DAMES & MOORE

A DAMES & MOORE GROUP COMPANY

STATUS REPORT AND WORK PLAN ADDENDUM
THE HUGÉ COMPANY
PAGEDALE, MISSOURI
MARCH 1999

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Dames & Moore Project No. 35889-002-045
March 22, 1999

DAMES & MOORE

A DAMES & MOORE GROUP COMPANY

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1.0 INTRODUCTION

This status report describes the work performed during the first mobilization at the site on February 15 and 16, 1999. During the first mobilization, the former stockpile was removed and the test pits were performed to identify and locate the storm sewer. This status report presents the results of confirmation sampling beneath the stockpile, the disposal characterization sampling from the stockpiles generated while performing test pits, and surface water sampling. A survey of the storm sewer was also performed during the first mobilization. The Work Plan Addendum identifies changing the discharge location for surface water to a location west of the site, refer to Section 5.0.

2.0 FIRST MOBILIZATION TASKS

On February 15 and 16, 1999, Dames & Moore performed the tasks listed below as outlined in the Revised Removal Action Work Plan (Rev. 2) dated November 1998.

- Removed impacted soil stockpiled west of the northwest corner of the Hugé building and disposed of the soil as a special waste at the Allied Waste landfill in Bridgeton, Missouri.
- Sampled standing water north of the east corner of the Hugé building for discharge characterization.
- Completed four test pits to confirm the presence and location of the clay tile pipe exiting the Hugé building and clay tile pipe south of the rail line.
- Determined the location of the discharge point for the new stormwater line to be installed north of the Hugé building.

2.1 Former Stockpile Removal

The stockpile of impacted soil was removed on February 15, 1999. Impacted soil was loaded in plastic lined dump trucks, covered with tarps, and transported to the Allied Waste landfill. A total of approximately 315 tons of soil (20 loads) was excavated from the former stockpile and transported to the landfill during the February mobilization.

One confirmatory sample was collected from beneath the former footprint of the stockpile after excavation was completed. The confirmatory sample consisted of a composite sample with four aliquots collected from approximately 0 to 6 inches below ground surface (bgs). The confirmatory sample was placed in laboratory supplied sample jars, labeled, and placed in a chilled cooler for transportation to the American Technical and Analytical Services (ATAS) for total arsenic, chlordane and 2,4,5-TP (Silvex) analysis. Sampling results are discussed in Section 3.1 of this report.

2.2 Surface Water Sampling

Ponded water collected upgradient of the berm in the ditch north of the Hugé building was sampled for discharge permitting. One sample of the ponded water was collected by dipping laboratory supplied bottles into the water. The samples were sealed, labeled, and placed in a chilled cooler for transportation to ATAS for total volatile organic compound (VOC), total RCRA metals, chlordane, 2,4,5-TP (Silvex), pH, total solids, total suspended solids, total volatile solids, and chemical oxygen demand analysis. Results of this sample and a permit for discharge has been submitted to the St. Louis Metropolitan Sewer District (MSD). A discussion of sample results is provided in Section 3.2.

2.3 Test Pits and Identification of Clay Tile Pipe

On February 16, 1999 Dames & Moore completed four test pits to identify and locate the north-south trending clay tile pipe exiting the Hugé building and the east-west trending clay pipe south and paralleling the Terminal Railroad track. The test pits were excavated with a back-hoe and the excavation spoils from each test pit were placed in individual stockpiles on and covered with plastic.

One composite sample was collected from each stockpile consisting of four aliquots. Samples were submitted to ATAS for total arsenic, chlordane, and 2,4,5-TP (Silvex).

The Work Plan indicated that a test pit would be completed along the rail line south of the east corner of the Hugé building. However, ponded water in this area at the time of the fieldwork prevented completing a test pit at this location.

The top-of-pipe and pipe invert elevations were determined at each test pit by a licensed surveyor relative to an arbitrary benchmark established at the site. In addition, the ground surface and top-of-pipe elevation were determined at the stormwater manhole located north of the day care center west of the site. The survey is provided as Figure 1.

A discussion of activities and observations for each test pit is presented in the following paragraphs.

Test Pit 1

Test Pit 1 is nine feet north of the location where the storm sewer exits the northern side of the Hugé building. An abandoned rail line was encountered just below the surface at this location, but the excavation was performed at this location anyway. A 12-inch diameter concrete pipe was present in the test pit; however, it was only present beneath the abandoned rail line behind the building. The concrete pipe was likely used in place of the clay tile pipe for strength purposes. A 12-inch diameter clay tile pipe was connected to the concrete pipe north of the rail line. The top of the pipe was located approximately three feet bgs. The soil removed from the test pit was stained and had a petroleum odor. The excavated soil was placed in one stockpile on a double layer of plastic, sampled and covered. The excavation was backfilled with crushed limestone gravel.

Test Pit 2

Test Pit 2 is 38 feet north of the Hugé building and immediately south of the ditch located along the Terminal Railroad tracks. At this location a 12-inch diameter clay tile T-shaped fitting was located, which connected the north-south trending pipe and the east-west trending pipe along the rail line. The T-shaped fitting was located approximately one foot bgs. The excavated soil was stained and a petroleum sheen was noted. The excavated soil was placed on plastic sheeting in one stockpile, sampled and covered. The excavation was then backfilled with crushed limestone gravel.

Test Pit 3

Test Pit 3 is 33 feet north of the west corner of the Hugé building. At this location, the 12-inch diameter clay tile pipe was located south of the MCI fiber optic line and at a depth of approximately 0.5 feet bgs. The excavated soil was not stained. The excavated soil was placed on plastic sheeting in one stockpile, sampled and covered. The excavation was backfilled with crushed limestone gravel.

Test Pit 4

Test Pit 4 is 45 feet west of Test Pit 3 near the northern extent of the former stockpile of impacted soil. At this location the 12-inch diameter clay tile pipe was located at a depth of approximately two feet bgs. Stained soil was removed from the excavation. The excavated soil was placed on plastic sheeting in one stockpile, sampled and covered. The excavation was backfilled with crushed limestone gravel.

3.0 LABORATORY ANALYTICAL RESULTS

3.1 Former Stockpile

Laboratory results of the composite soil sample collected beneath the former stockpile indicate that arsenic (46.4 mg/kg) and chlordane (3.440 mg/kg) exceeded the Removal Action Levels (RALs) of 11 mg/kg and 3.4 mg/kg, respectively. 2,4,5-TP (Silvex) was not detected in the composite sample collected beneath the former stockpile. These laboratory results indicate that additional excavation from the area of the former stockpile is required to achieve RALs for arsenic and chlordane. (See Table 1 and Appendix B).

3.2 Surface Water

Arsenic was the only constituent of concern detected in the surface water sample. The reported arsenic concentration was 0.056 mg/L. A permit to discharge the standing water to MSD is currently being prepared for submittal. Upon approval from MSD, the ponded water will be discharged to the sanitary sewer south of the Hugé building along Page Avenue.

3.3 Test Pits

Chlordane was detected at 4.35 mg/kg in the Test Pit 2 stockpile, which was the only constituent detected above RALs. Total chlordane concentrations in Test Pits 1, 2, and 4 were greater than twenty times 80% of the TCLP regulatory limit. The samples from Test Pits 1, 2, and 4 have been re-submitted to the analytical laboratory for TCLP chlordane analysis and results are pending. (See Table 2 and Appendix C).

Disposal permitting for stockpiled soil from each test pit will be performed upon receipt of the TCLP data.

4.0 ADDITIONAL WORK REQUIRED

4.1 Former Stockpile

Additional removal of soil is required from the former location of the stockpile to achieve the RALs for arsenic and chlordane. An additional six inches of soil will be removed from the former stockpile location. The removal and subsequent confirmation sampling will be performed in accordance with the Removal Action Work Plan. The additional removal will be performed at the time the test pit stockpiles are removed (see Section 4.3).

4.2 Surface Water

The surface water will be discharged to MSD pending approval of the discharge permit. The surface water will be discharged at the time the test pits stockpiles are removed (see Section 4.3).

4.3 Test Pits

Permitting for disposal of the test pit excavation spoils at the Allied Waste landfill will be performed after receipt of TCLP chlordane laboratory results. Loading, transportation and disposal will be performed in accordance with the Removal Action Work Plan.

5.0 WORK PLAN ADDENDUM

5.1 New Stormwater Sewer Line

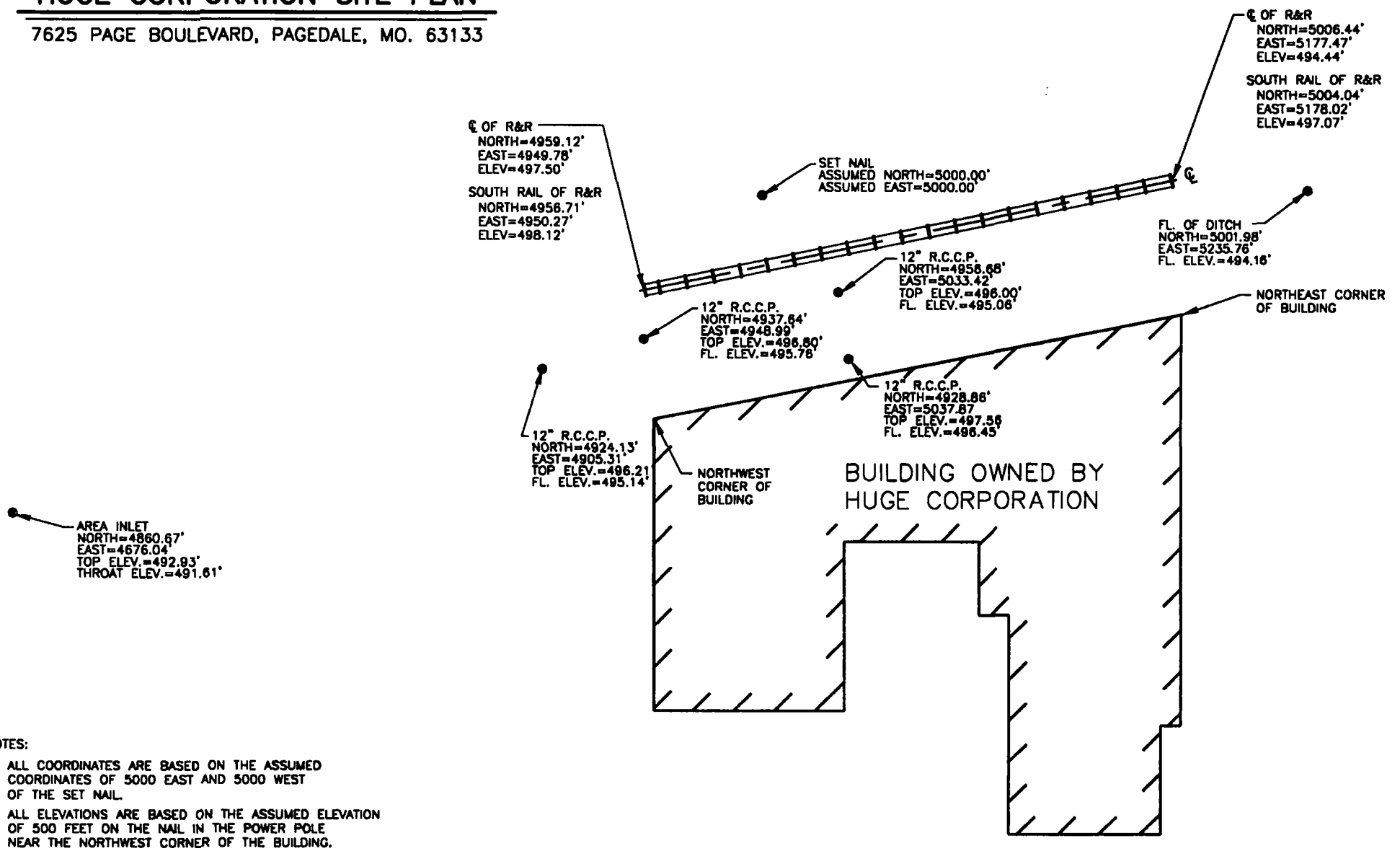
The existing 12-inch clay tile pipe apparently discharges to the existing stormwater manhole located west of the site; however, access to the manhole was not possible to physically observe the connection. The survey indicates the 12-inch clay tile pipe aligns with the storm sewer manhole and sufficient change in elevation exists between the stormwater pipe exiting the Hugé building and the proposed discharge location. Therefore, the existing 12-inch pipe will be replaced with a new pipe and then removed.

FIGURES

FIGURE

HUGE CORPORATION SITE PLAN

7625 PAGE BOULEVARD, PAGEDALE, MO. 63133



NOTES:

ALL COORDINATES ARE BASED ON THE ASSUMED COORDINATES OF 5000 EAST AND 5000 WEST OF THE SET NAIL.

ALL ELEVATIONS ARE BASED ON THE ASSUMED ELEVATION OF 500 FEET ON THE NAIL IN THE POWER POLE NEAR THE NORTHWEST CORNER OF THE BUILDING.

SITE PLAN	PROJECT NO. 1959
	SCALE: 1"=60'
HUGE CORPORATION	DATE: FEB. 1999
	DRAWN BY: B.E.C.
	CHECKED BY:
SHERBUT-CARSON & ASSOCIATES, P.C.	DATE CHECKED:
14 MEADOW HEIGHTS PROFESSIONAL PARK	REVISIONS:
COLLINSVILLE, ILLINOIS 62234	
PH. (618) 345-5454	
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TABLES

TABLES

Table 1
The Huge Company, Inc.
Confirmation Sample Results
Dames & Moore Project No. 35889-002-045

Sample Location	Sample Id.	Arsenic Results (mg/kg)	Arsenic RAL [1] (mg/kg)	Chlordane Results (mg/kg)	Chlordane RAL [1] (mg/kg)	2,4,5-TP Results (mg/kg)	2,4,5-TP RAL [1] (mg/kg)
Stockpile	S001-0215	46.4	11	3.44 [2]	3.400	ND	450

Notes:
1. RAL - Removal Action Level from the Removal Action Work Plan.
2. Concentration exceeds the resective RAL.

Table 2
The Huge Company, Inc.
Test Pit Sample Results
Dames & Moore Project No. 35889-002-045

Sample Location	Sample Id.	Arsenic Results (mg/kg)	Arsenic RAL [1] (mg/kg)	Twenty times 80% of the TCLP Threshold [2] (mg/kg)	Chlordane Results (mg/kg)	Chlordane RAL [1] (mg/kg)	Twenty times 80% of the TCLP Threshold [2] (mg/kg)	2,4,5-TP Results (mg/kg)	2,4,5-TP RAL [1] (mg/kg)	Twenty times 80% of the TCLP Threshold [2] (mg/kg)
Test Pit 1	TP001-0216	4.48	11	80	0.853	3.4	0.48 [4]	ND	450	16
Test Pit 2	TP002-0216	6.98	11	80	4.35 [3]	3.4	0.48 [4]	ND	450	16
Test Pit 3	TP003-0216	6.6	11	80	0.193	3.4	0.48	ND	450	16
Test Pit 4	TP004-0216	8.8	11	80	1.020	3.4	0.48 [4]	ND	450	16

Notes:
1. RAL - Removal Action Level from the Removal Action Work Plan.
2. Twenty times 80% of the TCLP threshold concentration is the total concentration of the respective constituent which must be present such that the sample could be considered characteristically hazardous.
3. Concentration exceeds the resective RAL.
4. Concentration exceeds the twenty times 80% of the TCLP threshold concentration criteria, thus requiring TCLP analysis prior to disposal.

APPENDIX A

SURFACE WATER LABORATORY RESULTS

AMERICAN TECHNICAL & ANALYTICAL SERVICES, INC.
875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 • FAX (314) 434-0080

March 8, 1999

Mike Ellis
Dames & Moore
721 Emerson Road, Suite 220
St. Louis, MO 63141

RE: ATAS #25619.01-#25619.02
#35889-002-045 - Huge

Dear Mr. Ellis:

Enclosed are the analytical reports for the samples received in our laboratory on February 15, 1999.

If, in your review, you should have any questions or require additional information, please call me at (314) 434-4570.

Thank you for choosing ATAS for your analytical needs.

Sincerely,

Ruseal Brewer

Ruseal Brewer
Project Manager

Enclosures

RB/jp

DAMES & MOORE
MAR 9 1999
LOUIS, MISSOURI

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2561901HB(709)

DATE : 03-05-99

SAMPLE MATRIX : WATER
ATAS # : 25619.01
DATE SUBMITTED: 02-15-99
DATE EXTRACTED: 02-22-99
DATE ANALYZED : 02-24-99
METHOD REF. : SW846-8150, EPA METHODOLOGY
PROJECT : #35889-002-045 - HUGE
SAMPLE ID : W001-0215

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

HERBICIDES

HERBICIDES	REPORTING LIMIT	RESULTS
2,4,5-TP (SILVEX)	0.4	ND

QA/QC SURROGATE RECOVERIES

DCAA (10-98%) 76 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2561901HB(709)

DATE : 03-05-99

SAMPLE MATRIX : WATER
ATAS # : METHOD BLANK
DATE SUBMITTED: 02-15-99
DATE EXTRACTED: 02-22-99
DATE ANALYZED : 02-24-99
METHOD REF. : SW846-8150, EPA METHODOLOGY
PROJECT : #35889-002-045 - HUGE
SAMPLE ID : METHOD BLANK

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

HERBICIDES

HERBICIDES	REPORTING LIMIT	RESULTS
2,4,5-TP (SILVEX)	0.4	ND

QA/QC SURROGATE RECOVERIES

DCAA (10-98%) 69 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

LABORATORY QUALITY CONTROL SEQUENCE

SAMPLE MATRIX : WATER
QA SEQUENCE NO. : LABORATORY CONTROL SAMPLE
DATE EXTRACTED : 02-22-99
DATE ANALYZED : 02-24-99
METHOD REF. : EPA 8150

REPORT DATE: 03-05-99

HERBICIDE LABORATORY CONTROL SAMPLE RECOVERY FORM

COMPOUND	LCS PERCENT RECOVERY	LCSD PERCENT RECOVERY	RELATIVE PERCENT DIFFERENCE
2,4,5-TP (SILVEX)	53 %	61 %	14 %

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721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2561901VO(709)

DATE : 03-05-99

SAMPLE MATRIX : WATER
ATAS # : 25619.01
DATE SUBMITTED: 02-15-99
METHOD REF. : SW846-8260, EPA METHODOLOGY

DATE ANALYZED : 02-17-99
PROJECT # : 35889-002-045 - HUGE
SAMPLE ID : W001-0215

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

VOLATILES	R.L.	RESULTS	VOLATILES	R.L.	RESULTS
TOTAL-1,2-DICHLOROETHENE	5	17	TOLUENE	5	ND
XYLENE (TOTAL)	5	ND	trans-1,3-DICHLOROPROPENE	5	ND
DICHLORODIFLUOROMETHANE	10	ND	1,1,2-TRICHLOROETHANE	5	ND
CHLOROMETHANE	10	ND	TETRACHLOROETHENE	5	ND
VINYL CHLORIDE	10	ND	1,3-DICHLOROPROPANE	5	ND
BROMOMETHANE	10	ND	2-HEXANONE	10	ND
CHLOROETHANE	10	ND	DIBROMOCHLOROMETHANE	5	ND
TRICHLOROFLUOROMETHANE	10	ND	1,2-DIBROMOETHANE	5	ND
1,1-DICHLOROETHENE	5	ND	CHLOROBENZENE	5	ND
ACETONE	10	ND	1,1,1,2-TETRACHLOROETHANE	5	ND
IODOMETHANE	10	ND	ETHYLBENZENE	5	ND
CARBON DISULFIDE	5	ND	STYRENE	5	ND
METHYLENE CHLORIDE	5	ND	BROMOFORM	5	ND
trans-1,2-DICHLOROETHENE	5	ND	ISOPROPYLBENZENE	5	ND
METHYL TERT-BUTYL ETHER	10	ND	1,1,2,2-TETRACHLOROETHANE	5	ND
1,1-DICHLOROETHANE	5	9	BROMOBENZENE	5	ND
VINYL ACETATE	10	ND	1,2,3-TRICHLOROPROPANE	5	ND
2,2-DICHLOROPROPANE	5	ND	n-PROPYLBENZENE	5	ND
cis-1,2-DICHLOROETHENE	5	17	2-CHLOROTOLUENE	5	ND
2-BUTANONE	10	ND	1,3,5-TRIMETHYLBENZENE	5	ND
BROMOCHLOROMETHANE	5	ND	4-CHLOROTOLUENE	5	ND
CHLOROFORM	5	ND	TERT-BUTYLBENZENE	5	ND
1,1,1-TRICHLOROETHANE	5	23	1,2,4-TRIMETHYLBENZENE	5	ND
CARBON TETRACHLORIDE	5	ND	sec-BUTYLBENZENE	5	ND
1,1-DICHLOROPROPENE	5	ND	1,3-DICHLOROBENZENE	5	ND
BENZENE	5	ND	p-ISOPROPYLTOLUENE	5	ND
1,2-DICHLOROETHANE	5	ND	1,4-DICHLOROBENZENE	5	ND
TRICHLOROETHENE	5	5	n-BUTYLBENZENE	5	ND
1,2-DICHLOROPROPANE	5	ND	1,2-DICHLOROBENZENE	5	ND
DIBROMOMETHANE	5	ND	1,2-DIBROMO-3-CHLOROPROPANE	5	ND
BROMODICHLOROMETHANE	5	ND	1,2,4-TRICHLOROBENZENE	5	ND
cis-1,3-DICHLOROPROPENE	5	ND	HEXACHLOROBUTADIENE	5	ND
4-METHYL-2-PENTANONE	10	ND	NAPHTHALENE	5	ND
1,2,3-TRICHLOROBENZENE	5	ND			

QA/QC SURROGATE RECOVERIES

TOLUENE-d8(80-116) 103% BROMOFLUOROBENZENE(86-115) 106%
1,2-DICHLOROETHANE-D4(76-114) 92%

B = ANALYTE DETECTED IN METHOD BLANK, POSSIBLY BELOW THE REPORTING LIMIT.
RL = REPORTING LIMIT; DEFINED AS THE PRACTICAL QUANTITATION LIMIT PLUS ANY DILUTION, POSITIVE VALUES BELOW THIS LIMIT WERE NOT REPORTED.
ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2561901MT(709)

DATE : 03-05-99

SAMPLE MATRIX : WATER
ATAS # : 25619.01
DATE SUBMITTED: 02-15-99
PROJECT : #35889-002-045 - HUGE
SAMPLE ID : W001-0215

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			INORGANICS		
COD	28.6	mg/L	74.8	02-17-99	EPA 410.4
pH		S.U.@25c	8.1	02-23-99	EPA 150.1
TSS	10	mg/L	20	02-18-99	EPA 160.2
TOTAL SOLIDS	10	mg/L	234	02-23-99	EPA 160.3
TOTAL VOL.SOLIDS	10	mg/L	180	02-23-99	EPA 160.4
			METALS		
ARSENIC	0.050	mg/L	0.056	02-25-99	SW 6010
BARIUM	0.020	mg/L	0.051	02-25-99	SW 6010
CADMIUM	0.005	mg/L	ND	02-25-99	SW 6010
CHROMIUM	0.005	mg/L	ND	02-25-99	SW 6010
LEAD	0.050	mg/L	ND	02-18-99	SW 6010
SILVER	0.010	mg/L	ND	02-25-99	SW 6010
SELENIUM	0.100	mg/L	ND	02-25-99	SW 6010
MERCURY	0.0002	mg/L	ND	03-01-99	SW 7470

mg/L = PARTS PER MILLION(PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT

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721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2561901PC(709)

DATE : 03-05-99

SAMPLE MATRIX : WATER
ATAS # : METHOD BLANK
DATE SUBMITTED: 02-15-99
DATE EXTRACTED: 02-17-99
DATE ANALYZED : 02-18-99
METHOD REF. : SW846-8081, EPA METHODOLOGY
PROJECT : #35889-002-045 - HUGE
SAMPLE ID : METHOD BLANK

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

PESTICIDES/PCB'S	REPORTING LIMIT	RESULTS
CHLORDANE (TECHNICAL)	0.014	ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	77 %
TETRACHLORO-M-XYLENE(30-150)	78 %

D = NOT DETECTED ABOVE REPORTING LIMIT
= ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

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LABORATORY QUALITY CONTROL SEQUENCE

SAMPLE MATRIX : WATER
DATE EXTRACTED: 02-17-99
DATE ANALYZED : 02-18-99
METHOD REF. : SW846-8081, EPA METHODOLOGY

REPORT DATE: 03-05-99

LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

COMPOUND	LCS PERCENT RECOVERY	LCSD PERCENT RECOVERY	RELATIVE PERCENT DIFFERENCE
GAMMA-BHC	87 %	97 %	11 %
HEPTACLOR	93 %	103 %	10 %
ALDRIN	81 %	92 %	13 %
DIELDRIN	88 %	98 %	11 %
ENDRIN	92 %	104 %	12 %
4,4-DDT	84 %	98 %	15 %

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CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2561901MT(709)

DATE : 03-05-99

QA/QC

DESCRIPTION		PARAMETER	RESULTS	
METHOD BLANK	02-17-99	COD	<25	mg/L
METHOD BLANK	02-25-99	ARSENIC	<0.050	mg/L
METHOD BLANK	02-25-99	BARIUM	<0.020	mg/L
METHOD BLANK	02-25-99	CADMIUM	<0.005	mg/L
METHOD BLANK	02-25-99	CHROMIUM	<0.005	mg/L
METHOD BLANK	02-18-99	LEAD	<0.050	mg/L
METHOD BLANK	02-25-99	SILVER	<0.010	mg/L
METHOD BLANK	02-25-99	SELENIUM	<0.100	mg/L
METHOD BLANK	03-01-99	MERCURY	<0.0002	mg/L
CONTROL SPIKE	02-17-99	COD	102 %	RECOVERY
CONTROL SPIKE	02-25-99	ARSENIC	95 %	RECOVERY
CONTROL SPIKE	02-25-99	BARIUM	93 %	RECOVERY
CONTROL SPIKE	02-25-99	CADMIUM	93 %	RECOVERY
CONTROL SPIKE	02-25-99	CHROMIUM	98 %	RECOVERY
CONTROL SPIKE	02-18-99	LEAD	99 %	RECOVERY
CONTROL SPIKE	02-25-99	SILVER	98 %	RECOVERY
CONTROL SPIKE	02-25-99	SELENIUM	97 %	RECOVERY
CONTROL SPIKE	03-01-99	MERCURY	96 %	RECOVERY

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CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2561901MT(709)

DATE : 03-05-99

QA/QC

DESCRIPTION		PARAMETER	RESULTS	
METHOD BLANK	02-22-99	ARSENIC	<1.00	mg/Kg
CONTROL SPIKE	02-22-99	ARSENIC	93 %	RECOVERY

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

:LIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2561901VO(709)

DATE : 03-05-99

SAMPLE MATRIX : WATER
ATAS # : METHOD BLANK
DATE SUBMITTED: 02-15-99
METHOD REF. : SW846-8260, EPA METHODOLOGY

DATE ANALYZED : 02-17-99
PROJECT # : 35889-002-045 - HUGE
SAMPLE ID : METHOD BLANK

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

VOLATILES	R.L.	RESULTS	VOLATILES	R.L.	RESULTS
'OTAL-1,2-DICHLOROETHENE	5	ND	TOLUENE	5	ND
XYLENE (TOTAL)	5	ND	trans-1,3-DICHLOROPROPENE	5	ND
'ICHLORODIFLUOROMETHANE	10	ND	1,1,2-TRICHLOROETHANE	5	ND
'HLOROMETHANE	10	ND	TETRACHLOROETHENE	5	ND
VINYL CHLORIDE	10	ND	1,3-DICHLOROPROPANE	5	ND
˜ROMOMETHANE	10	ND	2-HEXANONE	10	ND
HLOROETHANE	10	ND	DIBROMOCHLOROMETHANE	5	ND
.RICHLOROFLUOROMETHANE	10	ND	1,2-DIBROMOETHANE	5	ND
1,1-DICHLOROETHENE	5	ND	CHLOROBENZENE	5	ND
.CETONE	10	ND	1,1,1,2-TETRACHLOROETHANE	5	ND
ODOMETHANE	10	ND	ETHYLBENZENE	5	ND
CARBON DISULFIDE	5	ND	STYRENE	5	ND
'ETHYLENE CHLORIDE	5	ND	BROMOFORM	5	ND
rans-1,2-DICHLOROETHENE	5	ND	ISOPROPYLBENZENE	5	ND
METHYL TERT-BUTYL ETHER	10	ND	1,1,2,2-TETRACHLOROETHANE	5	ND
˜,1-DICHLOROETHANE	5	ND	BROMOBENZENE	5	ND
'INYL ACETATE	10	ND	1,2,3-TRICHLOROPROPANE	5	ND
_,2-DICHLOROPROPANE	5	ND	n-PROPYLBENZENE	5	ND
cis-1,2-DICHLOROETHENE	5	ND	2-CHLOROTOLUENE	5	ND
-BUTANONE	10	ND	1,3,5-TRIMETHYLBENZENE	5	ND
ROMOCHLOROMETHANE	5	ND	4-CHLOROTOLUENE	5	ND
CHLOROFORM	5	ND	TERT-BUTYLBENZENE	5	ND
,1,1-TRICHLOROETHANE	5	ND	1,2,4-TRIMETHYLBENZENE	5	ND
ARBON TETRACHLORIDE	5	ND	sec-BUTYLBENZENE	5	ND
1,1-DICHLOROPROPENE	5	ND	1,3-DICHLOROBENZENE	5	ND
˜ENZENE	5	ND	p-ISOPROPYLTOLUENE	5	ND
,2-DICHLOROETHANE	5	ND	1,4-DICHLOROBENZENE	5	ND
RICHLOROETHENE	5	ND	n-BUTYLBENZENE	5	ND
1,2-DICHLOROPROPANE	5	ND	1,2-DICHLOROBENZENE	5	ND
'IBROMOMETHANE	5	ND	1,2-DIBROMO-3-CHLOROPROPANE	5	ND
ROMODICHLOROMETHANE	5	ND	1,2,4-TRICHLOROBENZENE	5	ND
cis-1,3-DICHLOROPROPENE	5	ND	HEXACHLOROBUTADIENE	5	ND
-METHYL-2-PENTANONE	10	ND	NAPHTHALENE	5	ND
,2,3-TRICHLOROBENZENE	5	ND			

QA/QC SURROGATE RECOVERIES

TOLUENE-d8(80-116) 101% BROMOFLUOROBENZENE(86-115) 101%
1,2-DICHLOROETHANE-D4(76-114) 94%

= ANALYTE DETECTED IN METHOD BLANK, POSSIBLY BELOW THE REPORTING LIMIT.
RL = REPORTING LIMIT; DEFINED AS THE PRACTICAL QUANTITATION LIMIT PLUS ANY DILUTION, POSITIVE VALUES BELOW THIS LIMIT WERE NOT REPORTED.
D = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

LABORATORY QUALITY CONTROL SEQUENCE

SAMPLE MATRIX : WATER
DATE ANALYZED : 02-17-99
METHOD REF. : SW846-8260, EPA METHODOLOGY

REPORT DATE: 03-05-99

LABORATORY CONTROL SAMPLE RECOVERY

COMPOUND	LCS % REC.
1,1-DICHLOROETHENE	120
TRICHLOROETHENE	104
BENZENE	104
TOLUENE	106
CHLOROBENZENE	100

* = VALUES OUTSIDE OF ADVISORY LIMITS

AMERICAN TECHNICAL & ANALYTICAL SERVICES, INC.
875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 • FAX (314) 434-0080

March 10, 1999

Mike Ellis
Dames & Moore
721 Emerson Road, Suite 220
St. Louis, MO 63141

RE: ATAS #25619.01-#25619.02
#35889-002-045 - Huge

Dear Mr. Ellis:

Enclosed, per your request, is the revised report for the above captioned project received in our laboratory on February 15, 1999.

If, in your review, you should have any questions or require additional information, please call me at (314) 434-4570.

Thank you for choosing ATAS for your analytical needs.

Sincerely,

Ruseal Brewer

Ruseal Brewer
Project Manager

Enclosures

RB/jp

DAMES & MOORE
MAR 11 1999
ST. LOUIS, MISSOURI

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2561901PC(709)
DATE: 03-05-99
REVISED DATE: 03-10-99

SAMPLE MATRIX : WATER
ATAS # : 25619.01
DATE SUBMITTED: 02-15-99
DATE EXTRACTED: 02-17-99
DATE ANALYZED : 02-18-99
METHOD REF. : SW846-8081, EPA METHODOLOGY
PROJECT : #35889-002-045 - HUGE
SAMPLE ID : W001-0215

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

PESTICIDES/PCB'S	REPORTING LIMIT	RESULTS
CHLORDANE (TECHNICAL)	1.00	ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	38 %
TETRACHLORO-M-XYLENE(30-150)	55 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

ATAS

AMERICAN TECHNICAL & ANALYTICAL SERVICES, Inc.

875 Fee Fee Road • Maryland Heights, MO 63043-3211 • Office (314) 434-4570 • FAX (314) 434-0080

CHAIN OF CUSTODY RECORD

ATAS Client Name: DAMES & MOORE

Project Name: HUGE

Project #: 35889-002-045

Form Completed By: ERIC FRITSCH

PO #:

Sample ID	Sample Date	Sample Time	Sample Matrix	Grab	Comp	No. of Containers	TOTAL VOC	TOTAL PESTICIDES	CHLORDANE	2,4,5-TP (SILVEX)	PH	TOTAL SOLIDS	TOTAL SUSPENDED SOLIDS	TOTAL VOLATILE SOLIDS	COD	ARSENIC	Remarks BA -	Lab Use Only Initials	Date	LOCATION
W001-0215	2-15-99	9:30	WATER	X		7	X	X	X	X	X	X	X	X	X		ARCHIVE REMAINDER	256190		
S001-0215	2-15-99	4:15	SOIL	X		3			X	X						X	SAMPLE FOR POSSIBLE OTHER ANALYSIS	↓ 02		

Relinquished by:	Received by:	Relinquished by:	Received by:
Signature: [signature]	Signature: [signature]	Signature:	Signature:
Printed Name: ERIC FRITSCH	Printed Name: JIM PORREN	Printed Name:	Printed Name:
Firm: DAMES & MOORE	Firm: ATAS	Firm:	Firm:
Date/Time: 2-15-99/5:05	Date/Time: 2-15-99 5:08	Date/Time:	Date/Time:

Turnaround Requirements
- ____ ASAP
- ____ 5 working days
- X 10 working days
- ____ 15 working days

Preservative
- A - COLD
- B - HNO_3
- C - H_2SO_4
- D - NaOH
- E - HCl
- F - _____

Temperature: _____

SEND RESULTS TO (Name & Company): MIKE ELLIS / DAMES & MOORE

Original to ATAS/Copy to Client

APPENDIX B

CONFIRMATION SAMPLE LABORATORY RESULTS

AMERICAN TECHNICAL & ANALYTICAL SERVICES, INC.

875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 • FAX (314) 434-0080

March 8, 1999

Mike Ellis
Dames & Moore
721 Emerson Road, Suite 220
St. Louis, MO 63141

RE: ATAS #25619.01-#25619.02
#35889-002-045 - Huge

Dear Mr. Ellis:

Enclosed are the analytical reports for the samples received in our laboratory on February 15, 1999.

If, in your review, you should have any questions or require additional information, please call me at (314) 434-4570.

Thank you for choosing ATAS for your analytical needs.

Sincerely,

Ruseal Brewer

Ruseal Brewer
Project Manager

Enclosures

RB/jp

DAMES & MOORE
MAR 9 1999
ST. LOUIS, MISSOURI

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2561901HB(709)

DATE : 03-08-99

SAMPLE MATRIX : SOIL
ATAS # : 25619.02
DATE SUBMITTED: 02-15-99
DATE EXTRACTED: 02-26-99
DATE ANALYZED : 03-05-99
METHOD REF. : SW846-8150, EPA METHODOLOGY
PROJECT : #35889-002-045 - HUGE
SAMPLE ID : S001-0215

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

HERBICIDES

HERBICIDES	REPORTING LIMIT	RESULTS
2,4,5-TP (SILVEX)	12	ND

QA/QC SURROGATE RECOVERIES

DCAA (18-94%) 106 % *

D = NOT DETECTED ABOVE REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.
* = VALUES OUTSIDE OF QC LIMITS

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2561901HB(709)

DATE : 03-08-99

SAMPLE MATRIX : SOIL
ATAS # : METHOD BLANK
DATE SUBMITTED: 02-15-99
DATE EXTRACTED: 02-26-99
DATE ANALYZED : 03-04-99
METHOD REF. : SW846-8150, EPA METHODOLOGY
PROJECT : #35889-002-045 - HUGE
SAMPLE ID : METHOD BLANK

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

HERBICIDES

HERBICIDES	REPORTING LIMIT	RESULTS
2,4,5-TP (SILVEX)	10	ND

QA/QC SURROGATE RECOVERIES

DCAA (18-94%) 65 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

LABORATORY QUALITY CONTROL SEQUENCE

SAMPLE MATRIX : SOIL
QA SEQUENCE NO. : LABORATORY CONTROL SAMPLE
DATE EXTRACTED : 02-26-99
DATE ANALYZED : 03-04-99
METHOD REF. : EPA 8150

REPORT DATE: 03-08-99

HERBICIDE LABORATORY CONTROL SAMPLE RECOVERY FORM

COMPOUND	LCS PERCENT RECOVERY	LCSD PERCENT RECOVERY	RELATIVE PERCENT DIFFERENCE
2,4,5-TP (SILVEX)	82 %	70 %	16 %

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2561901PC(709)

DATE : 03-05-99

SAMPLE MATRIX : SOIL
ATAS # : 25619.02
DATE SUBMITTED: 02-15-99
DATE EXTRACTED: 02-16-99
DATE ANALYZED : 02-18-99
METHOD REF. : SW846-8081, EPA METHODOLOGY
PROJECT : #35889-002-045 - HUGE
SAMPLE ID : S001-0215

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

PESTICIDES/PCB'S	REPORTING LIMIT	RESULTS
CHLORDANE (TECH.)	47.0	3440

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-142)	D %
TETRACHLORO-M-XYLENE(28-124)	D %

ND = NOT DETECTED ABOVE REPORTING LIMIT
D = DILUTED OUT
B = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2561901PC(709)

DATE : 03-05-99

SAMPLE MATRIX : SOIL
ATAS # : METHOD BLANK
DATE SUBMITTED: 02-15-99
DATE EXTRACTED: 02-16-99
DATE ANALYZED : 02-18-99
METHOD REF. : SW846-8081, EPA METHODOLOGY
PROJECT : #35889-002-045 - HUGE
SAMPLE ID : METHOD BLANK

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

PESTICIDES/PCB'S	REPORTING LIMIT	RESULTS
CHLORDANE (TECH.)	0.470	ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-142)	53 %
TETRACHLORO-M-XYLENE(28-124)	43 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
= ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

LABORATORY QUALITY CONTROL SEQUENCE

SAMPLE MATRIX : SOIL
DATE EXTRACTED: 02-16-99
DATE ANALYZED : 02-18-99
METHOD REF. : SW846-8081, EPA METHODOLOGY

REPORT DATE: 03-05-99

LABORATORY CONTROL SAMPLE RECOVERY

COMPOUND	LCS PERCENT RECOVERY
GAMMA-BHC	47 %
HEPTACLOR	59 %
ALDRIN	49 %
DIELDRIN	51 % *
ENDRIN	54 % *
4,4-DDT	50 % *

= VALUES OUTSIDE OF ADVISORY LIMITS

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2561901MT(709)

DATE : 03-05-99

SAMPLE MATRIX : SOIL
ATAS # : 25619.02
DATE SUBMITTED: 02-15-99
PROJECT : #35889-002-045 - HUGE
SAMPLE ID : S001-0215

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			METALS		
ARSENIC	1.00	mg/Kg	46.4	02-22-99	SW 6010

mg/Kg = PARTS PER MILLION(PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT

AMERICAN TECHNICAL & ANALYTICAL SERVICES, Inc.

875 Fee Fee Road • Maryland Heights, MO 63043-3211 • Office (314) 434-4570 • FAX (314) 434-0080

CHAIN OF CUSTODY RECORD

ATAS Client Name: DAMES & MOORE

Project Name: HUGE

Project #: 35889-002-045

Form Completed By: ERIC FRITSCH

PO #:

Sample ID	Sample Date	Sample Time	Sample Matrix	Grab	Comp	No. of Containers	TOTAL VOC	TOTAL RCRA METALS	CHLORDANE	2,4,5-TP (SILVEX)	pH	TOTAL SOLIDS	TOTAL SUSPENDED SOLIDS	TOTAL VOLATILE SOLIDS	COD	ARSENIC	Remarks BA -	Lab Use Only Initials / Date / LOCATION
W001-0215	2-15-99	9:30	WATER	X		7	X	X	X	X	X	X	X	X	X		ARCHIVE REMAINING	2-16-99
S001-0215	2-15-99	4:15	SOIL	X		3			X	X						X	SAMPLE	↓ 02
																	FOR POSSIBLE	
																	OTHER	
																	ANALYSIS	

Relinquished by:	Received by:	Relinquished by:	Received by:
Signature: Eric Fritsch	Signature: Jim Robben	Signature	Signature
Printed Name: ERIC FRITSCH	Printed Name: JIM ROBBEN	Printed Name	Printed Name
Firm: DAMES & MOORE	Firm: ATAS	Firm	Firm
Date/Time: 2-15-99 / 5:05	Date/Time: 2-15-99 5:08	Date/Time	Date/Time

Turnaround Requirements
- ___ ASAP
- X 5 working days
- ___ 10 working days
- ___ 15 working days

Preservative
- A - COLD
- B - HNO_3
- C - H_2SO_4
- D - NaOH
- E - HCl
- F - _____

Temperature: _____

SEND RESULTS TO (Name & Company): MIKE ELLIS / DAMES & MOORE

Original to ATAS/Copy to Client

APPENDIX C

TEST PIT LABORATORY RESULTS

AMERICAN TECHNICAL & ANALYTICAL SERVICES, INC.

875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 • FAX (314) 434-0080

March 8, 1999

Mike Ellis
Dames & Moore
721 Emerson Road, Suite 220
St. Louis, MO 63141

RE: ATAS #25641.01-#25641.06
#35889-001-045 - Huge

Dear Mr. Ellis:

Enclosed are the analytical reports for the samples received in our laboratory on February 16, 1999.

If, in your review, you should have any questions or require additional information, please call me at (314) 434-4570.

Thank you for choosing ATAS for your analytical needs.

Sincerely,

Ruseal Brewer

Ruseal Brewer
Project Manager

Enclosures

RB/jp

DAMES & MOORE
MAR 9 1999
ST. LOUIS, MISSOURI

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 · FAX (314) 434-0080

CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2564101HB(709)

DATE : 03-08-99

SAMPLE MATRIX : SOIL
ATAS # : 25641.01
DATE SUBMITTED: 02-16-99
DATE EXTRACTED: 02-26-99
DATE ANALYZED : 03-04-99
METHOD REF. : SW846-8150, EPA METHODOLOGY
PROJECT : #35889-001-045 - HUGE
SAMPLE ID : TP001-0216

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

HERBICIDES

HERBICIDES	REPORTING LIMIT	RESULTS
2,4,5-TP (SILVEX)	13	ND

QA/QC SURROGATE RECOVERIES

DCAA (18-94%) 92 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.
* = VALUES OUTSIDE OF QC LIMITS

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2564101HB(709)

DATE : 03-08-99

SAMPLE MATRIX : SOIL
ATAS # : 25641.02
DATE SUBMITTED: 02-16-99
DATE EXTRACTED: 02-26-99
DATE ANALYZED : 03-05-99
METHOD REF. : SW846-8150, EPA METHODOLOGY
PROJECT : #35889-001-045 - HUGE
SAMPLE ID : TP002-0216

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

HERBICIDES

HERBICIDES	REPORTING LIMIT	RESULTS
2,4,5-TP (SILVEX)	13	ND

QA/QC SURROGATE RECOVERIES

DCAA (18-94%) 100 % *

ND = NOT DETECTED ABOVE REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.
* = VALUES OUTSIDE OF QC LIMITS

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2564101HB(709)

DATE : 03-08-99

SAMPLE MATRIX : SOIL
ATAS # : 25641.03
DATE SUBMITTED: 02-16-99
DATE EXTRACTED: 02-26-99
DATE ANALYZED : 03-05-99
METHOD REF. : SW846-8150, EPA METHODOLOGY
PROJECT : #35889-001-045 - HUGE
SAMPLE ID : TP003-0216

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

HERBICIDES

HERBICIDES	REPORTING LIMIT	RESULTS
2,4,5-TP (SILVEX)	12	ND

QA/QC SURROGATE RECOVERIES

DCAA (18-94%) 97 % *

ND = NOT DETECTED ABOVE REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.
* = VALUES OUTSIDE OF QC LIMITS

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2564101HB(709)

DATE : 03-08-99

SAMPLE MATRIX : SOIL
ATAS # : 25641.04
DATE SUBMITTED: 02-16-99
DATE EXTRACTED: 02-26-99
DATE ANALYZED : 03-05-99
METHOD REF. : SW846-8150, EPA METHODOLOGY
PROJECT : #35889-001-045 - HUGE
SAMPLE ID : TP004-0216

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

HERBICIDES

HERBICIDES	REPORTING LIMIT	RESULTS
2,4,5-TP (SILVEX)	13	ND

QA/QC SURROGATE RECOVERIES

DCAA (18-94%) 23 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.
* = VALUES OUTSIDE OF QC LIMITS

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2564101HB(709)
DATE : 03-08-99

SAMPLE MATRIX : SOIL
ATAS # : METHOD BLANK
DATE SUBMITTED: 02-16-99
DATE EXTRACTED: 02-26-99
DATE ANALYZED : 03-04-99
METHOD REF. : SW846-8150, EPA METHODOLOGY
PROJECT : #35889-001-045 - HUGE
SAMPLE ID : METHOD BLANK

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

HERBICIDES

HERBICIDES	REPORTING LIMIT	RESULTS
2,4,5-TP (SILVEX)	10	ND

QA/QC SURROGATE RECOVERIES

DCAA (18-94%) 65 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

LABORATORY QUALITY CONTROL SEQUENCE

SAMPLE MATRIX : SOIL
QA SEQUENCE NO. : MATRIX SPIKE/MATRIX SPIKE DUPLICATE
DATE EXTRACTED : 02-26-99
DATE ANALYZED : 03-05-99
METHOD REF. : EPA 8150

REPORT DATE: 03-08-99

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	25641.05 MS PERCENT RECOVERY	25641.06 MSD PERCENT RECOVERY	RELATIVE PERCENT DIFFERENCE
2,4,5-TP (SILVEX)	83 %	86 %	4 %

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

:LIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2564101PC(709)

DATE : 03-08-99

SAMPLE MATRIX : SOIL
ATAS # : 25641.01
DATE SUBMITTED: 02-16-99
DATE EXTRACTED: 02-18-99
DATE ANALYZED : 02-23-99
METHOD REF. : SW846-8081, EPA METHODOLOGY
PROJECT : #35889-001-045 - HUGE
SAMPLE ID : TP001-0216

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

PESTICIDES/PCB'S	REPORTING LIMIT	RESULTS
CHLORDANE (TECH.)	9.4	853

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	D %
TETRACHLORO-M-XYLENE(30-150)	D %

ND = NOT DETECTED ABOVE REPORTING LIMIT
D = DILUTED OUT
B = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2564101PC(709)
DATE : 03-08-99

SAMPLE MATRIX : SOIL
ATAS # : 25641.02
DATE SUBMITTED: 02-16-99
DATE EXTRACTED: 02-18-99
DATE ANALYZED : 02-23-99
METHOD REF. : SW846-8081, EPA METHODOLOGY
PROJECT : #35889-001-045 - HUGE
SAMPLE ID : TP002-0216

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

PESTICIDES/PCB'S	REPORTING LIMIT	RESULTS
CHLORDANE (TECH.)	47.0	4350

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	D %
TETRACHLORO-M-XYLENE(30-150)	D %

ND = NOT DETECTED ABOVE REPORTING LIMIT
D = DILUTED OUT
B = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2564101PC(709)

DATE : 03-08-99

SAMPLE MATRIX : SOIL
ATAS # : 25641.03
DATE SUBMITTED: 02-16-99
DATE EXTRACTED: 02-18-99
DATE ANALYZED : 02-24-99
METHOD REF. : SW846-8081, EPA METHODOLOGY
PROJECT : #35889-001-045 - HUGE
SAMPLE ID : TP003-0216

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

PESTICIDES/PCB'S	REPORTING LIMIT	RESULTS
CHLORDANE (TECH.)	2.35	193

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	D %
TETRACHLORO-M-XYLENE(30-150)	D %

ND = NOT DETECTED ABOVE REPORTING LIMIT
) = DILUTED OUT
; = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

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:LIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2564101PC(709)

DATE : 03-08-99

SAMPLE MATRIX : SOIL
ATAS # : 25641.04
DATE SUBMITTED: 02-16-99
DATE EXTRACTED: 02-18-99
DATE ANALYZED : 02-24-99
METHOD REF. : SW846-8081, EPA METHODOLOGY
PROJECT : #35889-001-045 - HUGE
SAMPLE ID : TP004-0216

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

PESTICIDES/PCB'S	REPORTING LIMIT	RESULTS
CHLORDANE (TECH.)	9.40	1020

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	D %
TETRACHLORO-M-XYLENE(30-150)	D %

ND = NOT DETECTED ABOVE REPORTING LIMIT
= DILUTED OUT
= ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2564101PC(709)

DATE : 03-08-99

SAMPLE MATRIX : SOIL
ATAS # : METHOD BLANK
DATE SUBMITTED: 02-16-99
DATE EXTRACTED: 02-18-99
DATE ANALYZED : 02-23-99
METHOD REF. : SW846-8081, EPA METHODOLOGY
PROJECT : #35889-001-045 - HUGE
SAMPLE ID : METHOD BLANK

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

PESTICIDES/PCB'S	REPORTING LIMIT	RESULTS
CHLORDANE (TECH.)	0.470	ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	96 %
TETRACHLORO-M-XYLENE(30-150)	92 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

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LABORATORY QUALITY CONTROL SEQUENCE

SAMPLE MATRIX : SOIL
DATE EXTRACTED: 02-18-99
DATE ANALYZED : 02-23-99
METHOD REF. : SW846-8081, EPA METHODOLOGY

REPORT DATE: 03-08-99

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	25641.05 MATRIX SPIKE % RECOVERY	25641.06 MATRIX SPIKE DUP. % RECOVERY	RELATIVE PERCENT DIFFERENCE
GAMMA-BHC	70 %	72 %	3 %
HEPTACLOR	67 %	71 %	6 %
ALDRIN	70 %	73 %	4 %
DIELDRIN	84 %	91 %	8 %
ENDRIN	83 %	96 %	15 %
4,4-DDT	95 %	83 %	13 %

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CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2564101MT(709)

DATE : 03-08-99

SAMPLE MATRIX : SOIL
ATAS # : 25641.01
DATE SUBMITTED: 02-16-99
PROJECT : #35889-001-045 - HUGE
SAMPLE ID : TP001-0216

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			METALS		
ARSENIC	1.00	mg/Kg	4.48	02-22-99	SW 6010

mg/Kg = PARTS PER MILLION(PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT

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CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2564101MT(709)

DATE : 03-08-99

SAMPLE MATRIX : SOIL
ATAS # : 25641.02
DATE SUBMITTED: 02-16-99
PROJECT : #35889-001-045 - HUGE
SAMPLE ID : TP002-0216

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			METALS		
ARSENIC	1.00	mg/Kg	6.98	02-22-99	SW 6010

mg/Kg = PARTS PER MILLION(PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2564101MT(709)

DATE : 03-08-99

SAMPLE MATRIX : SOIL
ATAS # : 25641.03
DATE SUBMITTED: 02-16-99
PROJECT : #35889-001-045 - HUGE
SAMPLE ID : TP003-0216

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			METALS		
ARSENIC	1.00	mg/Kg	6.60	02-22-99	SW 6010

mg/Kg = PARTS PER MILLION(PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2564101MT(709)
DATE : 03-08-99

SAMPLE MATRIX : SOIL
ATAS # : 25641.04
DATE SUBMITTED: 02-16-99
PROJECT : #35889-001-045 - HUGE
SAMPLE ID : TP004-0216

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			METALS		
ARSENIC	1.00	mg/Kg	8.8	02-22-99	SW 6010

mg/Kg = PARTS PER MILLION(PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT

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CLIENT: DAMES & MOORE
721 EMERSON ROAD, SUITE 220
ST. LOUIS, MO 63141
ATTN: MIKE ELLIS

REPORT: 2564101MT(709)

DATE : 03-08-99

QA/QC

DESCRIPTION		PARAMETER	RESULTS		
METHOD BLANK	02-22-99	ARSENIC	<1.00	mg/Kg	
CONTROL SPIKE	02-22-99	ARSENIC	92 %	RECOVERY	
MATRIX SPIKE	25641.05	ARSENIC	82 %	RECOVERY	
MATRIX SPIKE DUP.	25641.06	ARSENIC	84 %	RECOVERY	2 % RPD

AMERICAN TECHNICAL & ANALYTICAL SERVICES, Inc.

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PAGE 1 OF 1

CHAIN OF CUSTODY RECORD

ATAS Client Name: Dames & Moore

Project Name: Huge'

Project #: 35889-001-045

Form Completed By: Eric Fritsch

PO #:

Sample ID	Sample Date	Sample Time	Sample Matrix	Grab	Comp	No. of Containers	Total Arsenic	Chlordane	2,4,5-TP (Silvex)	Remarks	Lab Use Only Initials: LM Date: 2-17-99 LOCATION: 131-BA
TP001-0216	2-16-99		Soil		X		X	X	X	Archive Remaining	25641.01
TP002-0216							X	X	X	Sample	02
TP003-0216							X	X	X		03
TP004-0216							X	X	X		04
[redacted]											
TP003-0216-MS/MSD							X	X	X	Matrix Spike / Matrix Spike Dupe	05 MS / 06 MSD

Relinquished by:	Received by:	Relinquished by:	Received by:
Signature: [signature]	Signature: [signature]	Signature	Signature
Printed Name: Eric Fritsch	Printed Name: Walter Dosser	Printed Name	Printed Name
Firm: Dames & Moore	Firm: ATAS	Firm	Firm
Date/Time: 2-16-99 / 1548	Date/Time: 2-16-99 1548	Date/Time	Date/Time

Turnaround Requirements
- ____ ASAP
- ____ 5 working days
- X 10 working days
- ____ 15 working days

Preservative
- A - COLD
- B - HNO_3
- C - H_2SO_4
- D - NaOH
- E - HCl
- F - _____

Temperature: 5 to 6 C

SEND RESULTS TO (Name & Company): Mike Ellis / Dames & Moore

Original to ATAS/Copy to Client