Water Depth(m)	Comments*
9-20-83-1-A	9-26-83	9AM	1½ ft	4 Cores - 3ft deep only - small amount of Sediment each core
9-20-83-1-B	9-26-83	9AM	1½ ft	Sample was Split - total Collected was 300g mostly gravel

*Comments are required on the physical appearance of the sediment, i.e., color, coarsenes sand, clay, silt, gravel, etc., and on the presence or absence of benthic organisms and if possible, which type of organisms are present.

NEV 093689

READ AND UNDERSTOOD BY: [signature] | DATE: 9/27/83

FGL 0422916

HARTOLDMON0034604

MONSANTO COMPANY

Nº 1835106

SUBJECT: Choccolocco Creek for PCB

JOB NO.

PREPARED BY (SIGNATURE) [signature]

DATE 9/22/83

QUALITY ASSURANCE FORM #4 - MIC-NATIONAL AQUATIC MONITORING PROGRAM

SAMPLE TRANSMITTAL LETTER

Client MONSANTO

Project Title MIC-NAMP

Date shipped 9-21-83

Shipped by W J Adams

Shipped from Anniston Alabama

Shipped to PR Michael, Monsanto NLB St. Louis Attention of Paul Michael

Additional shipping information or comments

Sample description code	Comments
✓ 9-20-83-1-A	
9-20-83-9-A	
9-20-83-6-C	
9-20-83-7FB-1	
9-20-83-4-A	
9-20-83-6-A	
✓ 9-20-83-3-A	
✓ 9-20-83-2A	
9-20-83-7A	
9-20-83-7FB2	
9-20-83-5A	

Samples received by (Monsanto representative R Kuehnel

Date samples received 9/22/83

NEV 093690

Return letter received by contract laboratory W J Adams Date 9-23-83

READ AND UNDERSTOOD BY [signature] DATE 9/27/83

FGL 0422917

HARTOLDMON0034605

MONSANTO COMPANY

Nº 1835107

SUBJECT: Chocolatee Creek PCB Sampling

JOB NO.

PREPARED BY (SIGNATURE): [signature]

DATE: 9-20-95

QUALITY ASSURANCE FORM #1 - MIC-NATIONAL AQUATIC MONITORING PROGRAM

PERSONNEL SAMPLING Tom Hoogheen, Bill Adams, Vic Payne, Mike Forester

RIVER STAGE low FLOW RATE — TIDE CONDITIONS NA

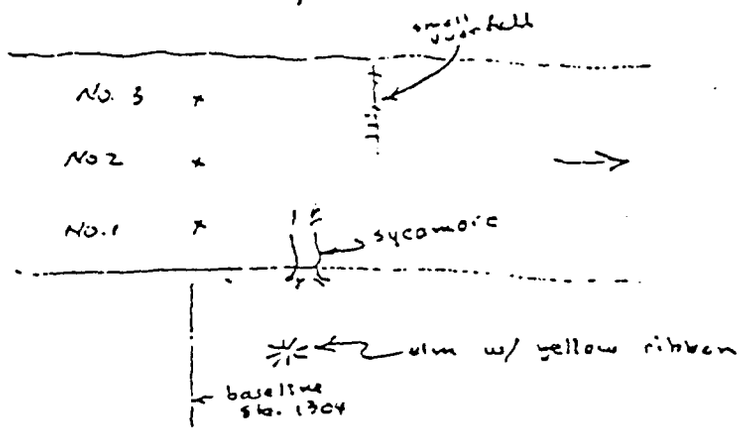
SAMPLE SITE NAME Chocolatee Creek #2 SAMPLE SITE NUMBER 2

SAMPLE COLLECTION METHOD USED (NUMBER) _____ DATE OF METHOD _____

Drawing of transect at each site and station 1 identification. Time 10:10 am
(Record prominent landmarks and compass bearings).

SCS baseline station 1304+00; 10' upstream of large sycamore leaning over water. Yellow ribbons

Core No 1 driven 3'; about 1.5 ft. of sample.
Core No. 2 " "; " 6 in. of sample (probably compacted in sampler)
Core No 3 " "; " 1.5 ft " " .



Comments (weather conditions, problems with sampling, etc.)

Hazy 78°F

NEV 093691

READ AND UNDERSTOOD BY: [signature]

DATE: 9/27/

FGL 0422918

HARTOLDMON0034606

MONSANTO COMPANY

№ 1835109

SUBJECT: Chocolocco Creek Site #2

JOB NO.

PREPARED BY (SIGNATURE): W J Williams

DATE: 9-20-93

QUALITY ASSURANCE FORM #3 - MIC-NATIONAL AQUATIC MONITORING PROGRAM

SEDIMENT SAMPLES

Sample Description Code	Date	Time	Water Depth(m)	Comments*
9-20-93-2-A	9-20-93	10:15	1½ ft	3 Cores obtained 6 - 1½ ft / sample composited - split - composited
9-20-93-2-B	9-20-93	10:15	1½ ft	" " "

*Comments are required on the physical appearance of the sediment, i.e., color, coarseness sand, clay, silt, gravel, etc., and on the presence or absence of benthic organisms and if possible, which type of organisms are present.

NEV 093692

READ AND UNDERSTOOD BY: [illegible]

DATE: 9/2 9/3

FGL 0422919

HARTOLDMON0034607

MONSANTO COMPANY

Nº 1835111

SUBJECT Chocolocco Creek PCB Sampling Site #3

JOB NO.

PREPARED BY (SIGNATURE) Vic Payne, Alabama Sit Gov.

DATE 9-20-8

QUALITY ASSURANCE FORM #1 - MIC-NATIONAL AQUATIC MONITORING PROGRAM

PERSONNEL SAMPLING Hougheem, Adams

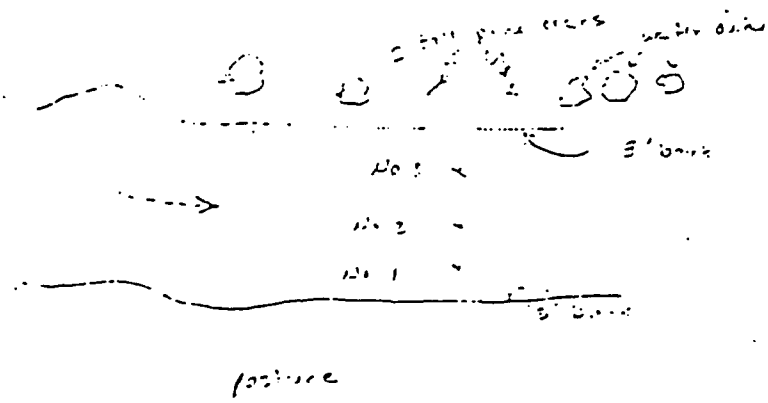
RIVER STAGE 6" avg. depth FLOW RATE _____ TIDE CONDITIONS N/A

SAMPLE SITE NAME _____ SAMPLE SITE NUMBER 3

SAMPLE COLLECTION METHOD USED (NUMBER) _____ DATE OF METHOD _____

Drawing of transect at each site and station I identification. Time [illegible]
(Record prominent landmarks and compass bearings).

Sample No. 1 - [illegible] - [illegible] 3' - 1.5' sample
No. 2 - [illegible] - driven 3' - 1.5' sample
No. 3 - " " " - driven 3' - 6" sample



Comments (weather conditions, problems with sampling, etc.)
at SCS Sta. 1325+00

NEV 093693

READ AND UNDERSTOOD BY W J Adams

DATE 9-20-8

FGL 0422920

HARTOLDMON0034608

MONSANTO COMPANY

№ 1835113

SUBJECT: Chiccolocco Creek PCB Sampling Site # 3

JOB NO. | PREPARED BY (SIGNATURE) W J Adams | DATE 9-20-83

QUALITY ASSURANCE FORM #3 - MIC-NATIONAL AQUATIC MONITORING PROGRAM

SEDIMENT SAMPLES

Sample Description Code	Date	Time	Water Depth(m)	Comments*
9-20-83-3-A	9/20/83	11:20	1-2 Ft	Mostly Clay - 3 cores Core contained 6"-13"
9-20-83-3-B	9/20/83	11:20	"	" "

*Comments are required on the physical appearance of the sediment, i.e., color, coarseness, sand, clay, silt, gravel, etc., and on the presence or absence of benthic organisms and if possible, which type of organisms are present.

NEV 093694

READ AND UNDERSTOOD BY [signature] | DATE 9/27/83

FGL 0422921

HARTOLDMON0034609

MONSANTO COMPANY

№ 1835115

SUBJECT: Chocolate Creek PCB Sampling #4

JOB NO.	PREPARED BY (SIGNATURE)	DATE
	Vic Payne	9-20-83

QUALITY ASSURANCE FORM #1 - MIC-NATIONAL AQUATIC MONITORING PROGRAM

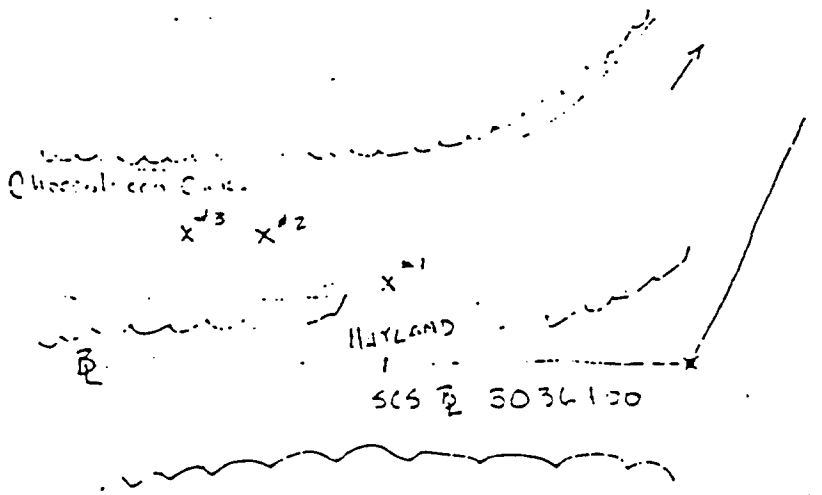
PERSONNEL SAMPLING T. Hargrave, D. Adams

RIVER STAGE _____ FLOW RATE _____ TIDE CONDITIONS N/A

SAMPLE SITE NAME Chocolate Creek SAMPLE SITE NUMBER 4

SAMPLE COLLECTION METHOD USED (NUMBER) _____ DATE OF METHOD _____

Drawing of transect at each site and station I identification.
(Record prominent landmarks and compass bearings).



Comments (weather conditions, problems with sampling, etc.)

Sample #1 - Brown Clay 20" sample
Sample #2 - Sandy 10" sample
Sample #3 - Black sand 15" sample

NEV 093695

READ AND UNDERSTOOD BY	DATE
William F. Adams	9-20-83

FGL 0422922

HARTOLDMON0034610

Nº 1835117

SUBJECT: Moccoluco Creek PCB Sampling Site # 4

JOB NO.

PREPARED BY (SIGNATURE): W J Adams

DATE: 9-20-83

QUALITY ASSURANCE FORM #3 - MIC-NATIONAL AQUATIC MONITORING PROGRAM

SEDIMENT SAMPLES

Sample Description Code	Date	Time	Water Depth(m)	Comments*
9-20-83-4-A	9-20-83	1200 PM	2-3'	Mostly clay -
9-20-83-4-B	9-20-83	12:00 PM	2-3'	Mostly clay

*Comments are required on the physical appearance of the sediment, i.e., color, coarseness, sand, clay, silt, gravel, etc., and on the presence or absence of benthic organisms and if possible, which type of organisms are present.

NEV 093696

READ AND UNDERSTOOD BY: C Stephens

DATE: 9/27/83

FGL 0422923

HARTOLDMON0034611

MONSANTO COMPANY

№ 1835119

SUBJECT Chocolocco Creek - PCB

JOB NO. | PREPARED BY - SIGNATURE | DATE 9/20/88

QUALITY ASSURANCE FORM #1 - MIC-NATIONAL AQUATIC MONITORING PROGRAM

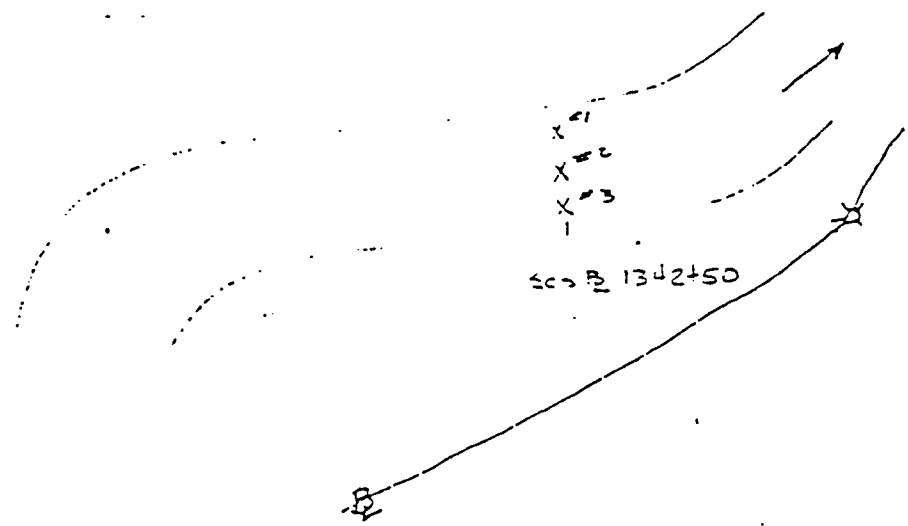
PERSONNEL SAMPLING Hodgeson / Adams

RIVER STAGE 3-4 Feet FLOW RATE _____ TIDE CONDITIONS N/A

SAMPLE SITE NAME Chocolocco Creek SAMPLE SITE NUMBER 5

SAMPLE COLLECTION METHOD USED (NUMBER) _____ DATE OF METHOD _____

Drawing of transect at each site and station 1 identification.
(Record prominent landmarks and compass bearings).



Comments (weather conditions, problems with sampling, etc.)

Sample #1 Sand 5" Samp. Driven 2.5 feet
Sample #2 Sand .18" Sample
Sample #3 Sandy-clay 20" Sample (sewage residue - sludge)

NEV 093697

READ AND UNDERSTOOD BY | DATE 9/27/88

FGL 0422924

HARTOLDMON0034612

MONSANTO COMPANY

№ 1835121

Choccolocco Creek Site # 5

PREPARED BY (SIGNATURE) W J Adams

DATE 9-20-8.

QUALITY ASSURANCE FORM #3 - MIC-NATIONAL AQUATIC MONITORING PROGRAM

SEDIMENT SAMPLES

Sample Description Code	Date	Time	Water Depth(m)	Comments*
9-20-83-5-A	9-20-83	1230	3-3½ ft	Heavy organic Gray Soil - Mucky
9-20-83-5-B	9-20-83	12:30	"	" " "

*Comments are required on the physical appearance of the sediment, i.e., color, coarseness, sand, clay, silt, gravel, etc., and on the presence or absence of benthic organisms and if possible, which type of organisms are present.

NEV 093698

READ AND UNDERSTOOD BY [signature]

DATE 9/27/83

FGL 0422925

HARTOLDMON0034613

MONSANTO COMPANY

Nº 1835123

SUBJECT: Chocolocco Crk Site No. 6

JOB NO.	PREPARED BY (SIGNATURE)	DATE
	Vic Payne	9-20-83

QUALITY ASSURANCE FORM #1 - MIC-NATIONAL AQUATIC MONITORING PROGRAM

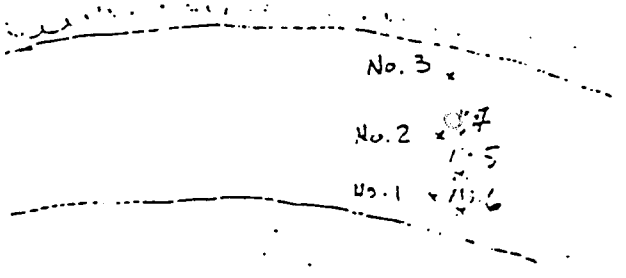
PERSONNEL SAMPLING T. Hoogreen Bill Rivers

RIVER STAGE 2.5' [illegible] FLOW RATE _____ TIDE CONDITIONS NA

SAMPLE SITE NAME Chocolocco Creek SAMPLE SITE NUMBER 6

SAMPLE COLLECTION METHOD USED (NUMBER) _____ DATE OF METHOD _____

Drawing of transect at each site and station 1 identification.
(Record prominent landmarks and compass bearings).



SCS B 1360+05

Comments (weather conditions, problems with sampling, etc.)

Yellow ribbon on tree overhanging stream (elm?)

Sample # 1 - probe 15" drop sandy, thin top layer sewage sludge.

Sample # 2 - 15" sample, sandy

Sample # 3 - 18" " sandy

Sample # 4 5" sample - sandy

5 [illegible] sample - "

6 18" SAMPLE - SANDY

NEV 093699

READ AND UNDERSTOOD BY	DATE
William J. Adams	9-20-83

FGL 0422926

HARTOLDMON0034614

MONSANTO COMPANY

№ 1835125

SUBJECT: Chocc-locco Creek Site # 6

JOB NO.

PREPARED BY (SIGNATURE): W J Calvert

DATE: 9-20-83

QUALITY ASSURANCE FORM #3 - MIC-NATIONAL AQUATIC MONITORING PROGRAM

SEDIMENT SAMPLES

Sample Description Code	Date	Time	Water Depth(m)	Comments*
9-20-83-6-A	9-20-83	3:15	2½-3½ ft	Sandy with some organic
9-20-83-6-B	9-20-83	"	"	"
9-20-83-6-C	9-20-83	"	"	"
9-20-83-6-D	9-20-83	"	"	"

*Comments are required on the physical appearance of the sediment, i.e., color, coarseness, sand, clay, silt, gravel, etc., and on the presence or absence of benthic organisms and if possible, which type of organisms are present.

NEV 093700

READ AND UNDERSTOOD BY: [signature]

DATE: 9/27/83

FGL 0422927

HARTOLDMON0034615

MONSANTO COMPANY

Nº 1835127

SUBJECT: Chocolocco Cre., Site No. 7

JOB NO.

PREPARED BY SIGNATURE: [signature]

DATE: 9-20-8.

QUALITY ASSURANCE FORM #1 - MIC-NATIONAL AQUATIC MONITORING PROGRAM

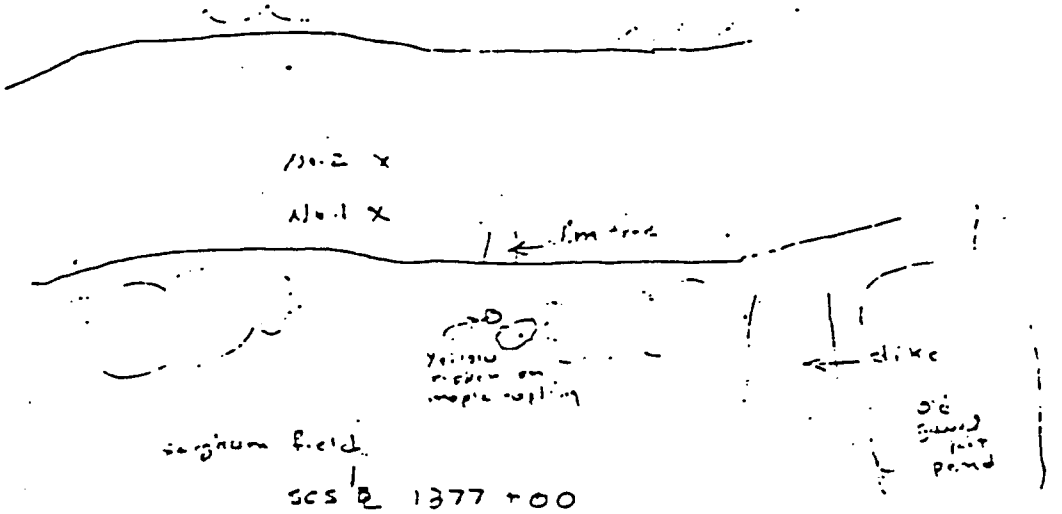
PERSONNEL SAMPLING Hoogheem / Adams

RIVER STAGE [illegible] FLOW RATE _____ TIDE CONDITIONS _____

SAMPLE SITE NAME _____ SAMPLE SITE NUMBER 7

SAMPLE COLLECTION METHOD USED (NUMBER) _____ DATE OF METHOD _____

Drawing of transect at each site and station 1 identification.
(Record prominent landmarks and compass bearings).



Comments (weather conditions, problems with sampling, etc.)

Sample No. 1 - Driven 30" - 18" sample collected - sandy, gray

" " 2 - " " - 15" " " " , sand color

(water depth at No. 2, site.)

" " 3 - Driven 30" - 12" sample collected - sandy, gray

4 Field Blank 1 } Split as 9-20-83-[illegible]-PB-1
5 " " 2 }
6 Field Blank 2
7 " " 2

NEV 093701

READ AND UNDERSTOOD BY: [signature]

DATE: 9/27/83

FGL 0422928

HARTOLDMON0034616

MONSANTO COMPANY

№ 1835129

PROJECT: Chocolocco Creek - PCB

ICS NO.

PREPARED BY (SIGNATURE)

DATE 9-20-83

QUALITY ASSURANCE FORM #3 - MIC-NATIONAL AQUATIC MONITORING PROGRAM

SEDIMENT SAMPLES

Sample Description Code	Date	Time	Water Depth(m)	Comments*
9-20-83-T-A	9-20-83	3:50		
9-20-83-T-B	9-20-83	3:50		
9-20-83-FB-1	9-20-83	4:05		
9-20-83-FB-2	9-20-83	4:05		
9-20-83-FB-1	9-20-83	4:05		TO SCS
9-20-83-FB-2	9-20-83	4:05		TO SCS

*Comments are required on the physical appearance of the sediment, i.e., color, coarseness, sand, clay, silt, gravel, etc., and on the presence or absence of benthic organisms and if possible, which type of organisms are present.

NEV 093702

READ AND UNDERSTOOD BY

DATE 9/27/83

FGL 0422929

HARTOLDMON0034617

MONSANTO COMPANY

№ 1835131

SUBJECT

Charco[illegible] [illegible] 3

FORM NO.	PREPARED BY (SIGNATURE)	DATE
	Vic Payne	9-20-83

QUALITY ASSURANCE FORM #1 - MIC-NATIONAL AQUATIC MONITORING PROGRAM

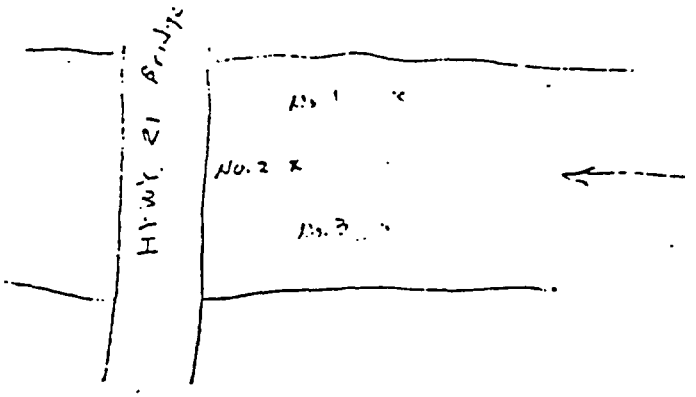
PERSONNEL SAMPLING [illegible]

RIVER STAGE 2 ft FLOW RATE _____ TIDE CONDITIONS N/A

SAMPLE SITE NAME _____ SAMPLE SITE NUMBER 8

SAMPLE COLLECTION METHOD USED (NUMBER) _____ DATE OF METHOD _____

Drawing of transect at each site and station 1 identification.
(Record prominent landmarks and compass bearings).



Comments (weather conditions, problems with sampling, etc.)

No. 1 - 6" sample, gravelly sand
No. 2 12" Sand/gravel
No 3. 12" Sand/gravel/organic

NEV 093703

READ AND UNDERSTOOD BY	DATE
William J. Blanco	9-20-83

FGL 0422930

HARTOLDMON0034618

MONSANTO COMPANY

№ 1835133

PROJECT: Chocolocco Creek

JOB NO.	PREPARED BY (SIGNATURE)	DATE
	[signature]	9-20-83

QUALITY ASSURANCE FORM #3 - MIC-NATIONAL AQUATIC MONITORING PROGRAM

SEDIMENT SAMPLES

Sample Description Code	Date	Time	Water Depth(m)	Comments*
9-20-83-S - A	9-20-83	4:45	1-2 ft	Sand/gravel
9-20-83-S - B	9-20-83	4:45	1-2 ft	"

*Comments are required on the physical appearance of the sediment, i.e., color, coarseness, sand, clay, silt, gravel, etc., and on the presence or absence of benthic organisms and if possible, which type of organisms are present.

NEV 093704

READ AND UNDERSTOOD BY	DATE
[signature]	9/27/83

FGL 0422931

HARTOLDMON0034619