PROJECT ID: 00260018

SAMPLE ID: DK27069

DESCRIPTOR: COMPLAINT RESPONSE

HERITAGE ENVIRONMENTAL SERVICES, LLC

7901 West Morris Street
Indianapolis, IN 46231

Dempsen

MITT L. DENNEY
INDIANA DEPT. OF ENV. MANAGEMENT

REPORT PACKAGE #7946

SAMPLE: ***A533487***
IDEM ID: ***DK27069***

Done

HERITAGE ENVIRONMENTAL SERVICES, LLC

7901 West Morris Street
Indianapolis, IN 46231
Phone: 317/243-0811
FAX: 317/486-5095
Internet:http://www.heritage-enviro.com

QUALITY ASSURANCE REPORT PACKAGE # 7946
FOR
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

MITT L. DENNEY
INDIANA DEPT. OF ENV. MANAGEMENT
2525 NORTH SHADELAND AVENUE
BUILDING 30
INDIANAPOLIS, IN 46219
(317) 308-3324

SAMPLE: **A533487**

IDEM ID: **DK27069**

HERITAGE ENVIRONMENTAL SERVICES, LLC
COMMERCIAL LABORATORY OPERATIONS
7901 WEST MORRIS STREET
INDIANAPOLIS, INDIANA 46231
PHONE: (317) 243-8304
FAX: (317) 486-5095

APPROVED BY: G.M. Bush, QAO
PROJECT CHEMIST

RECEIVED
[redacted]
IDEM-Water Mgmt
Drinking Water Branch

Recycled Paper

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Heritage Environmental Services, LLC
7901 West Morris Street
Indianapolis, IN 46231
Phone: (317) 243-0811
Fax: (317) 486-5095

CASE NARRATIVE
SHIPPING AND RECEIVING

The following sample was received at Heritage Environmental laboratory on 05-October-2000:

Sample #: A533487

IDEM #: DK27069

The sample was received within EPA recommended holding times and in good condition. If required, a pH screen confirmed that the sample was preserved to acceptable pH levels. The sample was analyzed within holding times as prescribed by the analytical method. Exceptions to these statements, additional information, and any analytical anomalies are noted on the accompanying Certificate of Analysis Report.

Nancy J. Brown

Nancy J. Brown
Document Control Officer

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

☒ OWM ☐ OSHWM ☐ OER ☐ OAM

CHAIN OF CUSTODY

I certify that the sample(s) listed below was/were collected by me or in my presence.

Date: 10 / 4 / 00

Signature: James Harris

Section: Ground Water

LAB NUMBER ASSIGNED	IDEM CONTROL NUMBER	CONSISTING OF THE INDICATED NUMBER OF BOTTLES											DATE AND TIME COLLECTED
		2000 ml P, N. M.	1000 ml P, N. M.	1000 ml G, N. M.	500 ml G, W. M.	40 ml VIAL	120 ml G, (B.O.)	500 ml P, N. M.	250 ml P, N. M.				
AS33487	DK27069			2									10 / 4 / 00 3 : 00 AM/PM
													/ / : AM/PM
													/ / : AM/PM
													/ / : AM/PM
													/ / : AM/PM
													/ / : AM/PM
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													/ / : AM/PM
													/ / : AM/PM
													/ / : AM/PM

P - Plastic G - Glass N.M. - Narrow Mouth W.M. - Wide Mouth B.O. - Bacti. Only

CARRIERS

Should samples be Iced? Y N

I certify that I received the above sample(s).

SIGNATURE	DATE AND TIME	SEALS INTACT		COMMENTS
RELINQUISHED BY: James Harris	10 / 5 / 00	Y	N	2 - 6°SK glass one liter (amber) SK
RECEIVED BY: S. KINNAMAN	9 : 00 AM/PM			
RELINQUISHED BY:	/ /	Y	N	
RECEIVED BY:	: AM/PM			
RELINQUISHED BY:	/ /	Y	N	
RECEIVED BY:	: AM/PM			
RELINQUISHED BY:	/ /	Y	N	
RECEIVED BY:	: AM/PM			
RELINQUISHED BY:	/ /	Y	N	
RECEIVED BY:	: AM/PM			

LAB CUSTODIAN

I certify that I received the above sample(s) and is/are recorded in the official record book. The same sample(s) will be in the custody of competent laboratory personnel at all times or locked in a secured area.

Signature: S. KINNAMAN Date: 5 OCT 00 Time: 0900 AM/PM

Lab: HERITAGE Address: INDIANAPOLIS

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER/GROUND WATER SECTION
BAA 97-044 SAMPLE TASK SHEET

Site ID: 00260018 IDEM Sample #'s: DK 27069 to DK _____ Project Date: October 4, 2000

Sampler: _____ Assigned Lab: EHL: [ ] HLI: [X]

TASK 1 - METALS

DW Stds		Geochem		Other		Other	
Antimony		Barium		Aluminum			
Arsenic		Calcium		Boron			
Beryllium		Iron		Cobalt			
Cadmium		Magnesium		Manganese			
Chromium		Potassium		Selenium			
Copper		Sodium		Silver			
Lead				Titanium			
Mercury				Thallium			
Nickle				Zinc			

TASK 2 - INORGANICS, MICROBIOLOGIC, NUTRIENTS & ORGANICS

Alkalinity		Total Coliforms,		Phosphorous (Applicable to /All Froms)	
BOD5		Cyanide, Total		Solids, Filterable Residue (TDS)	
BOD, Ultimate		Cyanide, Amenable		Solids, Non-Filterable Residue (TSS)	
Bromide		Fluoride		Solids, % (Solid Waste Matrices)	
Chemical Oxygen Demand		Hardness as CaC03		Solids, Settleable Residue	
Chloride		Nitrogen, Kjeldahl (TKN)		Specific Conductanc	
Chlorine, Free & Total		Nitrogen, Nitrate		Sulfate	
Chlorine, Free		Nitrogen, Nitrite		Total Organic carbon (TOC)	
Chromium, Hexavalent		Nitrogen, Nitrate-Nitrite		Turbidity	
Coliforms, E.coli		pH (Lab)			
Coliforms, Fecal		Phosphorous, ortho			

TASK 5 - VOLATILE ORGANICS	5A - 524.2			5B - 524E
TASK 6 - SEMIVOLATILE ORGANICS	6B - 525.2			6B -525.2

TASK 7 - DIOXINS, PCB's & PESTICIDES

504.1 - EDB & DBCP		513 -TCDD (2,3,7,8-TCDD)		547 - Glyphosate	X
505 - Organohalides & PCB's		515.1 - Chlorinated Acids - ECD		548.1 -Endothall	
507 - Nitrogen/Phosphorous NPD		531.1 - Carbamates		549.1 - Diquat/Paraquat	X
508.1 - Chlorinated Acids - ECD					

SAS

APPROXIMATE CONCENTRATIONS (worst case):	10ppm	X	100ppm		≥ 1000ppm		
REPORTING TIME (days):	30		14	X	2		

Please Send Reports to:	Hand Deliver Reports to:	COMMENTS
Mitt Denney Ground Water Section, 6633 [illegible] N Senate Ave Indianapolis, IN 46204 (317) 308-3324 (317) 308-3339, fax	Mitt Denney Ground Water Section, 6633 2525 N Shadeland Ave Indianapolis, IN 46219 (317) 308-3324 (317) 308-3339, fax	

Revision: 08/2/1998-2

HERITAGE ENVIRONMENTAL SERVICES, LLC

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Indianapolis, IN 46231
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Internet:http://www.heritage-enviro.com

CASE NARRATIVE

IDEM
Organics Section PACKET 1566
GC - FID
18 October 2000

The following samples were analyzed for Diquat and Paraquat using method EPA 549.1. A high performance liquid chromatograph equipped with a UV detector was used for the analyses. Diquat was scanned at 308 nm, while Paraquat was scanned at 257 nm.

IDEM #	Heritage #
DK27069	A533487

Water sample A533487 was below the detection limit of 2.0 micrograms per Liter (µg/L) for Diquat and Paraquat.

The quality assurance and quality control performance results for this run were within the established limits.

Heritage Environmental Services
Limited Liability Company

Bryan E. Bell
Organics Section Analyst

Recycled Paper

Sample Set Method: Diquat_1149

1	BLANK		Inject Samples	Normal	Diquat	3	100.0	7.00
2	L-1 Std		Inject Standards	Normal	Diquat	1	100.0	7.00
3	L-2 Std		Inject Standards	Normal	Diquat	1	100.0	7.00
4	L-3 Std		Inject Standards	Normal	Diquat	1	100.0	7.00
5	L-4 Std		Inject Standards	Normal	Diquat	1	100.0	7.00
6	L-5 Std		Inject Standards	Normal	Diquat	1	100.0	7.00
7	BLA 228		Inject Samples	Normal	Diquat	1	100.0	7.00
8	LFB 228		Inject Samples	Normal	Diquat	1	100.0	7.00
9	A532795		Inject Samples	Normal	Diquat	1	100.0	7.00
10	A532795 MS		Inject Samples	Normal	Diquat	1	100.0	7.00
11	A532795 MSD		Inject Samples	Normal	Diquat	1	100.0	7.00
12	BLA 231		Inject Samples	Normal	Diquat	1	100.0	7.00
13	LFB 231		Inject Samples	Normal	Diquat	1	100.0	7.00
14	A533487		Inject Samples	Normal	Diquat	1	100.0	7.00
15	A533487 MS		Inject Samples	Normal	Diquat	1	100.0	7.00
16	A533487 MSD		Inject Samples	Normal	Diquat	1	100.0	7.00
17	CCV L3		Inject Samples	Normal	Diquat	1	100.0	7.00

1	BLANK	3.00	3.00	1.00000	1.00	
2	L-1 Std	3.00	3.00	1.00000	1.00	
3	L-2 Std	3.00	3.00	1.00000	1.00	
4	L-3 Std	3.00	3.00	1.00000	1.00	
5	L-4 Std	3.00	3.00	1.00000	1.00	
6	L-5 Std	3.00	3.00	1.00000	1.00	
7	BLA 228	3.00	3.00	100.00000	5.00	
8	LFB 228	3.00	3.00	100.00000	5.00	
9	A532795	3.00	3.00	100.00000	5.00	
10	A532795 MS	3.00	3.00	100.00000	5.00	
11	A532795 MSD	3.00	3.00	100.00000	5.00	
12	BLA 231	3.00	3.00	100.00000	5.00	
13	LFB 231	3.00	3.00	100.00000	5.00	
14	A533487	3.00	3.00	100.00000	5.00	
15	A533487 MS	3.00	3.00	100.00000	5.00	
16	A533487 MSD	3.00	3.00	100.00000	5.00	
17	CCV L3	3.00	3.00	1.00000	1.00	

RH00802

HERITAGE ENVIRONMENTAL SERVICES, C.L.O.
GC-GROUP/HPLC SECTION PREP SHEET

DATE 10 / 9 / 00 ANALYTE(s) D. QUAT PREP CODE: P 549.0

ANALYST(s) BJW / 1367 ParaQuat TEST CODE: O 549.0

H.E.S. C.L.O. SAMPLE NUMBER	INITIAL wt. / vol.	FINAL VOLUME	DATE	TIME (military)	DESCRIPTION
1) A533487	100 ml	5 ml	10-9-00	18:30	DK 27069 IDEM
2)					
3)					
4)					
5)					
6)					
7)					
8)					
9)					
10)					
11)					
12)					
13)					
14)					
15)					
16)					
17)					
18)					
19)					
20)					
BLA02 Q1158146	100 ml	5 ml	10-9-00	1830	BLA 231
SPI02 Q1158147	100 ml	5 ml	↓	↓	A533487 MS
DPS02 Q1158148	100 ml	5 ml			↓ MSD
LFB02 Q1158149	100 ml	5 ml			LFB 231
DLFB0					DLFB

COMMENTS:

C-8 Lot 061583

SPIKES: 50 µl HA 1514

SURROGATES:

BALANCE#

SOLVENTS:

REVIEWED: BJW

ACETONITRILE:

DATE: 9 Oct 2000

METHYLENE CHLORIDE

ACETONE

iso-OCTANE

n-PENTANE

METHANOL

PAGE#

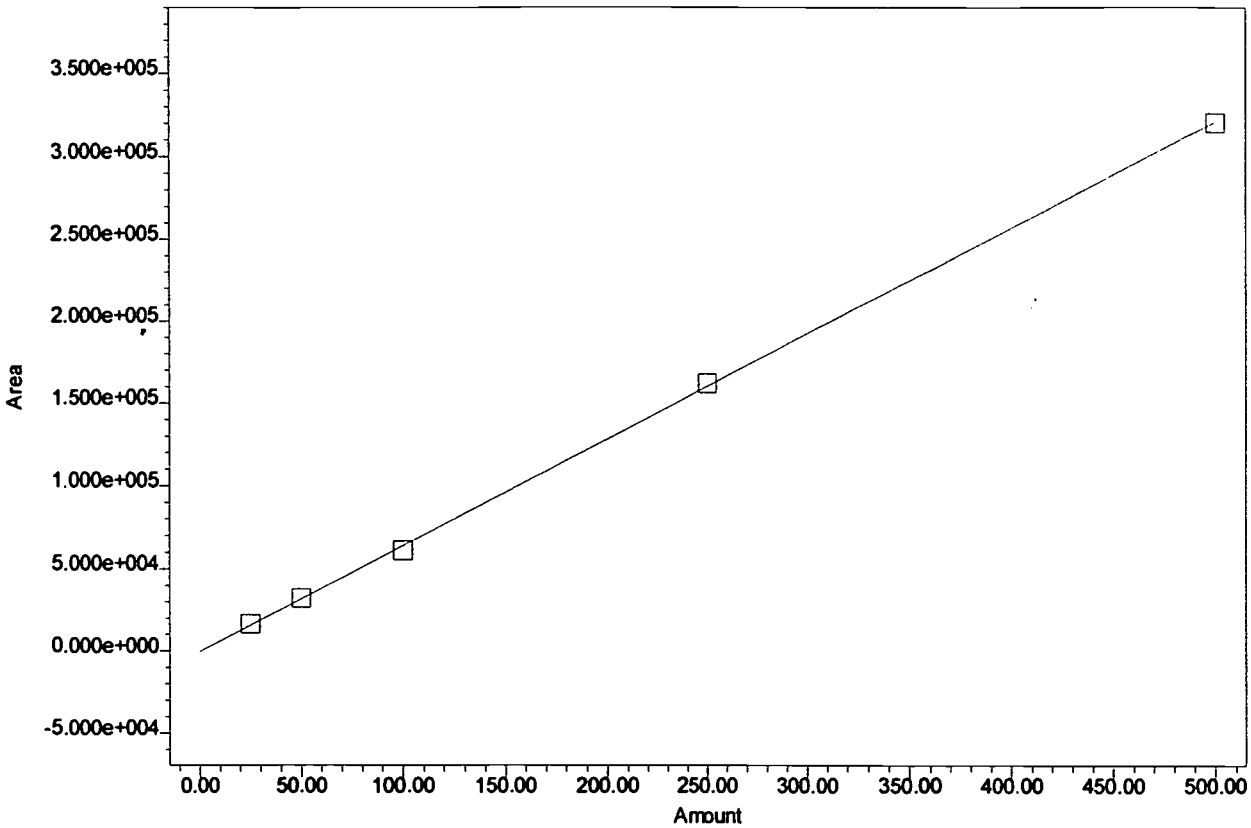
HPLCPS.XLS

CALIBRATION DATA

Calibration Information

Name	Diquat	A	-4.746686e+002	Calibration Id	8834
System	996	B	6.430194e+002	Date Calibrated	10/10/2000 3:45:14 PM
Channel	308nm	C	0.000000e+000	Time	4.220
Fit Type	Linear	D	0.000000e+000	Processing Method	Diquat_linear
		R^2	0.999813		

Calibration Plot



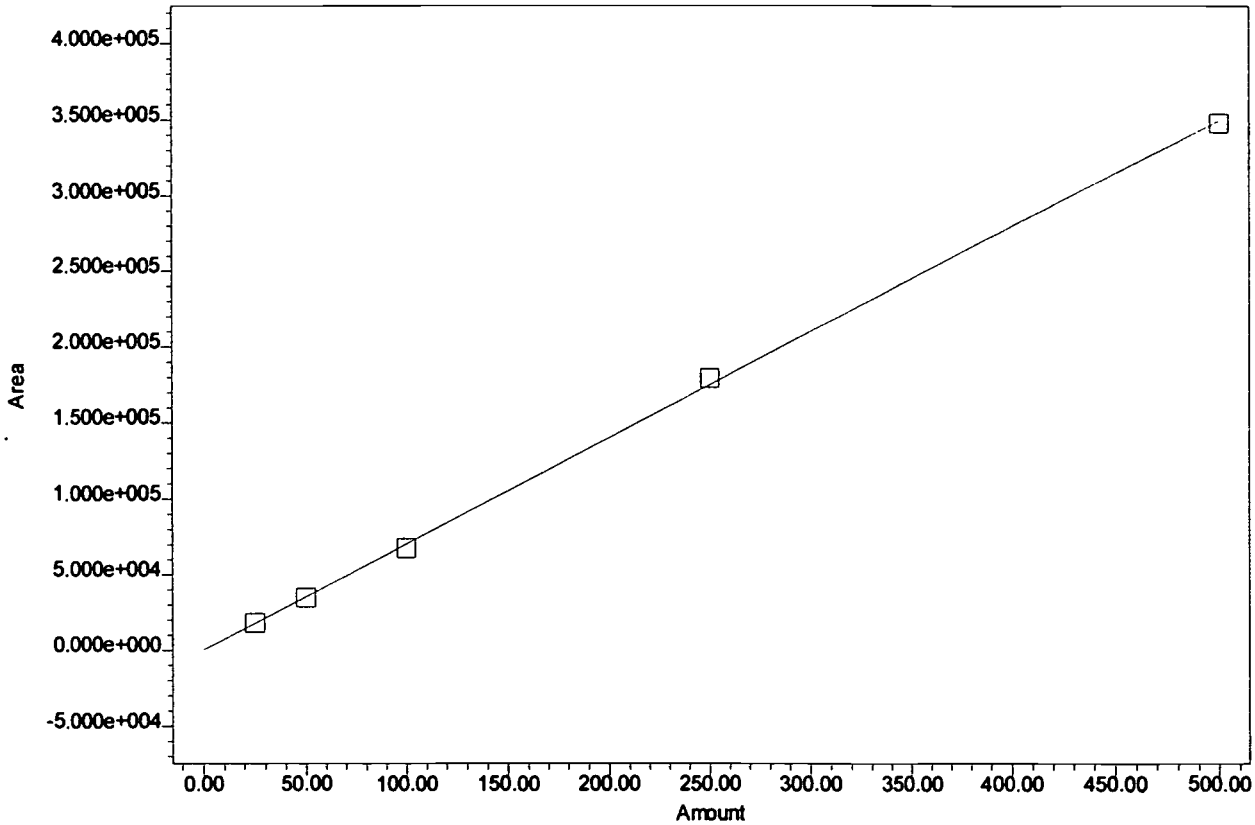
Peak: Diquat

	Name	Level	X Value	Response	Calc. Value	% Deviation	Manual	Ignore
1	Diquat		25.000000	16419.706575	26.273509	5.094	No	No
2	Diquat		50.000000	32151.635913	50.739224	1.478	No	No
3	Diquat		100.000000	61137.316275	95.816684	-4.183	No	No
4	Diquat		250.000000	162172.605705	252.943036	1.177	No	No
5	Diquat		500.000000	320538.320050	499.227547	-0.154	No	No

Calibration Information

Name	Paraquat	A	2.910295e+002	Calibration Id	8838
System	996	B	6.983945e+002	Date Calibrated	10/10/2000 3:45:28 PM
Channel	257	C	0.000000e+000	Time	4.480
Fit Type	Linear	D	0.000000e+000	Processing Method	Diquat_linear
		R^2	0.999626		

Calibration Plot



Peak: Paraquat

	Name	Level	X Value	Response	Calc. Value	% Deviation	Manual	Ignore
1	Paraquat		25.000000	18083.901869	25.476824	1.907	No	No
2	Paraquat		50.000000	34729.097842	49.310341	-1.379	No	No
3	Paraquat		100.000000	67573.682908	96.339043	-3.661	No	No
4	Paraquat		250.000000	179214.766636	256.192953	2.477	No	No
5	Paraquat		500.000000	347868.567430	497.680840	-0.464	No	No

SampleName L-1 Std

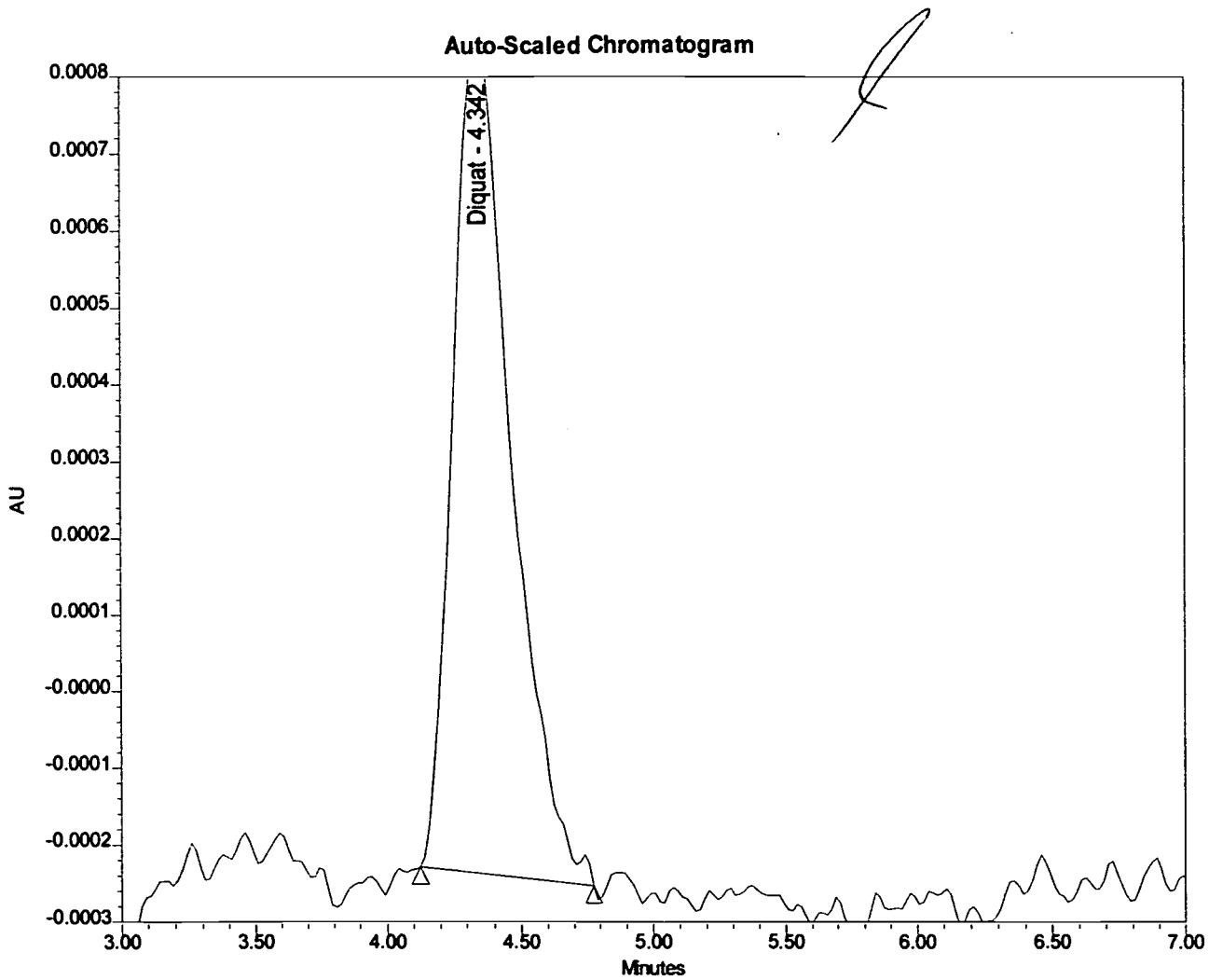
Channel Id 8784

Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

Date Acquired 10/10/2000 11:18:59 AM



Peak Results

	Name	RT	Area	Amount
1	Diquat	4.342	16420	25.000
2	Paraquat	4.480		

SampleName L-1 Std

Channel Id 8784

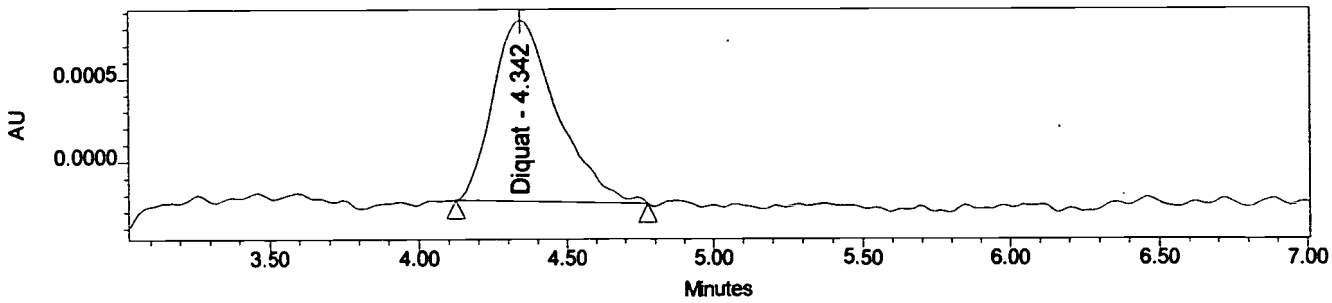
Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

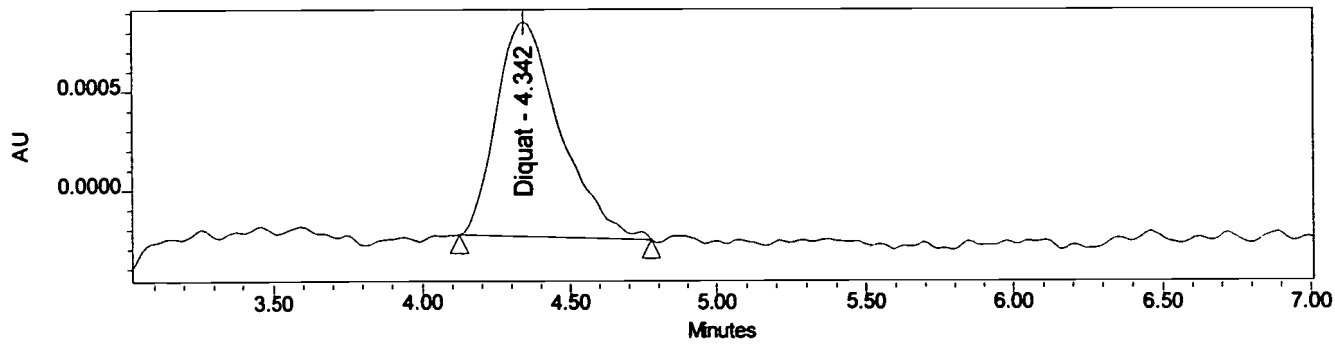
Date Acquired 10/10/2000 11:18:59 AM

Auto-Scaled Chromatogram



SampleName L-1 Std Vial 2 Injection 1 Channel 996 Date Acquired 10/10/2000 11:18:59 AM

Auto-Scaled Chromatogram



SampleName L-1 Std

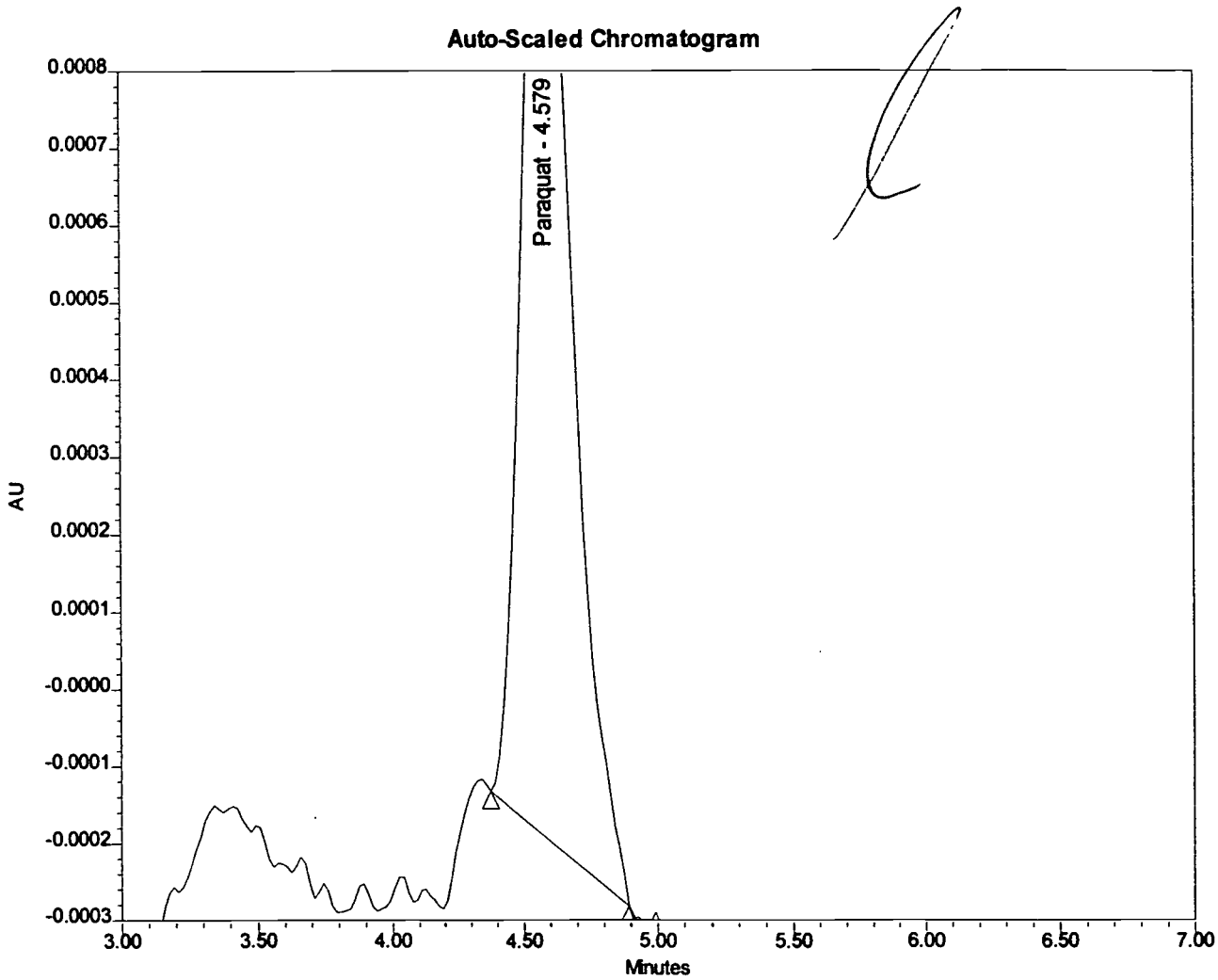
Channel Id 8784

Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

Date Acquired 10/10/2000 11:18:59 AM



Peak Results

	Name	RT	Area	Amount
1	Diquat	4.220		
2	Paraquat	4.579	18084	25.000

SampleName L-1 Std

Channel Id 8784

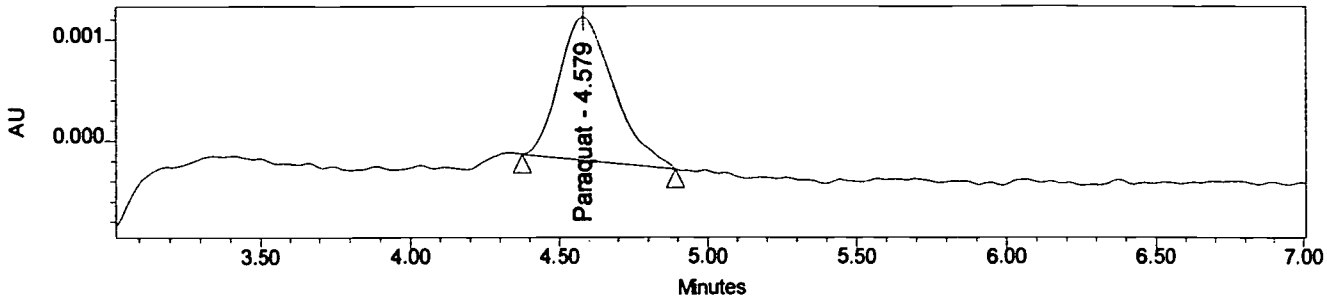
Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

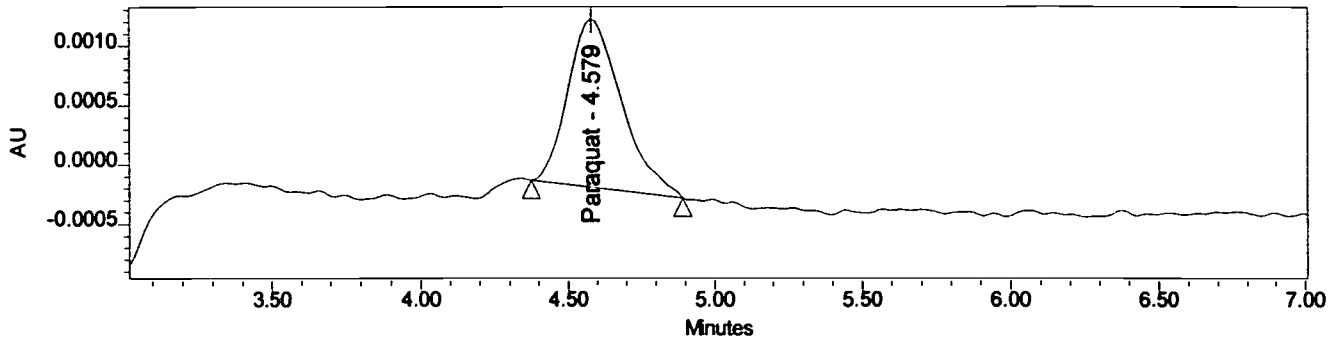
Date Acquired 10/10/2000 11:18:59 AM

Auto-Scaled Chromatogram



SampleName L-1 Std Vial 2 Injection 1 Channel 996 Date Acquired 10/10/2000 11:18:59 AM

Auto-Scaled Chromatogram



SampleName L-2 Std

Channel Id 8787

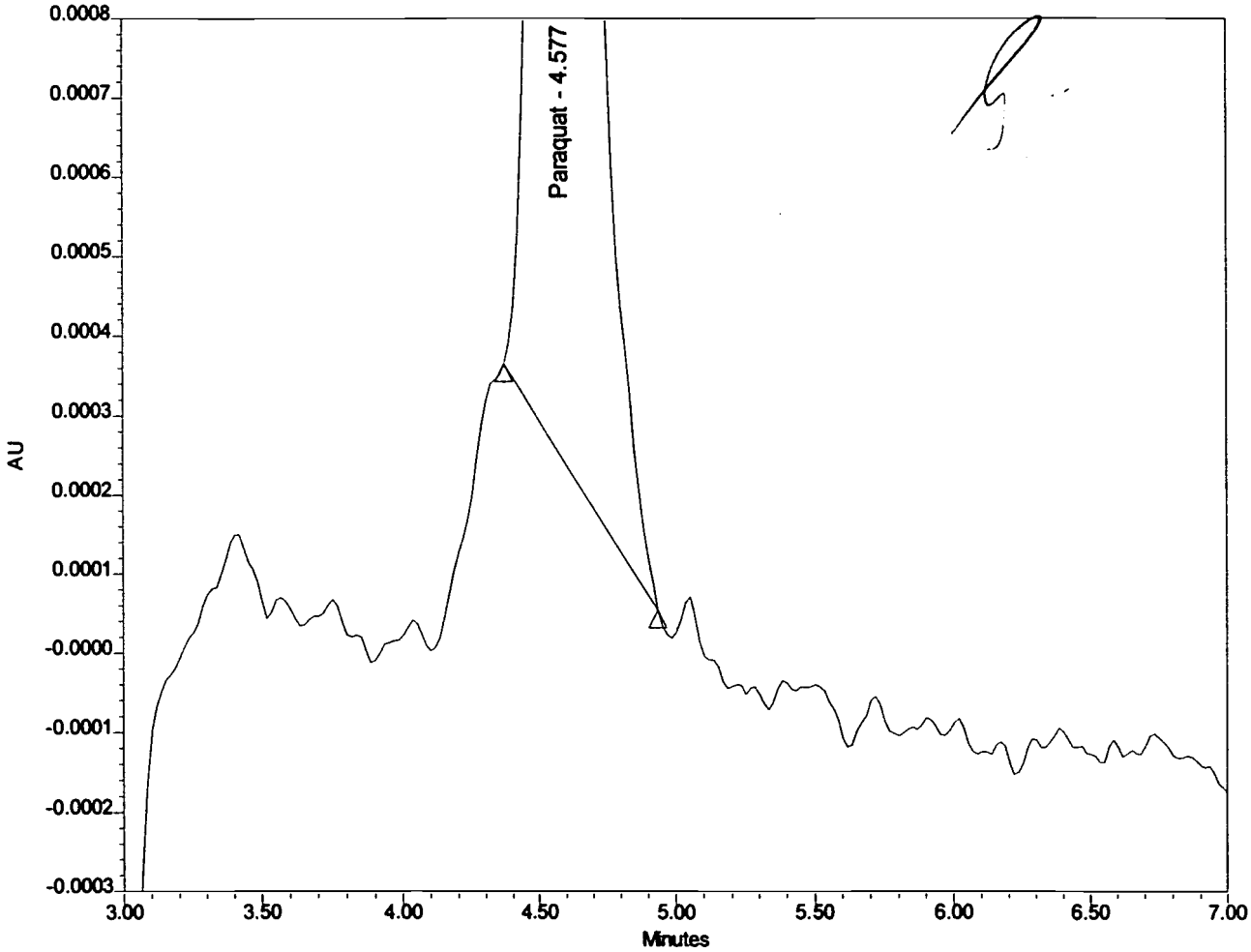
Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

Date Acquired 10/10/2000 11:30:37 AM

Auto-Scaled Chromatogram



Peak Results

	Name	RT	Area	Amount
1	Diquat	4.220		
2	Paraquat	4.577	34729	50.000

SampleName L-2 Std

Channel Id 8787

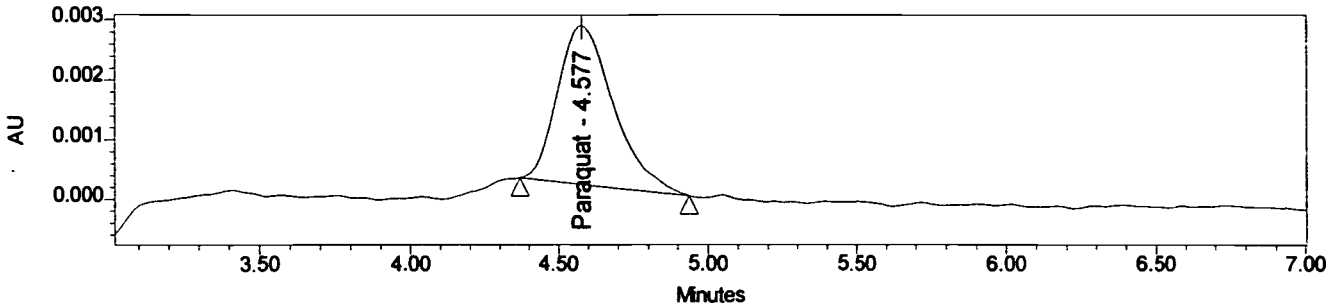
Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

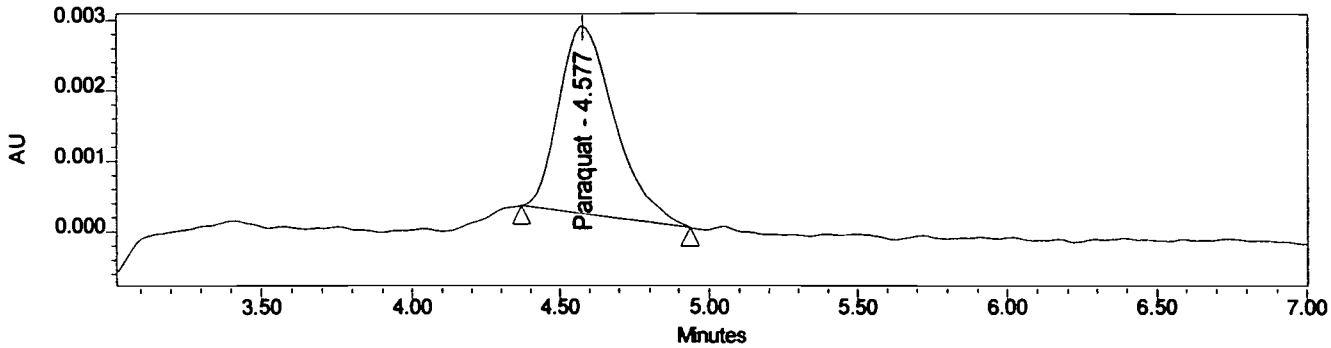
Date Acquired 10/10/2000 11:30:37 AM

Auto-Scaled Chromatogram



SampleName L-2 Std Vial 3 Injection 1 Channel 996 Date Acquired 10/10/2000 11:30:37 AM

Auto-Scaled Chromatogram



SampleName L-2 Std

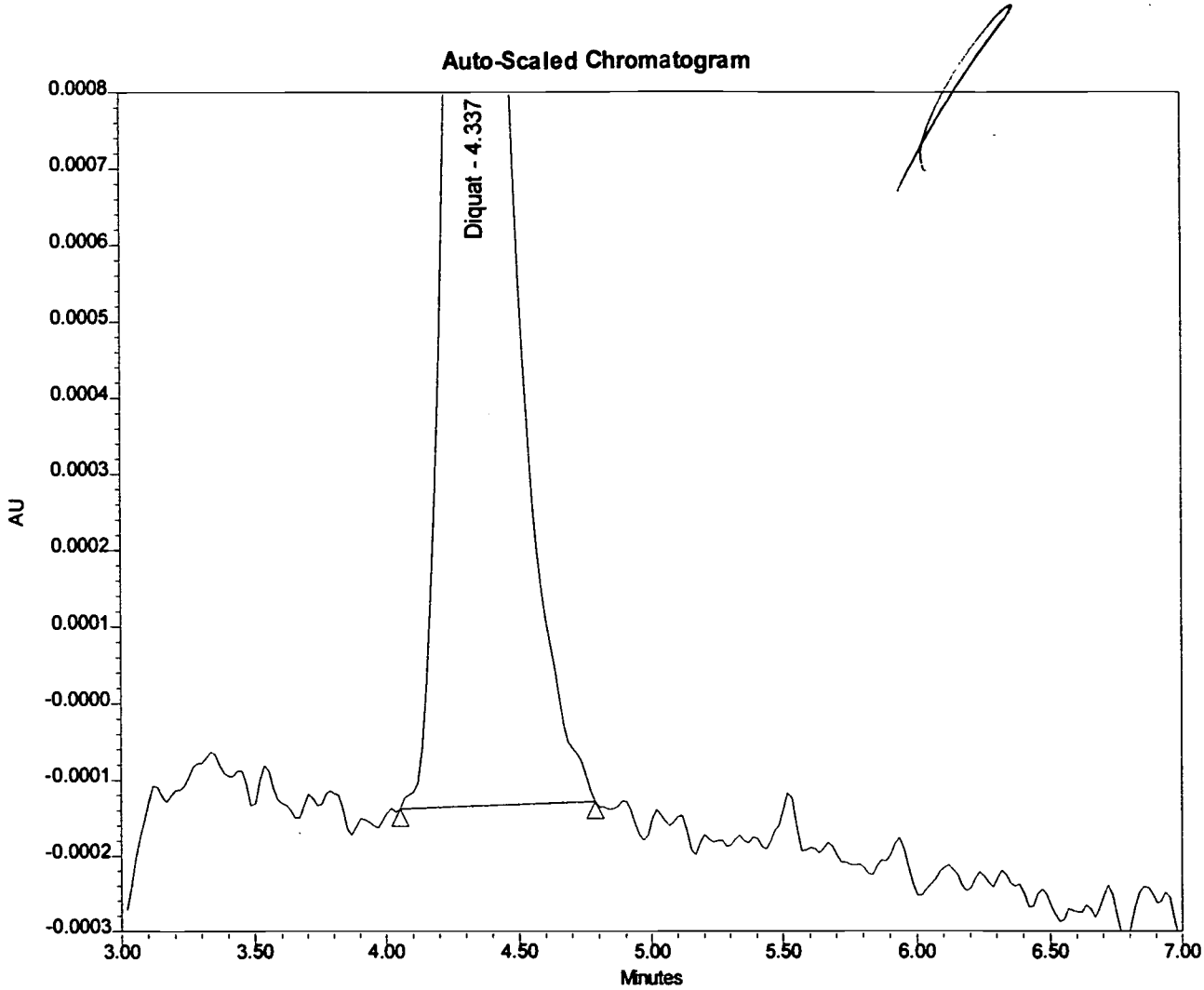
Channel Id 8787

Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

Date Acquired 10/10/2000 11:30:37 AM



Peak Results

	Name	RT	Area	Amount
1	Diquat	4.337	32152	50.000
2	Paraquat	4.480		

SampleName L-2 Std

Channel Id 8787

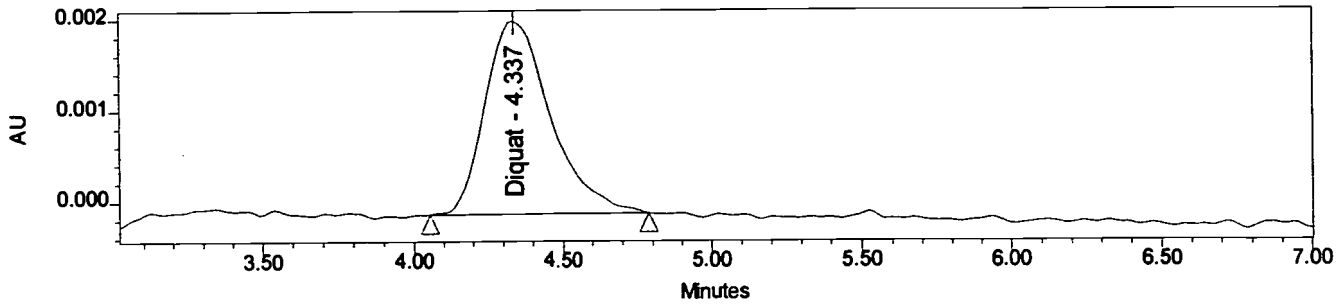
Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

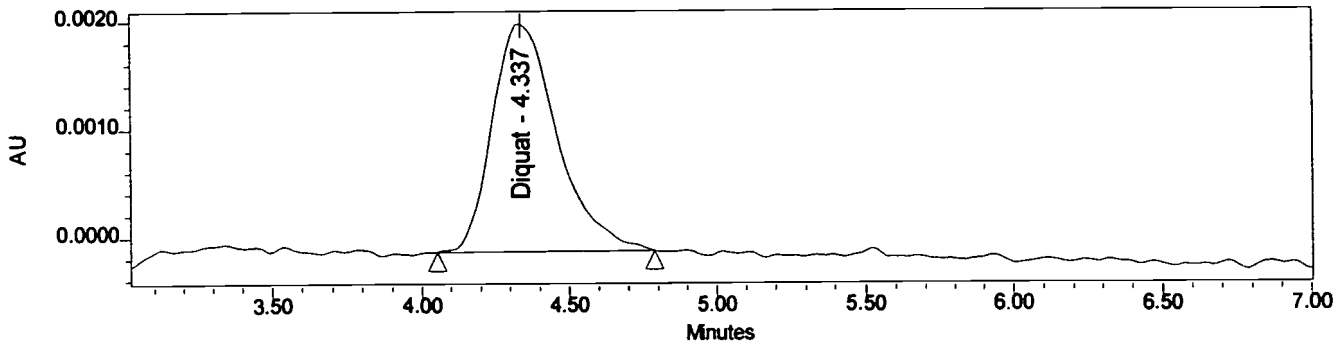
Date Acquired 10/10/2000 11:30:37 AM

Auto-Scaled Chromatogram



SampleName L-2 Std Vial 3 Injection 1 Channel 996 Date Acquired 10/10/2000 11:30:37 AM

Auto-Scaled Chromatogram



SampleName L-3 Std

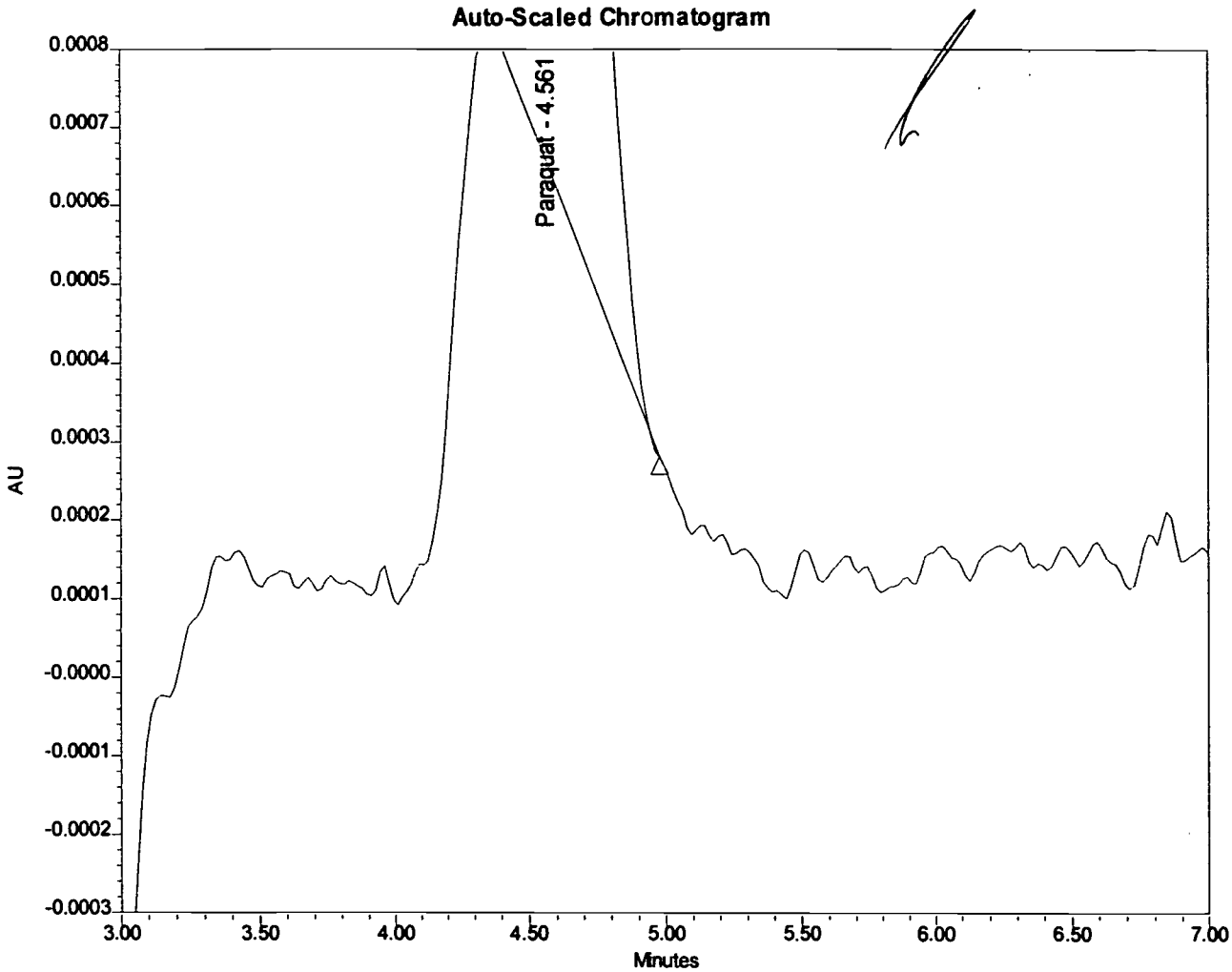
Channel Id 8790

Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

Date Acquired 10/10/2000 11:42:14 AM



Peak Results

	Name	RT	Area	Amount
1	Diquat	4.220		
2	Paraquat	4.561	67574	100.000

SampleName L-3 Std

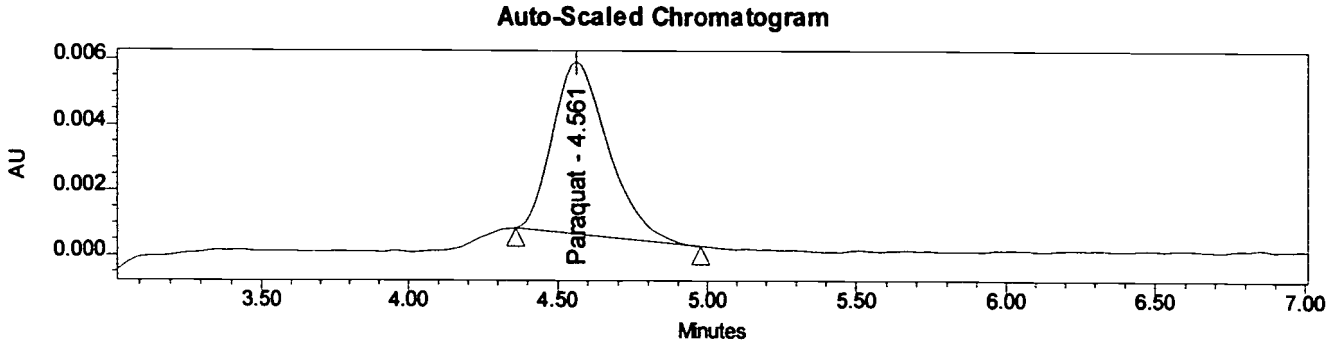
Channel Id 8790

Dilution 1.00

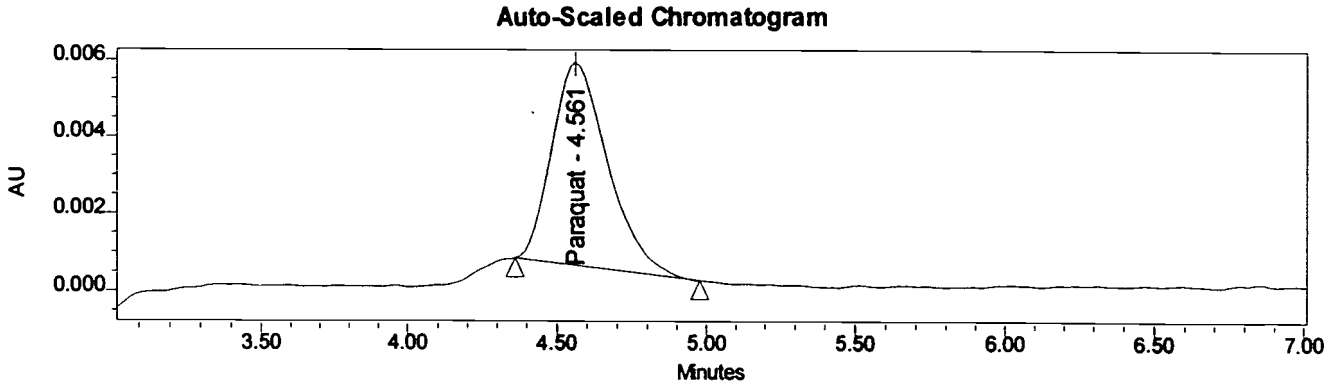
Injection Volume 100.00 ul

SampleWeight 1.00

Date Acquired 10/10/2000 11:42:14 AM



SampleName L-3 Std Vial 4 Injection 1 Channel 996 Date Acquired 10/10/2000 11:42:14 AM



SampleName L-3 Std

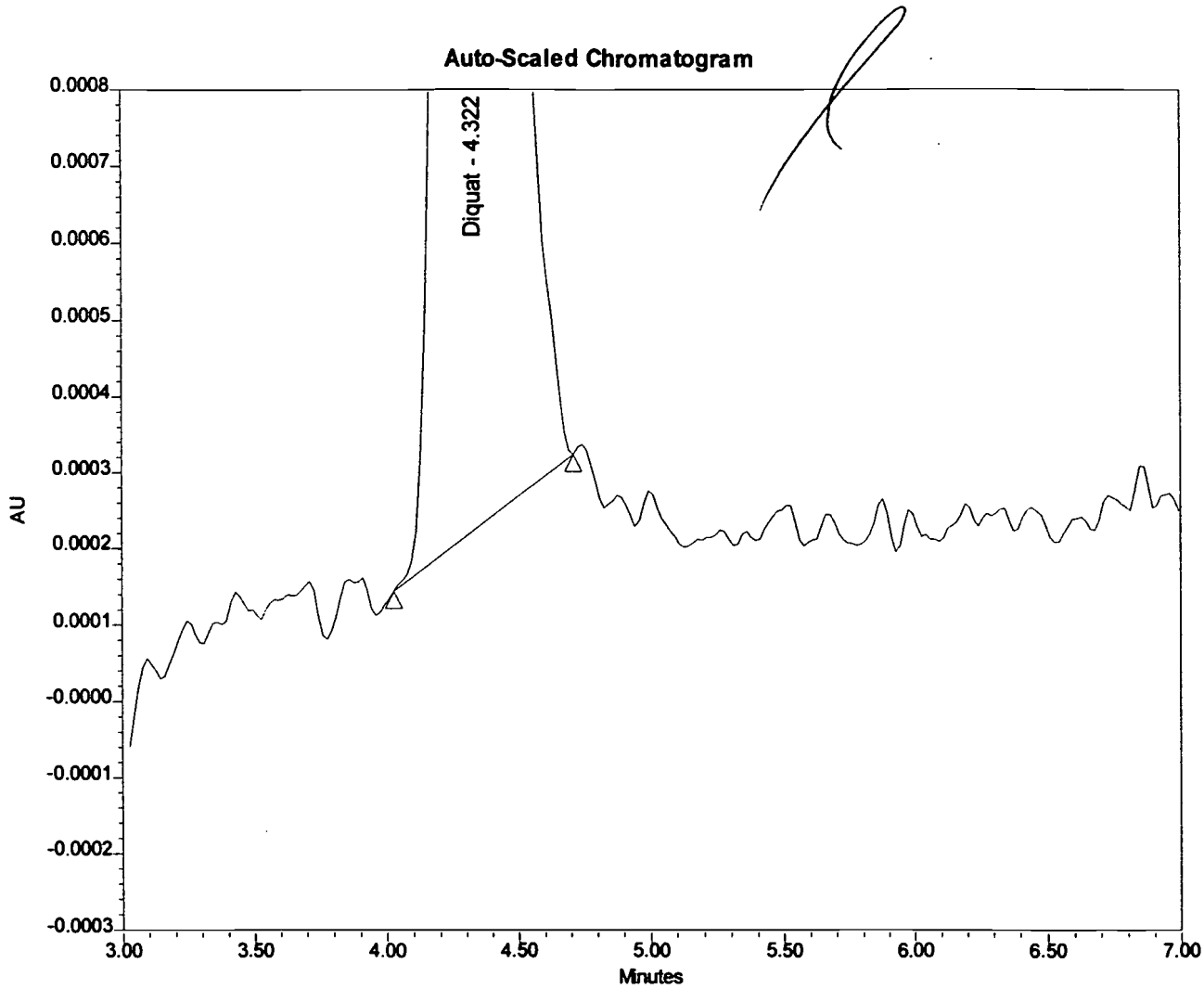
Channel Id 8790

Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

Date Acquired 10/10/2000 11:42:14 AM



Peak Results

	Name	RT	Area	Amount
1	Diquat	4.322	61137	100.000
2	Paraquat	4.480		

SampleName L-3 Std

Channel Id 8790

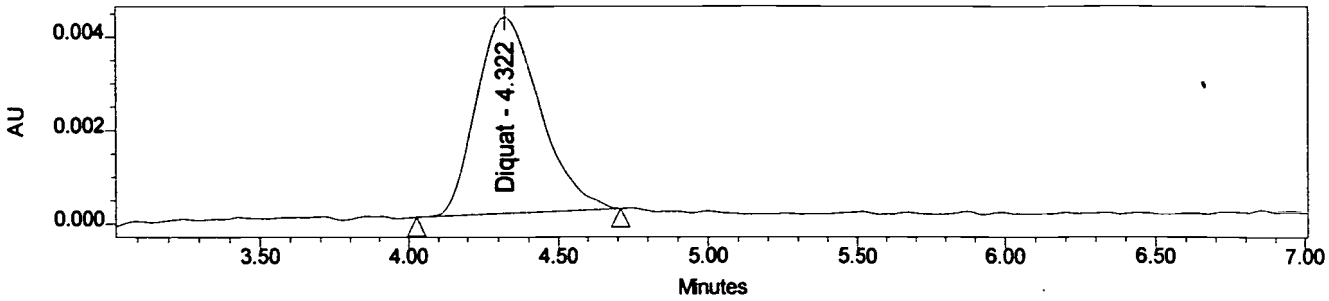
Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

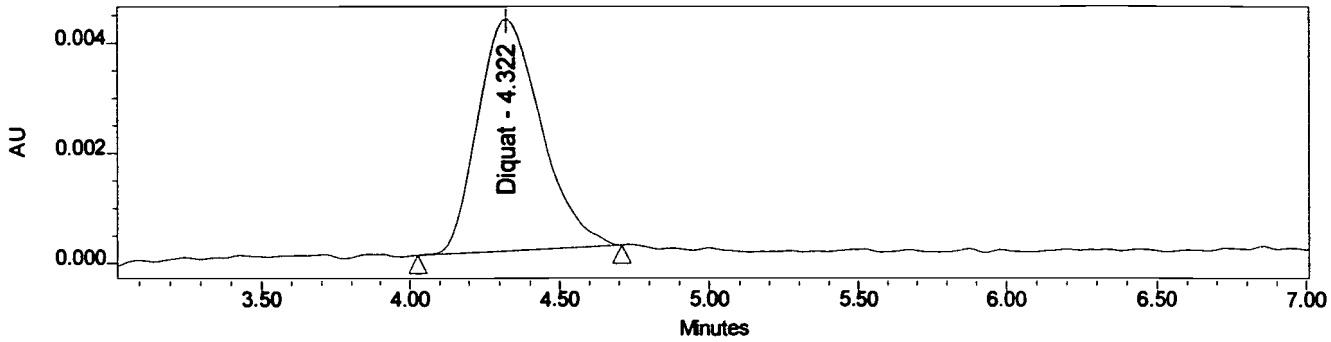
Date Acquired 10/10/2000 11:42:14 AM

Auto-Scaled Chromatogram



SampleName L-3 Std Vial 4 Injection 1 Channel 996 Date Acquired 10/10/2000 11:42:14 AM

Auto-Scaled Chromatogram



SampleName L-4 Std

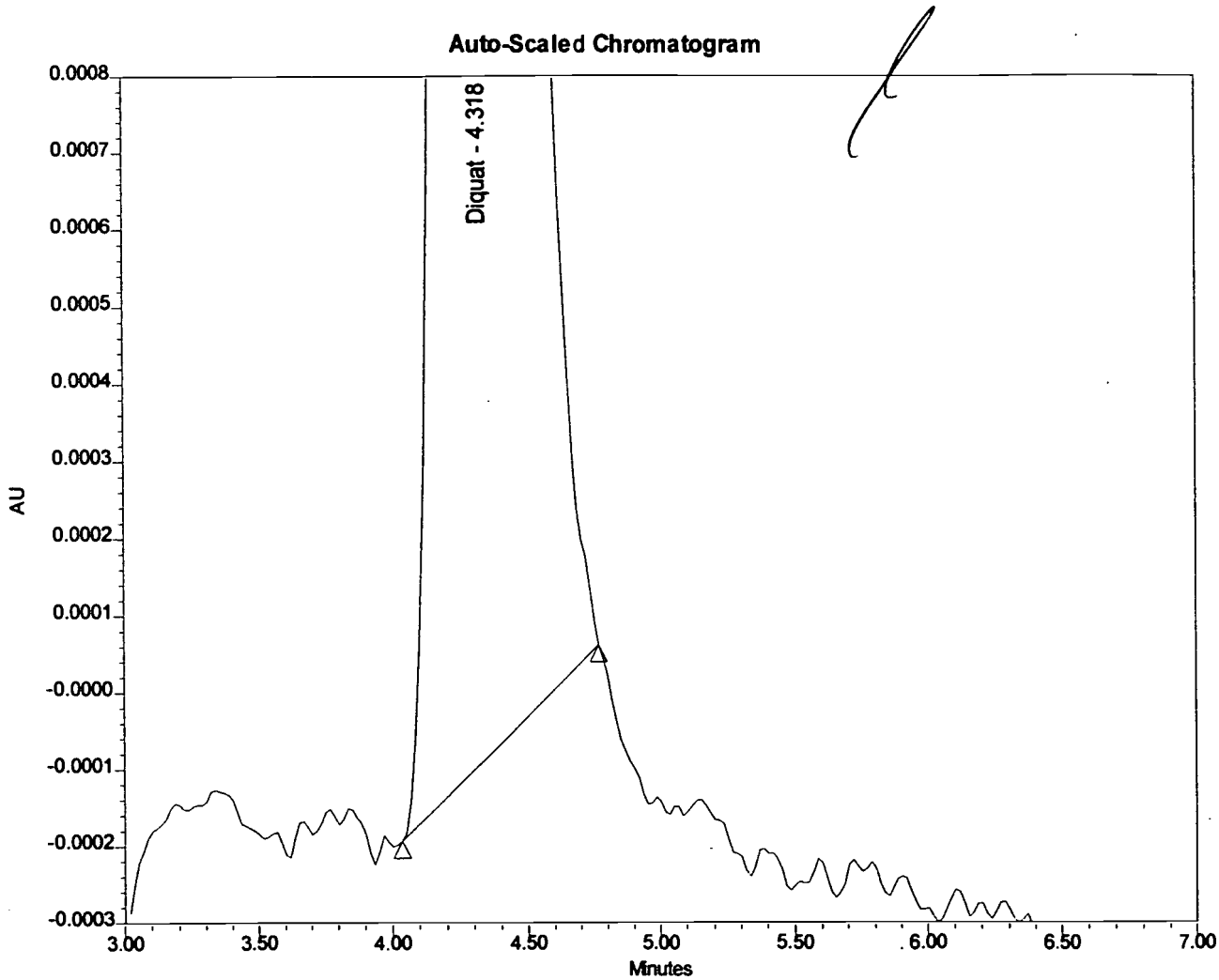
Channel Id 8793

Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

Date Acquired 10/10/2000 11:53:54 AM



Peak Results

	Name	RT	Area	Amount
1	Diquat	4.318	162173	250.000
2	Paraquat	4.480		

SampleName L-4 Std

Channel Id 8793

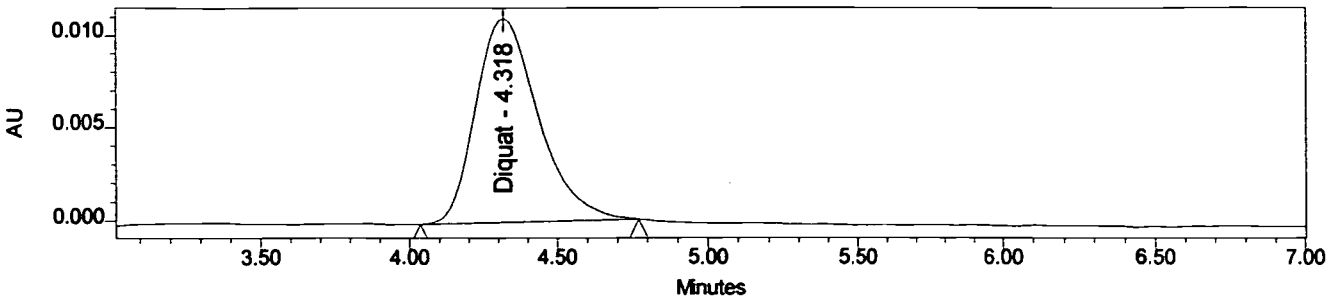
Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

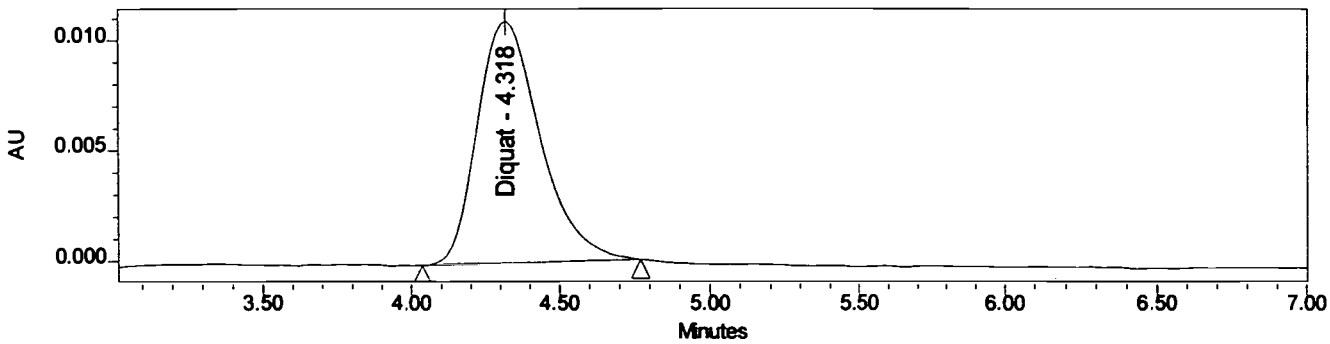
Date Acquired 10/10/2000 11:53:54 AM

Auto-Scaled Chromatogram



SampleName L-4 Std Vial 5 Injection 1 Channel 996 Date Acquired 10/10/2000 11:53:54 AM

Auto-Scaled Chromatogram



SampleName L-4 Std

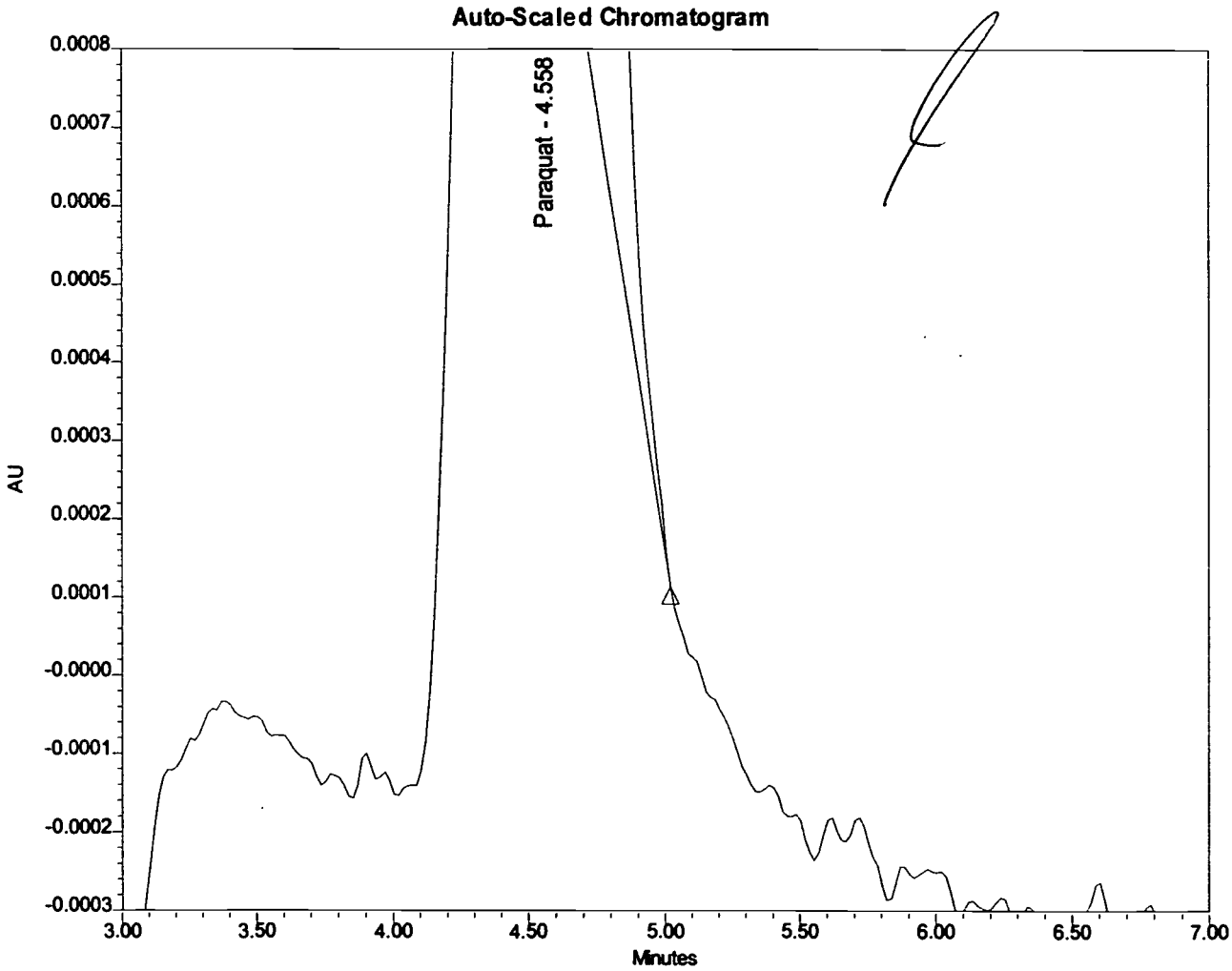
Channel Id 8793

Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

Date Acquired 10/10/2000 11:53:54 AM



Peak Results

	Name	RT	Area	Amount
1	Diquat	4.220		
2	Paraquat	4.558	179215	250.000

SampleName L-4 Std

Channel Id 8793

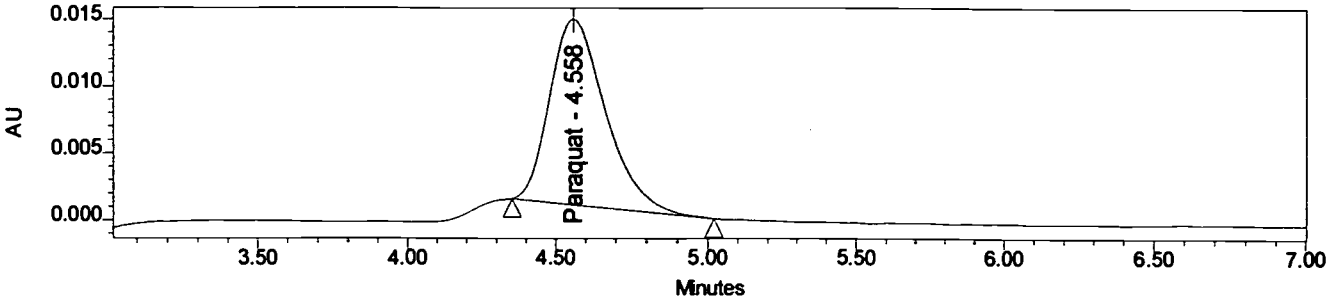
Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

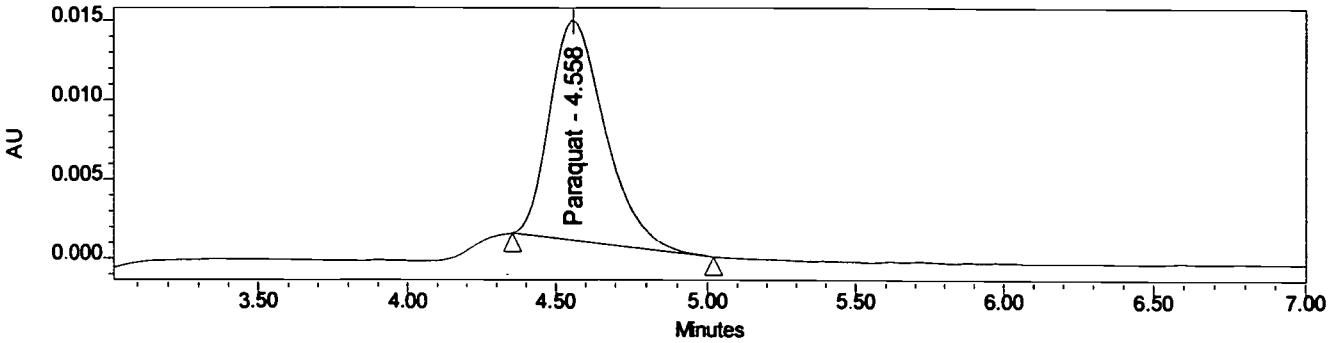
Date Acquired 10/10/2000 11:53:54 AM

Auto-Scaled Chromatogram



SampleName L-4 Std Vial 5 Injection 1 Channel 996 Date Acquired 10/10/2000 11:53:54 AM

Auto-Scaled Chromatogram



SampleName L-5 Std

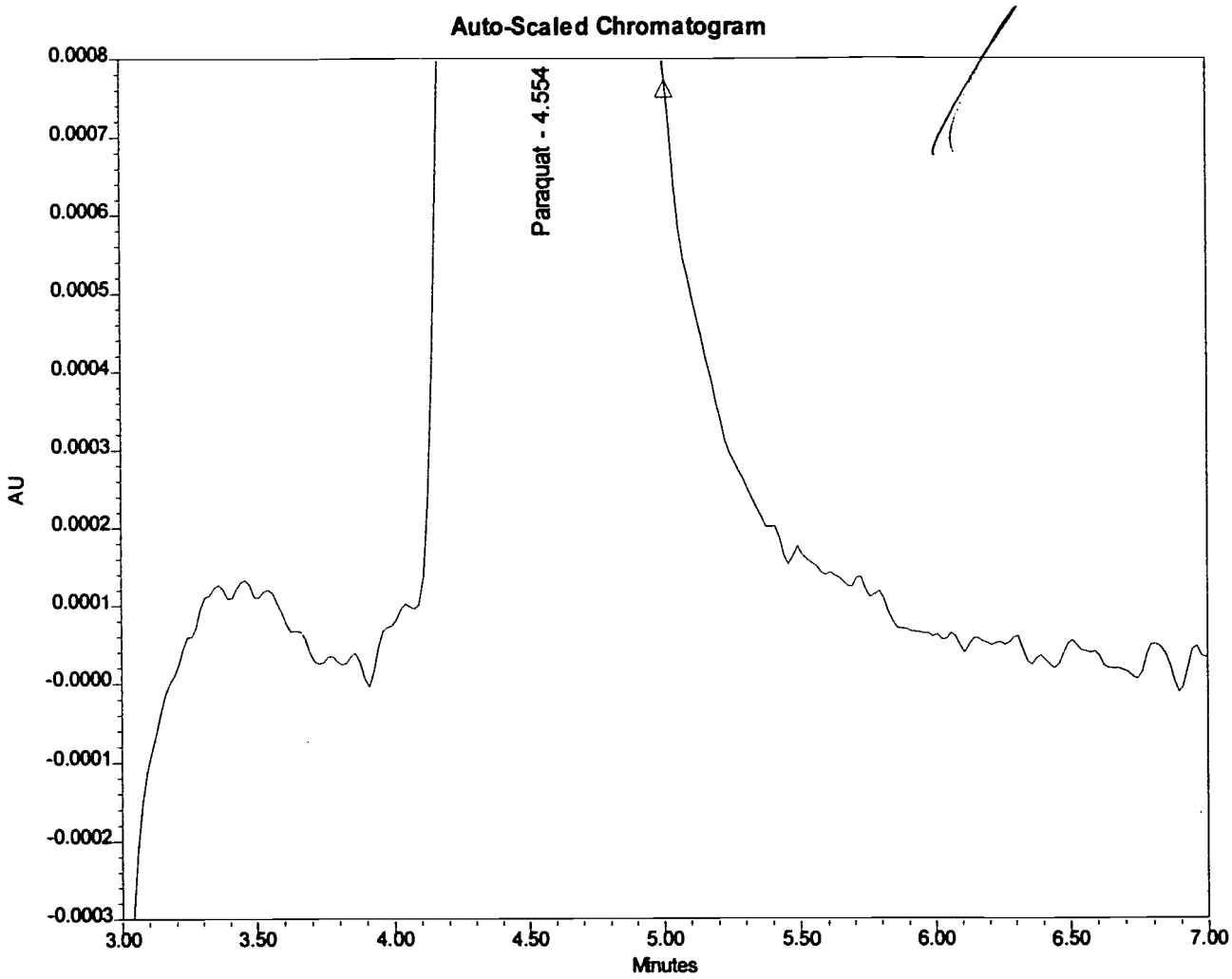
Channel Id 8796

Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

Date Acquired 10/10/2000 12:05:31 PM



Peak Results

	Name	RT	Area	Amount
1	Diquat	4.220		
2	Paraquat	4.554	347869	500.000

SampleName L-5 Std

Channel Id 8796

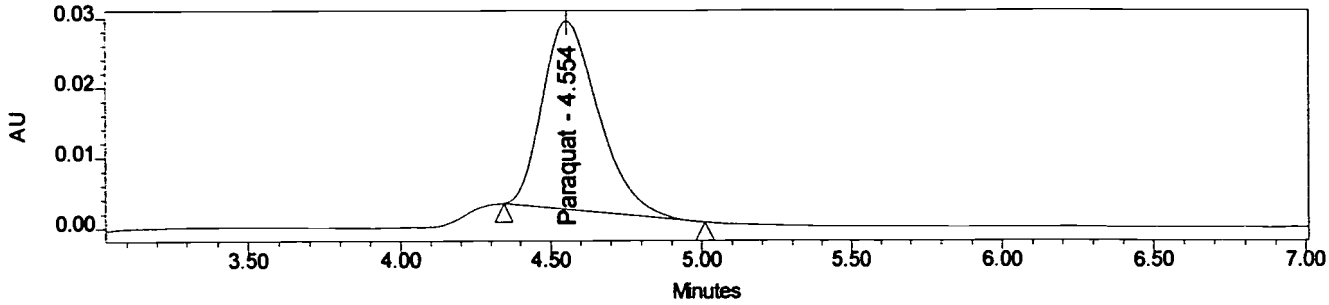
Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

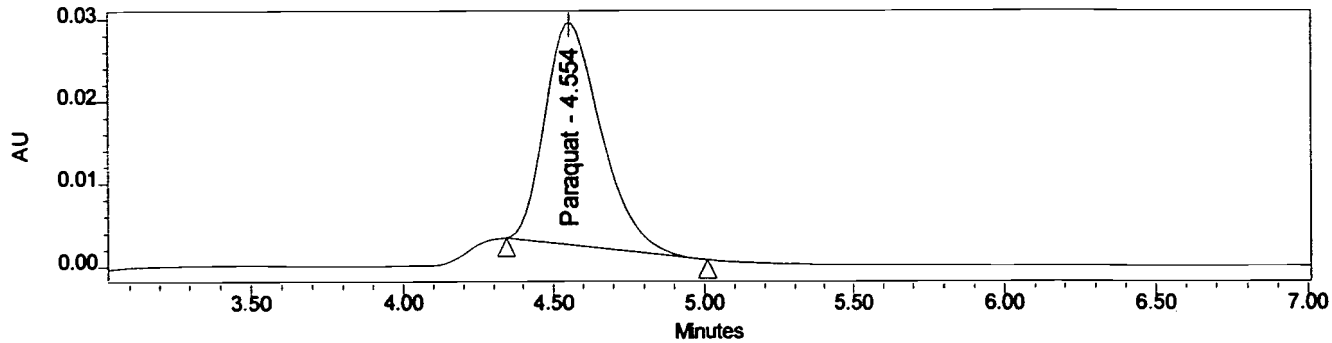
Date Acquired 10/10/2000 12:05:31 PM

Auto-Scaled Chromatogram



SampleName L-5 Std Vial 6 Injection 1 Channel 996 Date Acquired 10/10/2000 12:05:31 PM

Auto-Scaled Chromatogram



SampleName L-5 Std

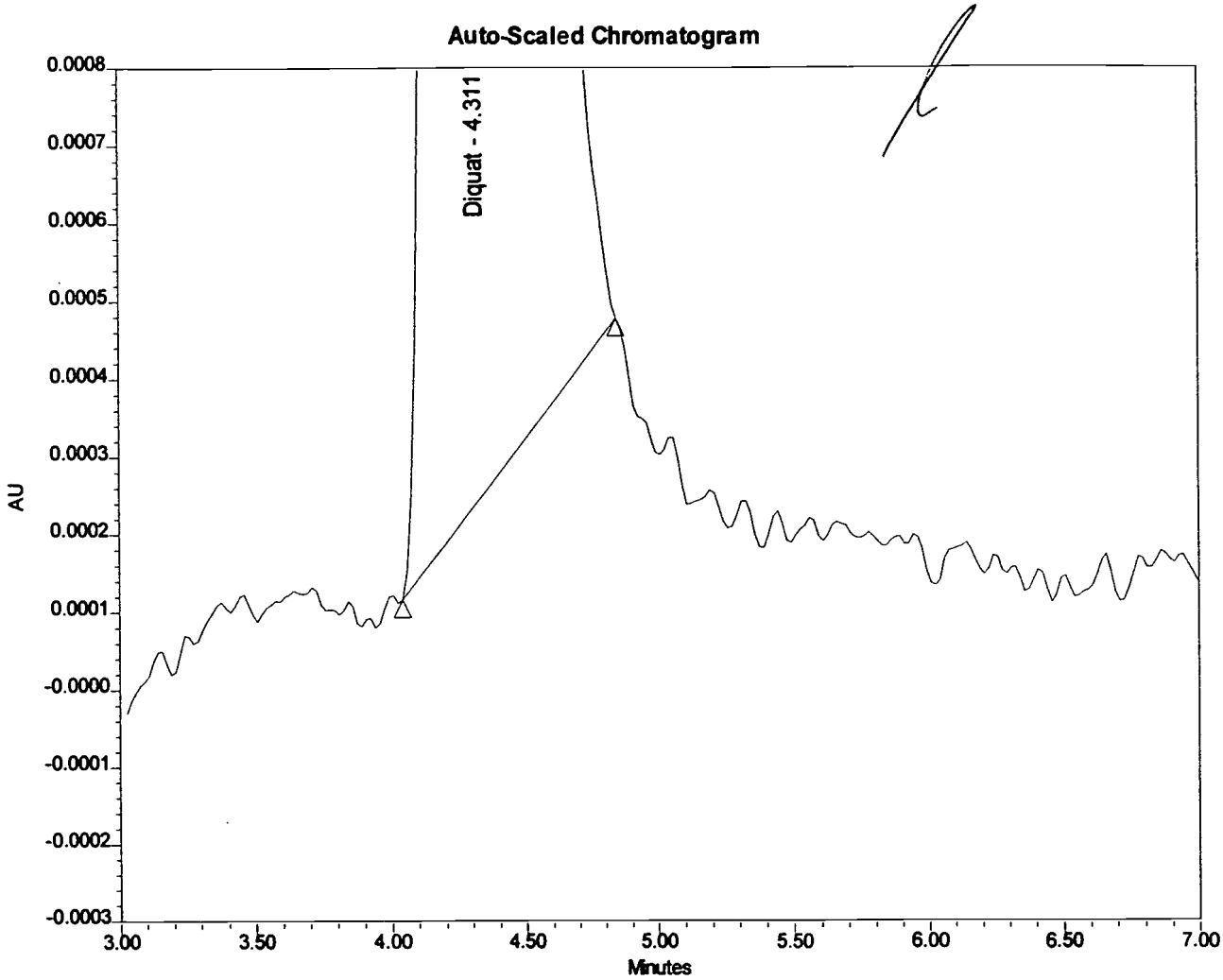
Channel Id 8796

Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

Date Acquired 10/10/2000 12:05:31 PM



Peak Results

	Name	RT	Area	Amount
1	Diquat	4.311	320538	500.000
2	Paraquat	4.480		

SampleName L-5 Std

Channel Id 8796

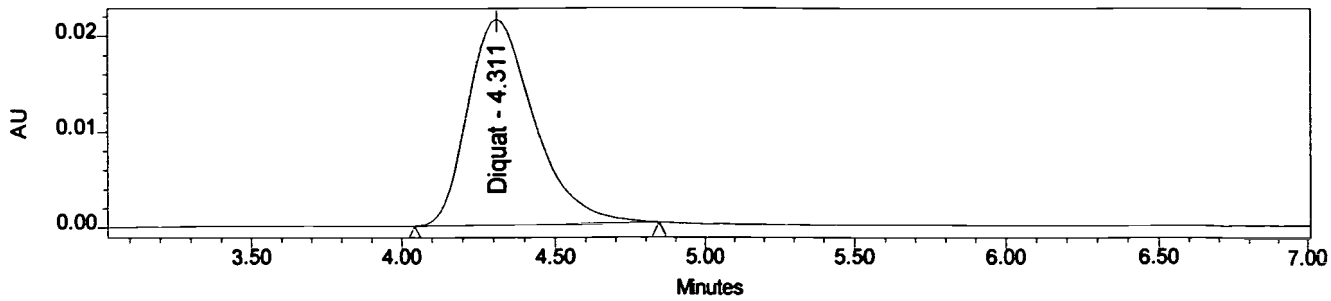
Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

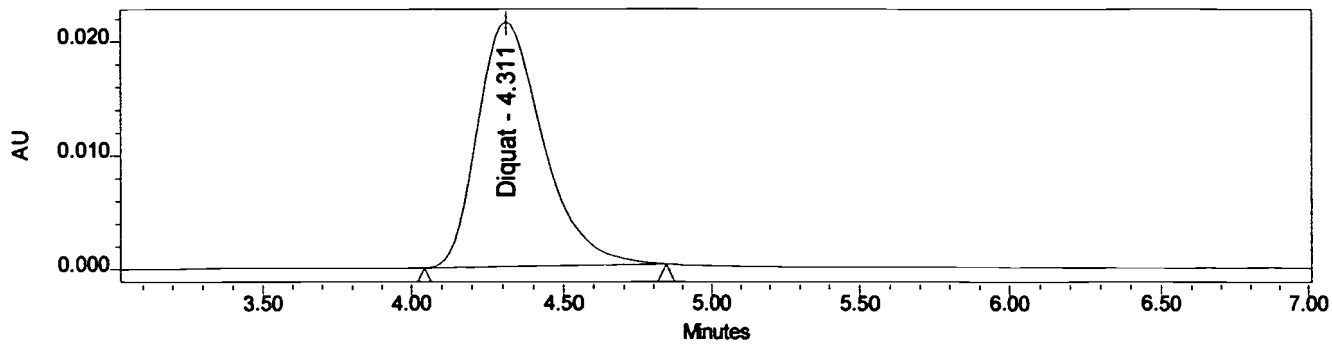
Date Acquired 10/10/2000 12:05:31 PM

Auto-Scaled Chromatogram



—— SampleName L-5 Std Vial 6 Injection 1 Channel 996 Date Acquired 10/10/2000 12:05:31 PM

Auto-Scaled Chromatogram



CALCULATING SHEETS

Heritage Environmental Services

EPA 549.1 Method Blank

Method 344 Mtx 3

File 1149

Q# 1158146

Analyst 2972

Sample ID **BLA 231**

Date 10/10/00

Time 13:15

Instrument # 96 Channel #1

PRM	Parameter	Extract	Result	Limit	Units
823	DIQUAT		BDL	2	ug/L
822	PARAQUAT		BDL	2	ug/L

Comments_____

Reviewed By: SAB Date 10/11/00

diquatblk

Heritage Environmental Services

EPA 549.1 MS/MSD/LCS

Method 344 Mtx 3

File 1149

Q# 1158149 Analyst 2972

Sample ID **LFB 231** Date 10/10/00 Time 13:27

Instrument # 96 Channel #1

PRM	Parameter	True Value	Result	%Rec.	Units
823	DIQUAT	5	4.06	81.2%	ug/L
822	PARAQUAT	5	3.85	77.0%	ug/L

Comments_____

Reviewed By: SAB Date 10/11/00

diquatblk

Heritage Environmental Services
HPLC

A533487

Method : EPA 549.2 Meth#: 344 **Test Code O549.0.0**
Sample Description : DK27069 Analyst #: 2972
Submitter : IDEM - OFFICE OF WATER MANAGEMENT File : 1149 Date/Time : 10-10-2000 /13:38
Instrument # : 96 Channel # : 1 Dilution Factor _____ DL Multiplier ____

Prep: Initial Weight/Volume 100 ML Final Volume 5 ML

PRM	Parameter	Extract	Result	Limit	Units	Flag
823	DIQUAT		BQL	2.0	ug/L	
822	PARAQUAT		↓	2.0	ug/L	NO Test Limit

Reviewed : SAB Date : 10/11/00

Heritage Environmental Services

EPA 549.1 MS/MSD/LCS

Sample ID		Method 344 Mtx 3		File 1149
A533487 MS	**Q# 1158147**		Date 10/10/00	Time 13:50
MSD	**Q# 1158148**		Date 10/10/00	Time 14:01
Instrument # 96 Channel #1			Analyst 2972	

PRM	Parameter	True Value	MS Result	%Rec.	MSD *Result*	*%Rec*	%RSD
823	DIQUAT	5	4.42	88.4%	*4.27*	*85.4%*	3.5%
822	PARAQUAT	5	3.89	77.8%	*3.69*	*73.8%*	5.3%

Comments_____

Reviewed By: SAB Date 10/11/00

diquatblk

Heritage Environmental Services

EPA 549.1 Continuing Calibration

Method 344 Mtx 3 File 1149

Date 10/10/00

Sample ID CCV L3 ✓ Analyst 2972

Instrument # 96 Channel #1 Time 14:13

PRM	Parameter	True Value	Result	%Rec.	Units
823	DIQUAT	100	94.5	94.5%	ug/L
822	PARAQUAT	100	97.9	97.9%	ug/L

Comments_____

Reviewed By: SAB Date 10/11/00

diquatblk

CHROMATOGRAMS

SampleName BLA 231

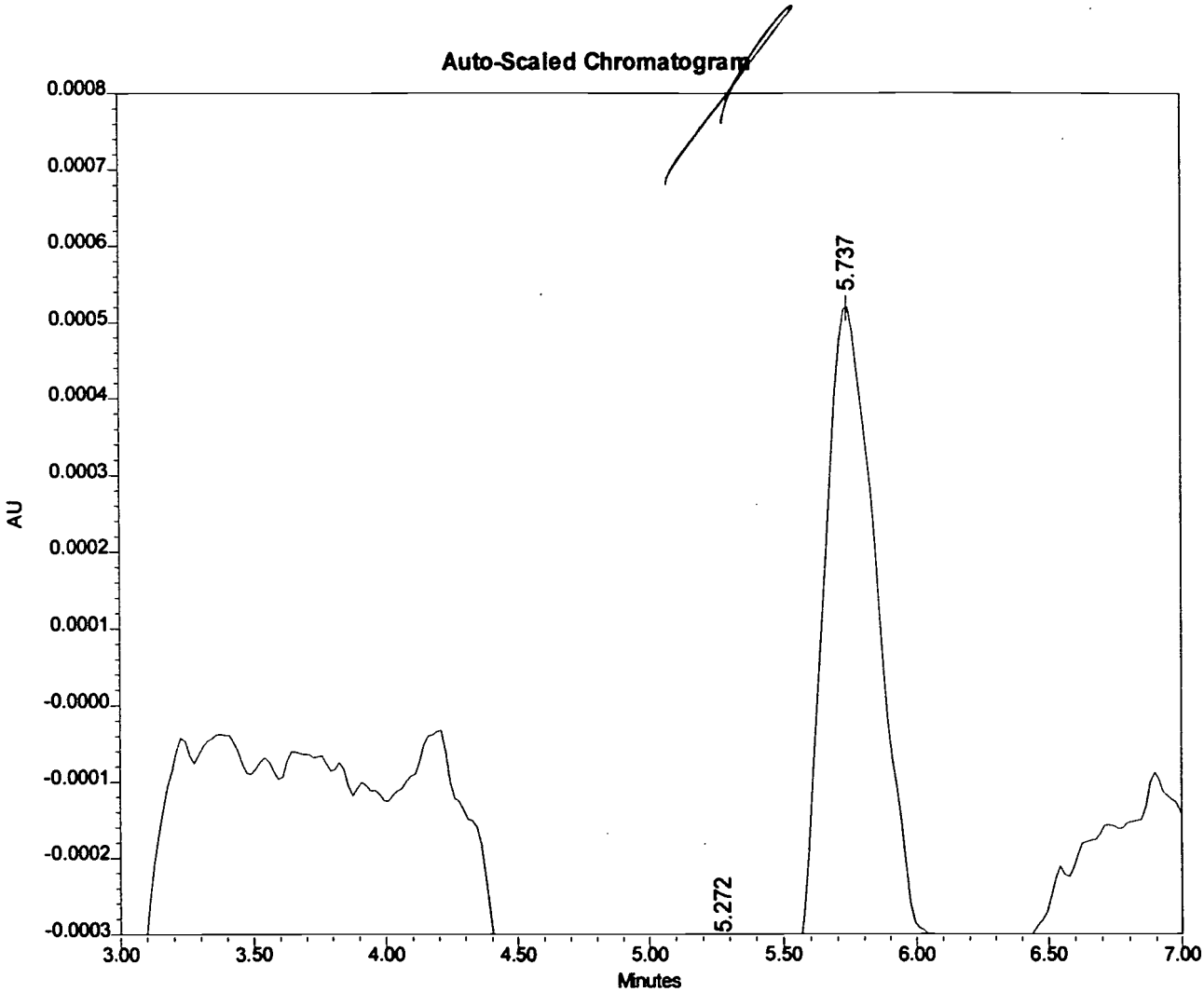
Channel Id 8814

Dilution 5.00

Injection Volume 100.00 ul

SampleWeight 100.00

Date Acquired 10/10/2000 1:15:23 PM



Peak Results

	Name	RT	Area	Amount
1	Diquat	4.220		
2	Paraquat	4.480		
3		5.272	15938	
4		5.737	21217	

SampleName BLA 231

Channel Id 8814

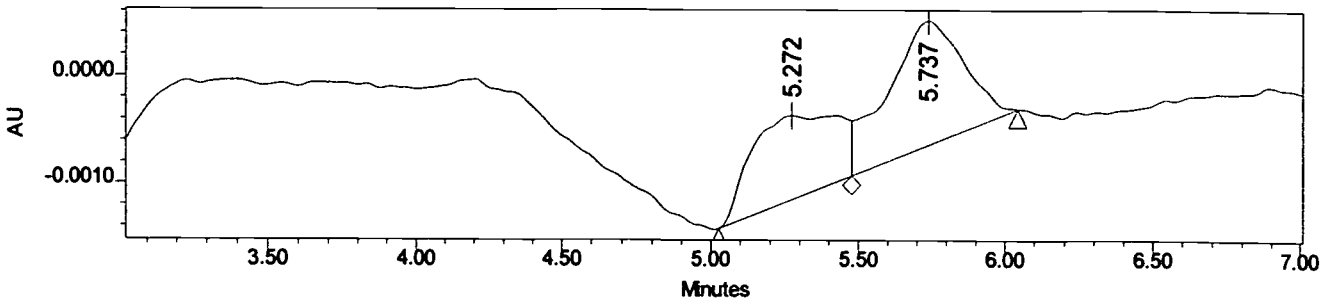
Dilution 5.00

Injection Volume 100.00 ul

SampleWeight 100.00

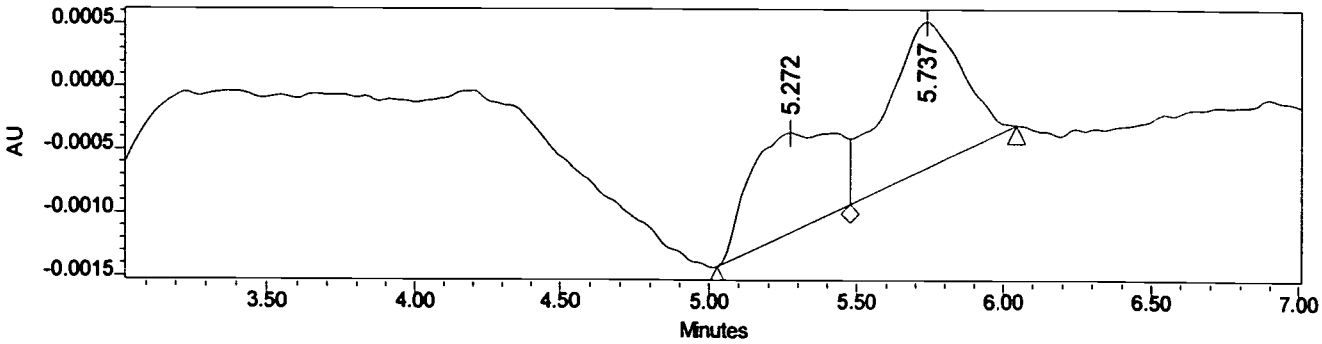
Date Acquired 10/10/2000 1:15:23 PM

Auto-Scaled Chromatogram



SampleName BLA 231 Vial 12 Injection 1 Channel 996 Date Acquired 10/10/2000 1:15:23 PM

Auto-Scaled Chromatogram



SampleName BLA 231

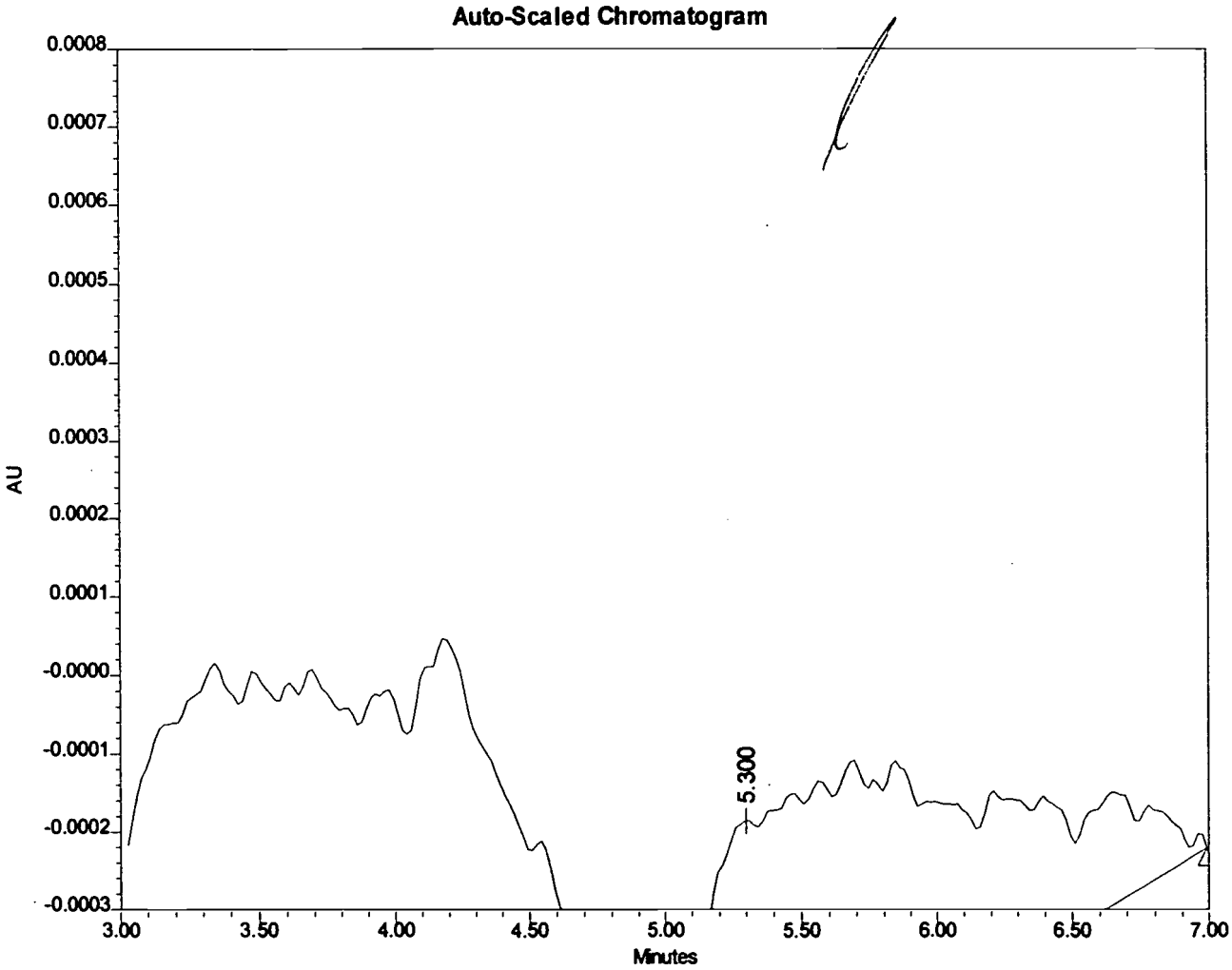
Channel Id 8814

Dilution 5.00

Injection Volume 100.00 ul

SampleWeight 100.00

Date Acquired 10/10/2000 1:15:23 PM



Peak Results

	Name	RT	Area	Amount
1	Diquat	4.220		
2	Paraquat	4.480		
3		5.300	27889	

SampleName BLA 231

Channel Id 8814

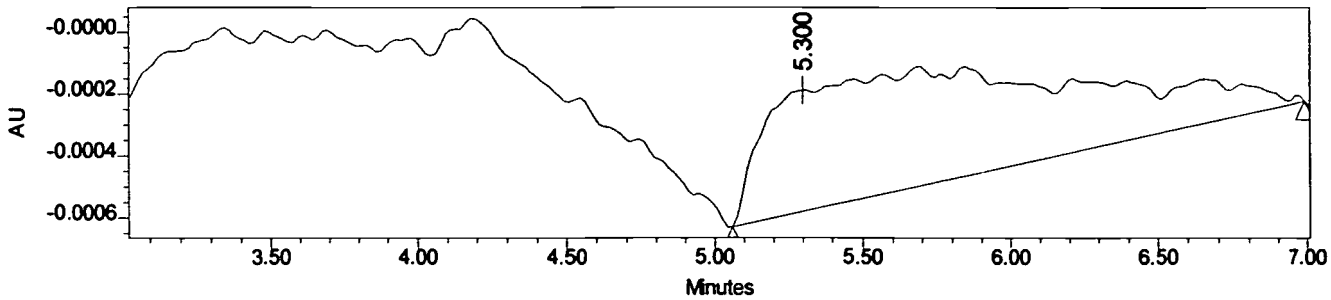
Dilution 5.00

Injection Volume 100.00 ul

SampleWeight 100.00

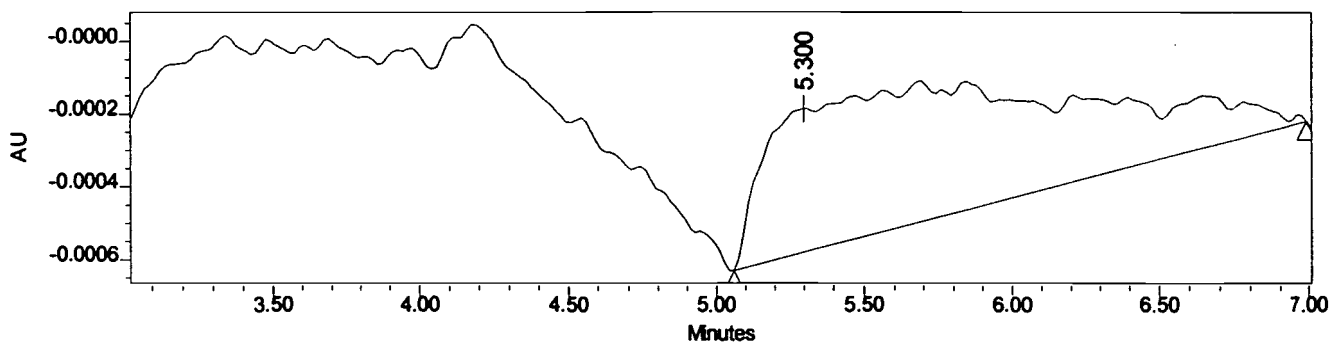
Date Acquired 10/10/2000 1:15:23 PM

Auto-Scaled Chromatogram



SampleName BLA 231 Vial 12 Injection 1 Channel 996 Date Acquired 10/10/2000 1:15:23 PM

Auto-Scaled Chromatogram



SampleName LFB 231

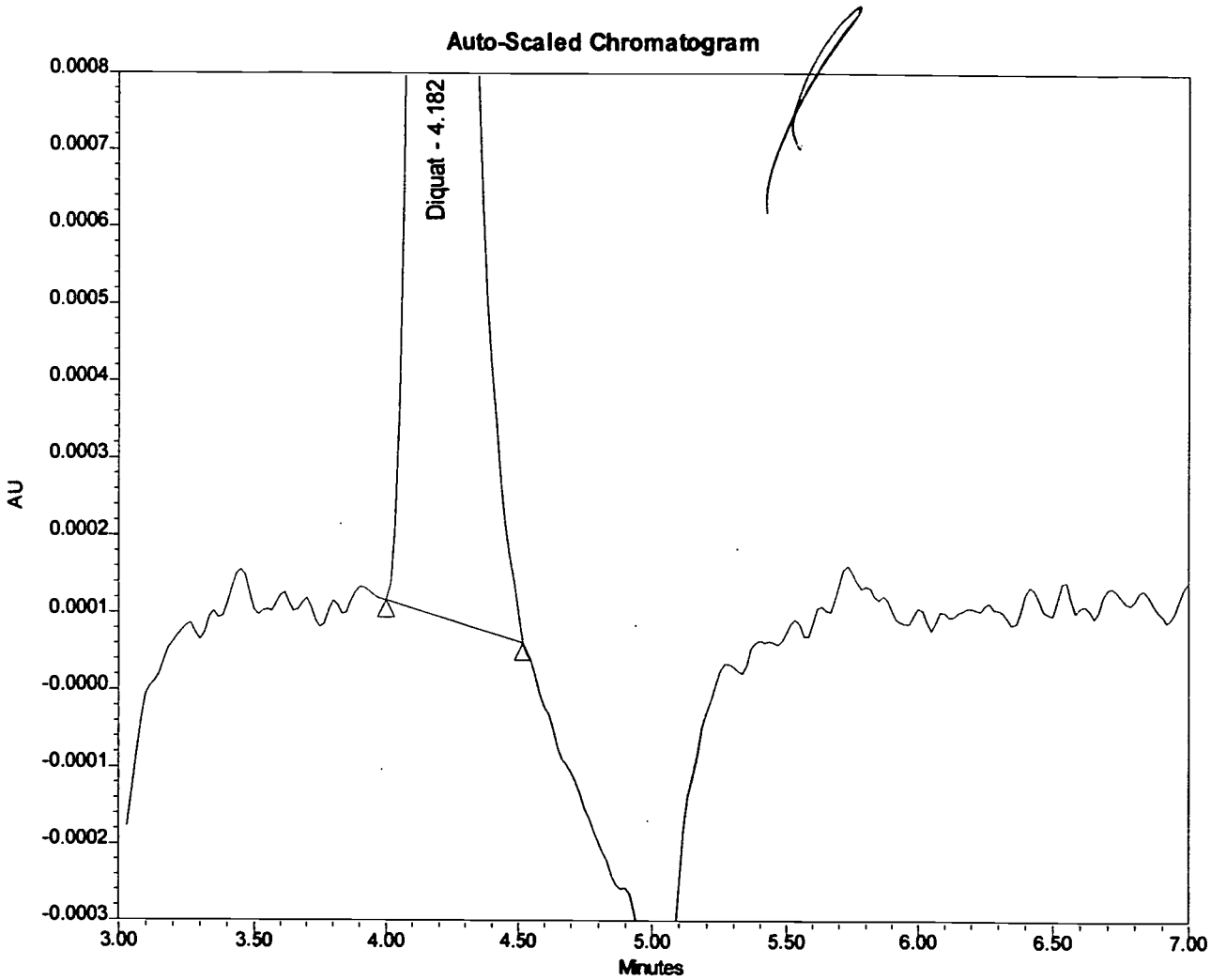
Channel Id 8817

Dilution 5.00

Injection Volume 100.00 ul

SampleWeight 100.00

Date Acquired 10/10/2000 1:27:01 PM



Peak Results

	Name	RT	Area	Amount
1	Diquat	4.182	51675	4.055
2	Paraquat	4.480		

SampleName LFB 231

Channel Id 8817

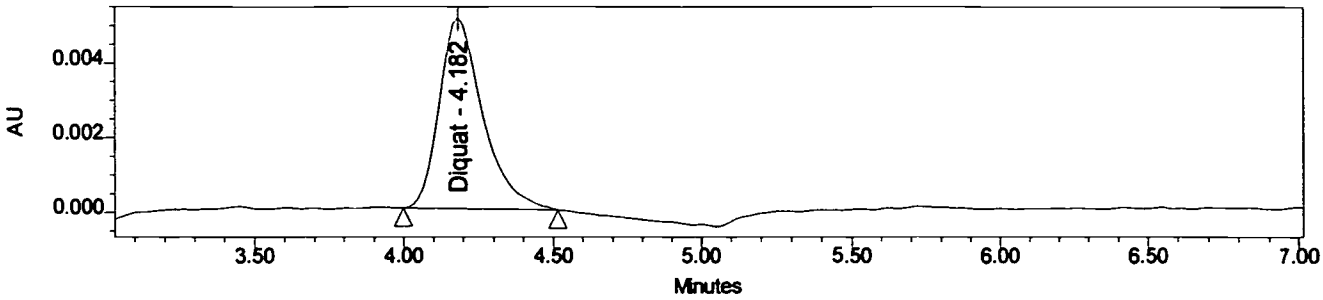
Dilution 5.00

Injection Volume 100.00 ul

SampleWeight 100.00

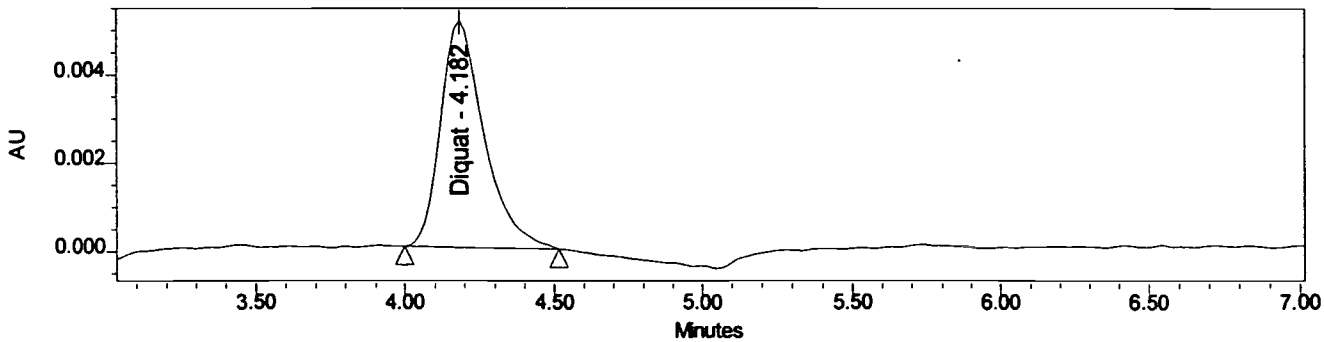
Date Acquired 10/10/2000 1:27:01 PM

Auto-Scaled Chromatogram



SampleName LFB 231 Vial 13 Injection 1 Channel 996 Date Acquired 10/10/2000 1:27:01 PM

Auto-Scaled Chromatogram



SampleName LFB 231

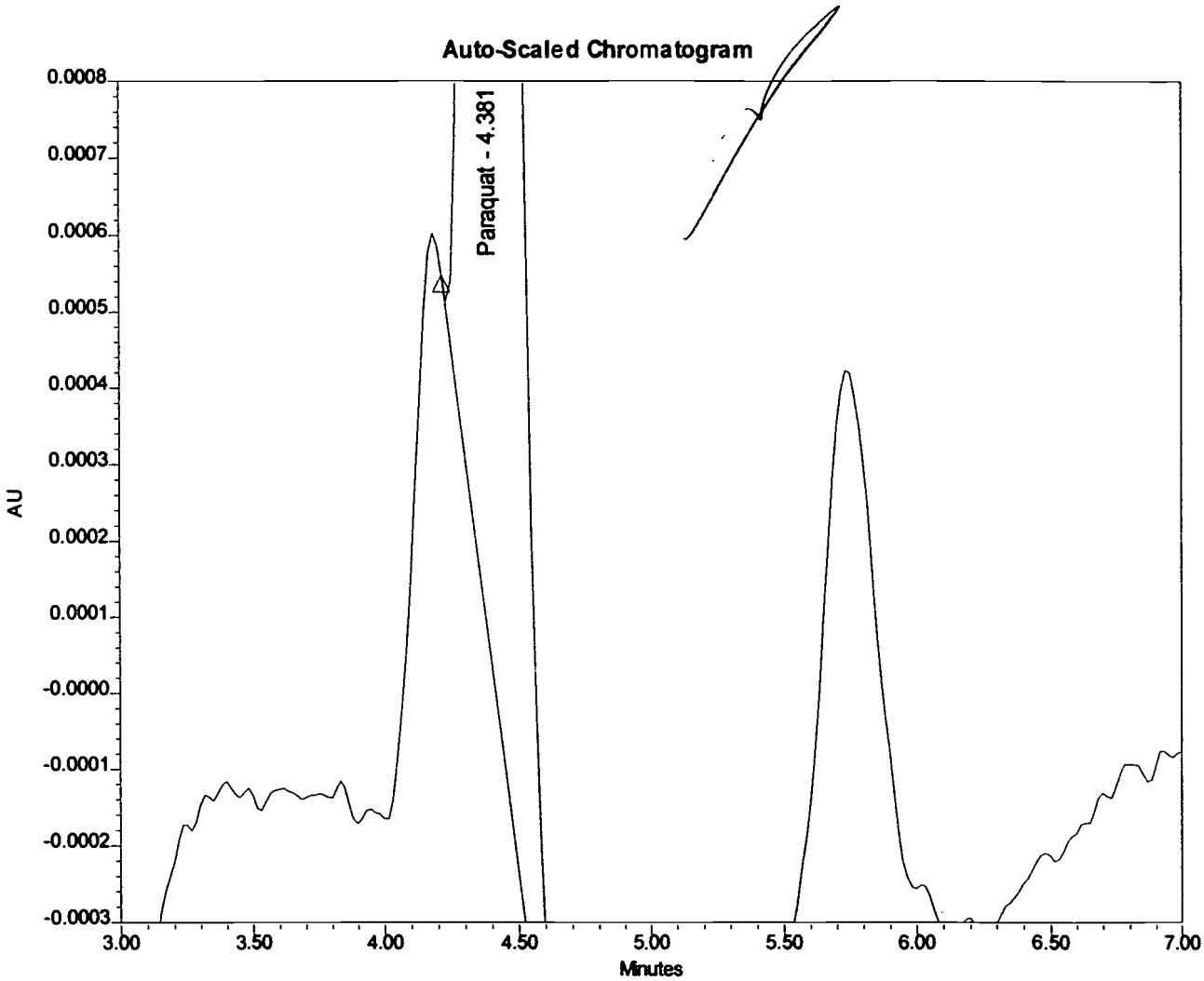
Channel Id 8817

Dilution 5.00

Injection Volume 100.00 ul

SampleWeight 100.00

Date Acquired 10/10/2000 1:27:01 PM



Peak Results

	Name	RT	Area	Amount
1	Diquat	4.220		
2	Paraquat	4.381	54124	3.854

SampleName LFB 231

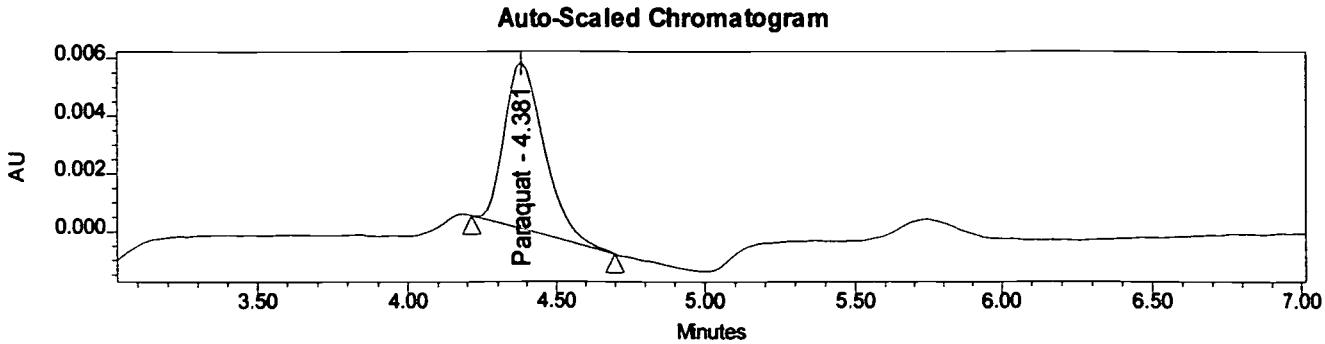
Channel Id 8817

Dilution 5.00

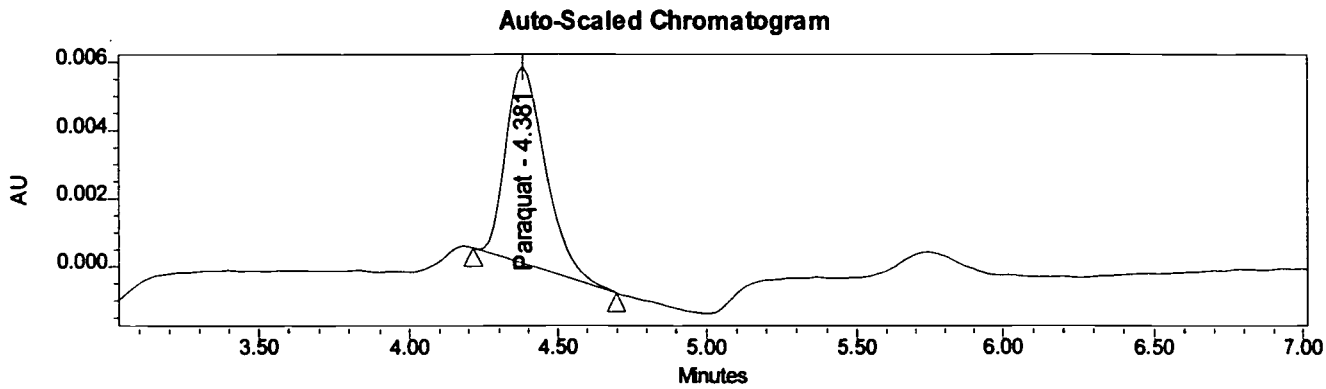
Injection Volume 100.00 ul

SampleWeight 100.00

Date Acquired 10/10/2000 1:27:01 PM



SampleName LFB 231 Vial 13 Injection 1 Channel 996 Date Acquired 10/10/2000 1:27:01 PM



SampleName A533487

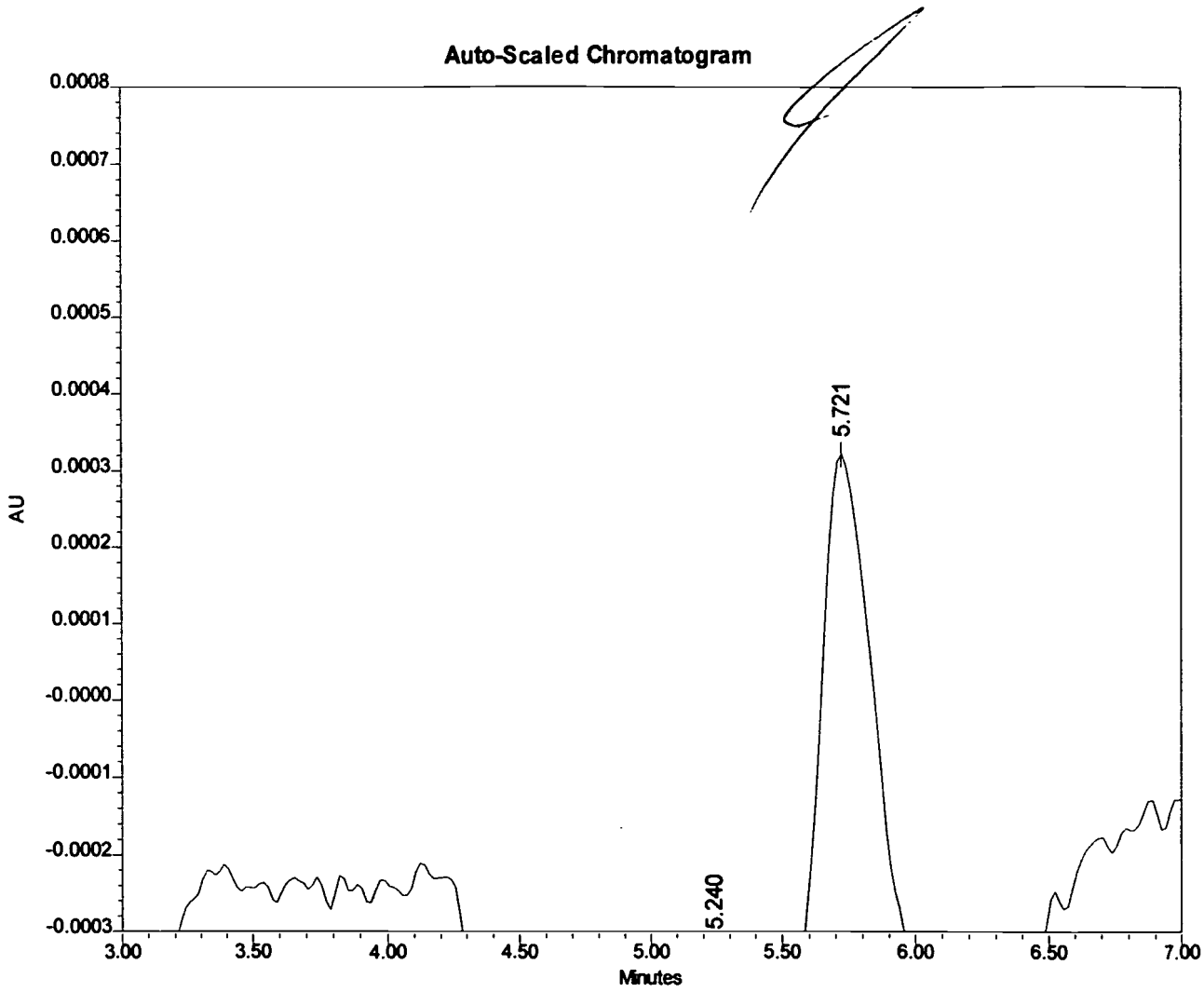
Channel Id 8820

Dilution 5.00

Injection Volume 100.00 ul

SampleWeight 100.00

Date Acquired 10/10/2000 1:38:38 PM



Peak Results

	Name	RT	Area	Amount
1	Diquat	4.220		
2	Paraquat	4.480		
3		5.240	14533	
4		5.721	18188	

SampleName A533487

Channel Id 8820

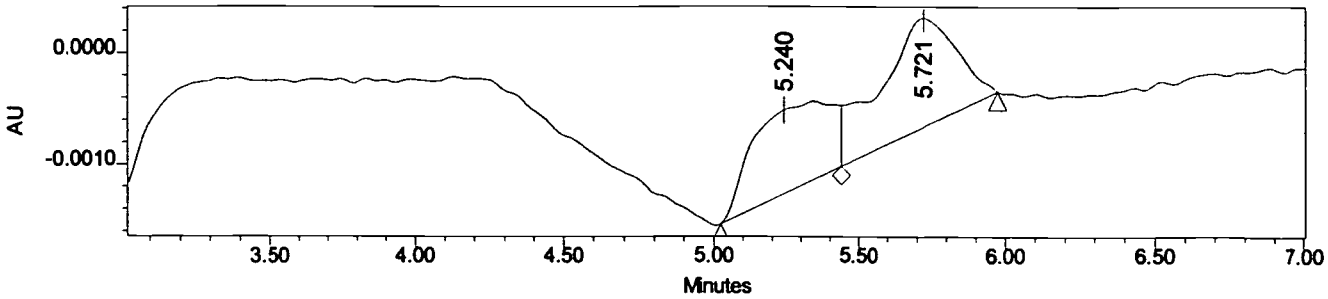
Dilution 5.00

Injection Volume 100.00 ul

SampleWeight 100.00

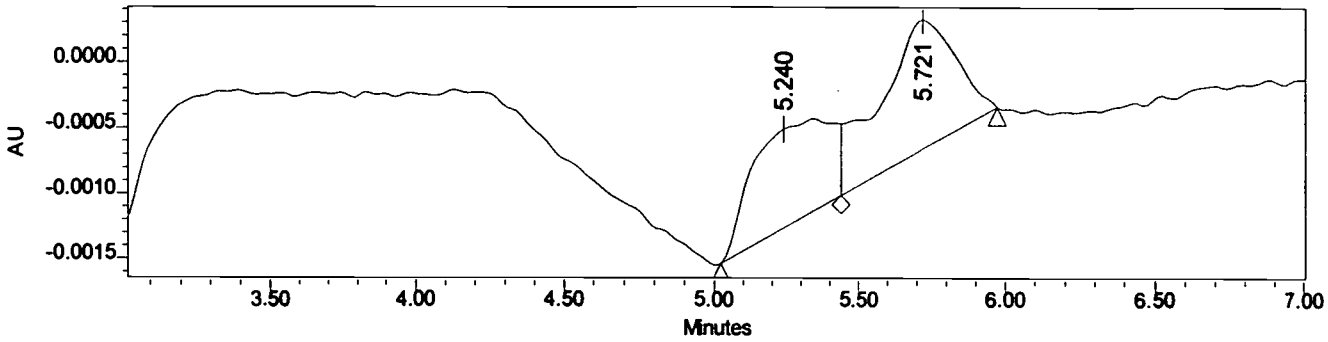
Date Acquired 10/10/2000 1:38:38 PM

Auto-Scaled Chromatogram



SampleName A533487 Vial 14 Injection 1 Channel 996 Date Acquired 10/10/2000 1:38:38 PM

Auto-Scaled Chromatogram



SampleName A533487

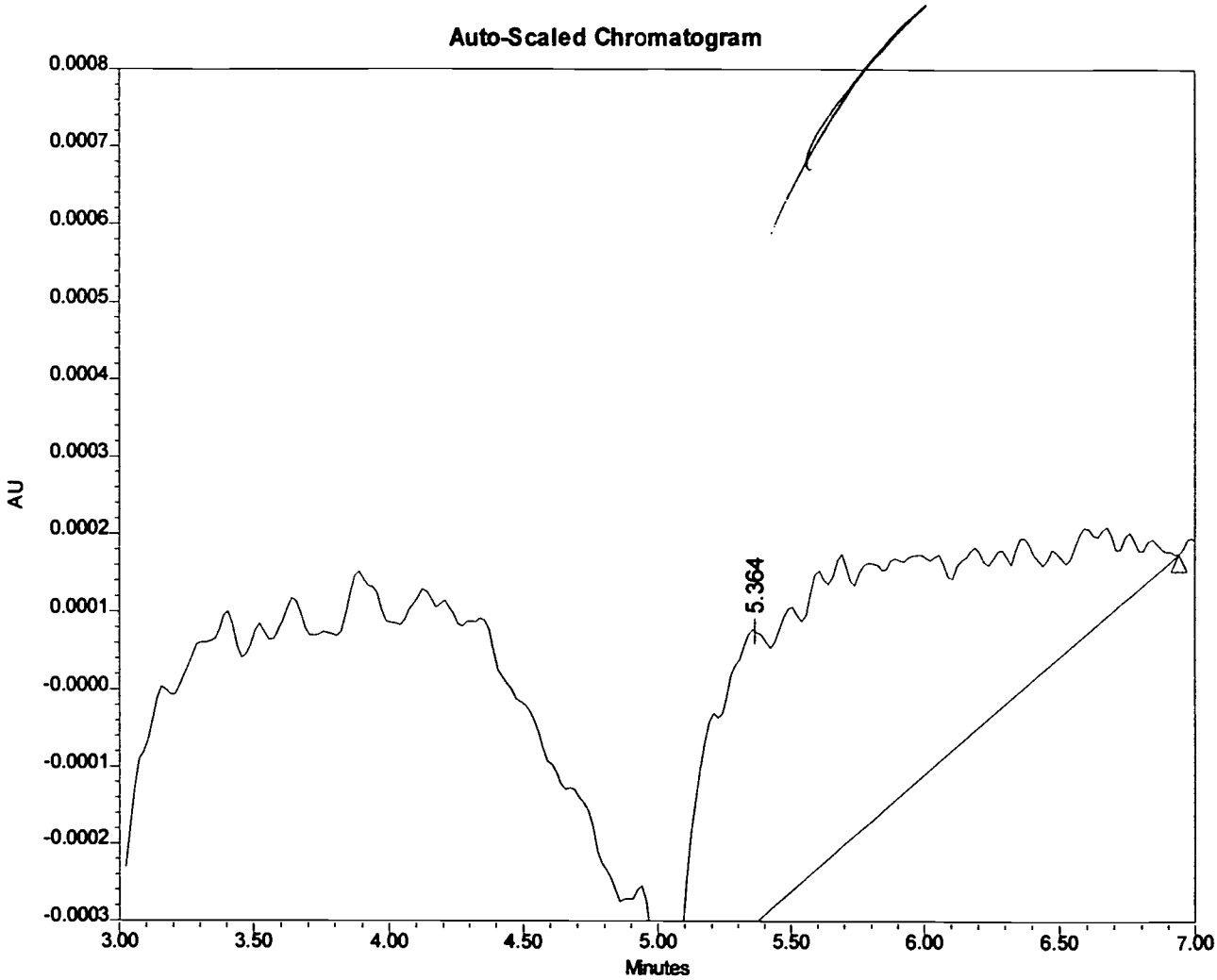
Channel Id 8820

Dilution 5.00

Injection Volume 100.00 ul

SampleWeight 100.00

Date Acquired 10/10/2000 1:38:38 PM



Peak Results

	Name	RT	Area	Amount
1	Diquat	4.220		
2	Paraquat	4.480		
3		5.364	26122	

SampleName A533487

Channel Id 8820

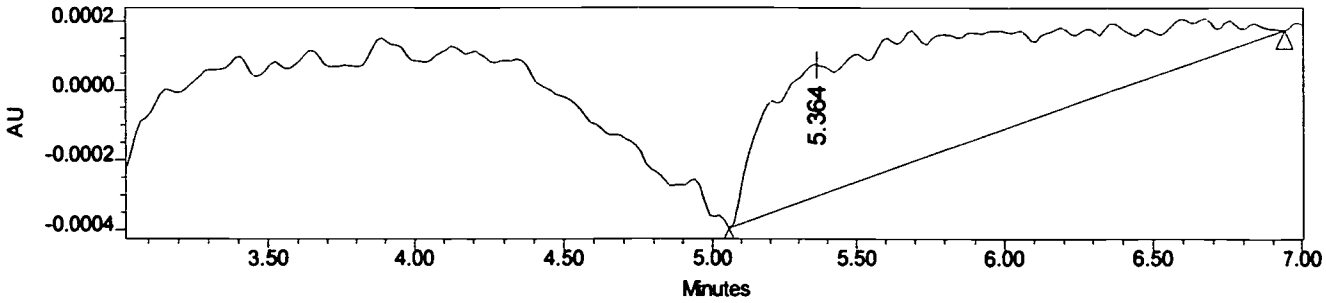
Dilution 5.00

Injection Volume 100.00 ul

SampleWeight 100.00

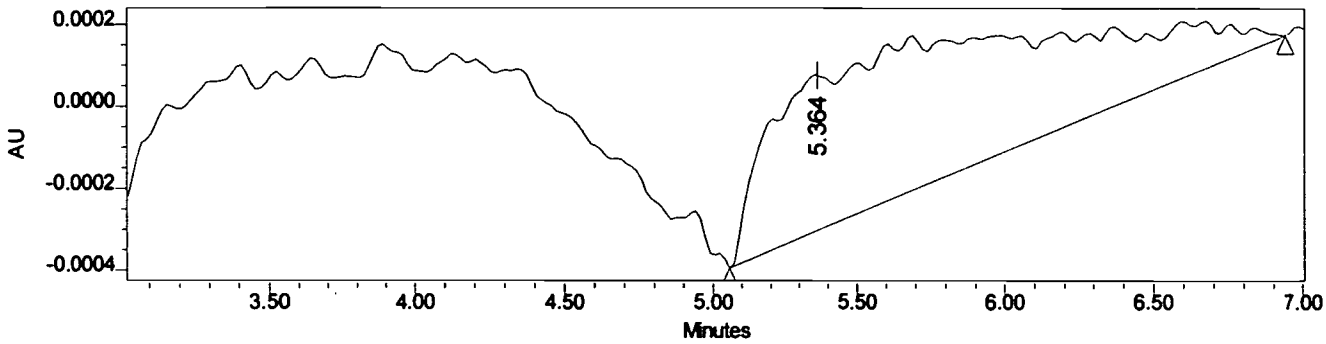
Date Acquired 10/10/2000 1:38:38 PM

Auto-Scaled Chromatogram



SampleName A533487 Vial 14 Injection 1 Channel 996 Date Acquired 10/10/2000 1:38:38 PM

Auto-Scaled Chromatogram



SampleName A533487 MS

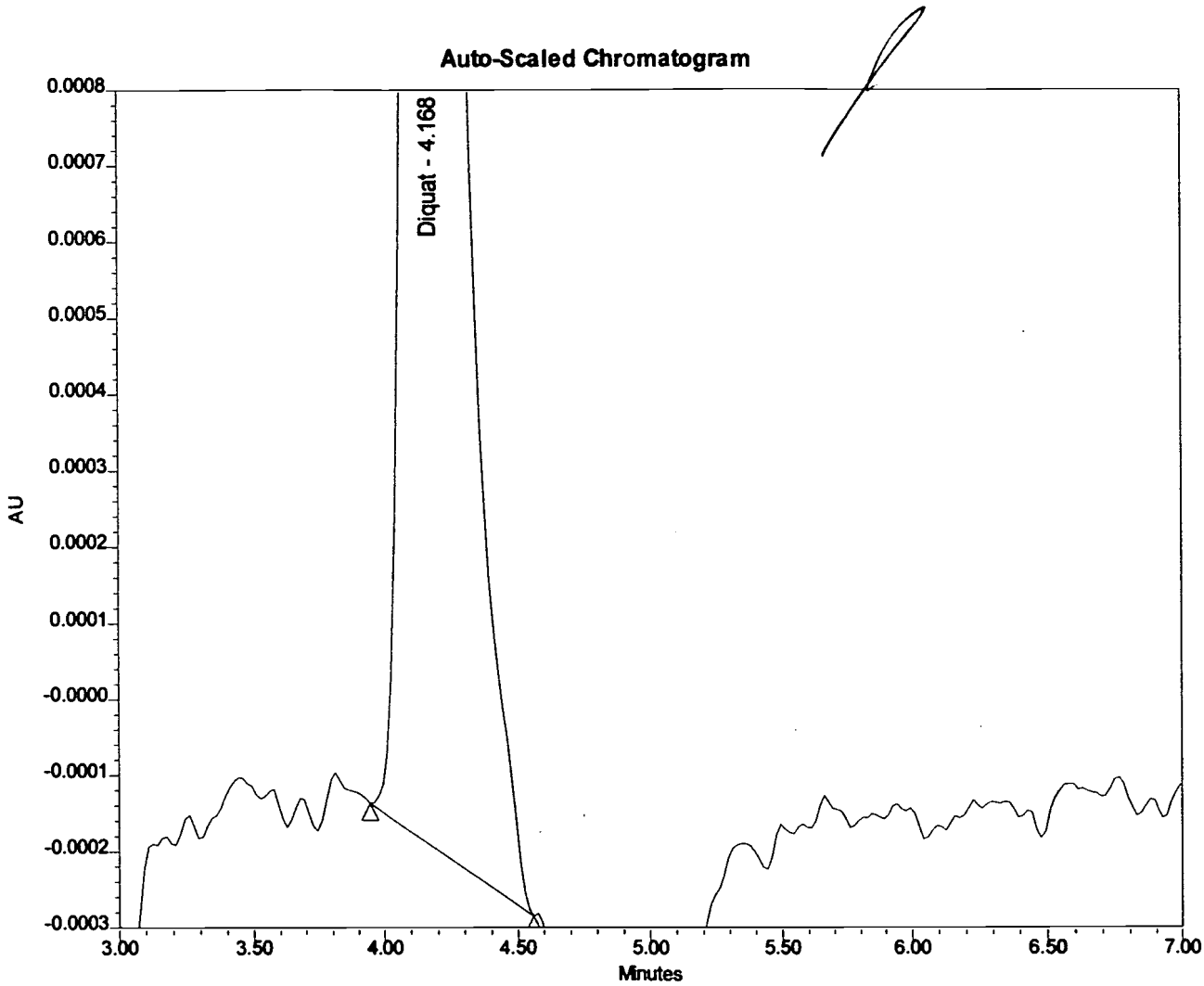
Channel Id 8823

Dilution 5.00

Injection Volume 100.00 ul

SampleWeight 100.00

Date Acquired 10/10/2000 1:50:16 PM



Peak Results

	Name	RT	Area	Amount
1	Diquat	4.168	56326	4.417
2	Paraquat	4.480		

SampleName A533487 MS

Channel Id 8823

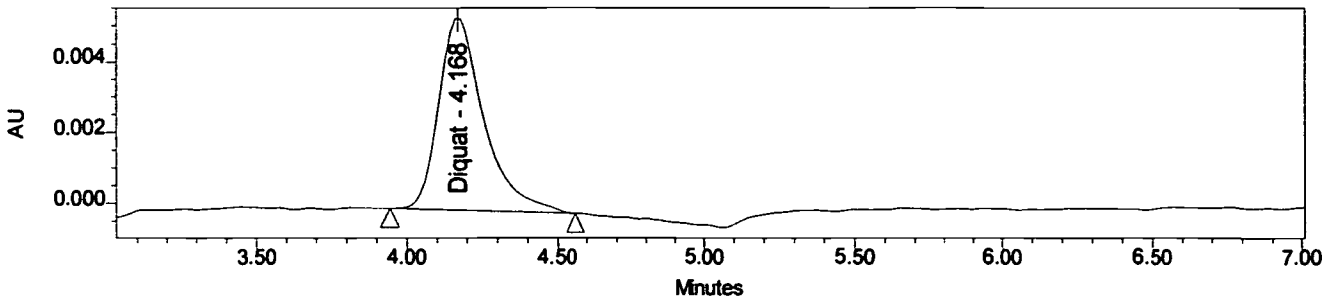
Dilution 5.00

Injection Volume 100.00 ul

SampleWeight 100.00

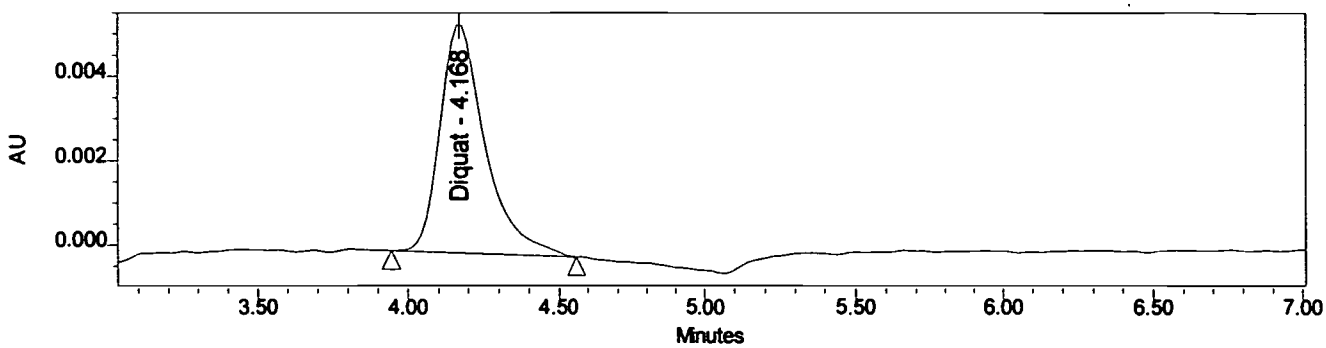
Date Acquired 10/10/2000 1:50:16 PM

Auto-Scaled Chromatogram



—— SampleName A533487 MS Vial 15 Injection 1 Channel 996 Date Acquired 10/10/2000 1:50:16 PM

Auto-Scaled Chromatogram



SampleName A533487 MS

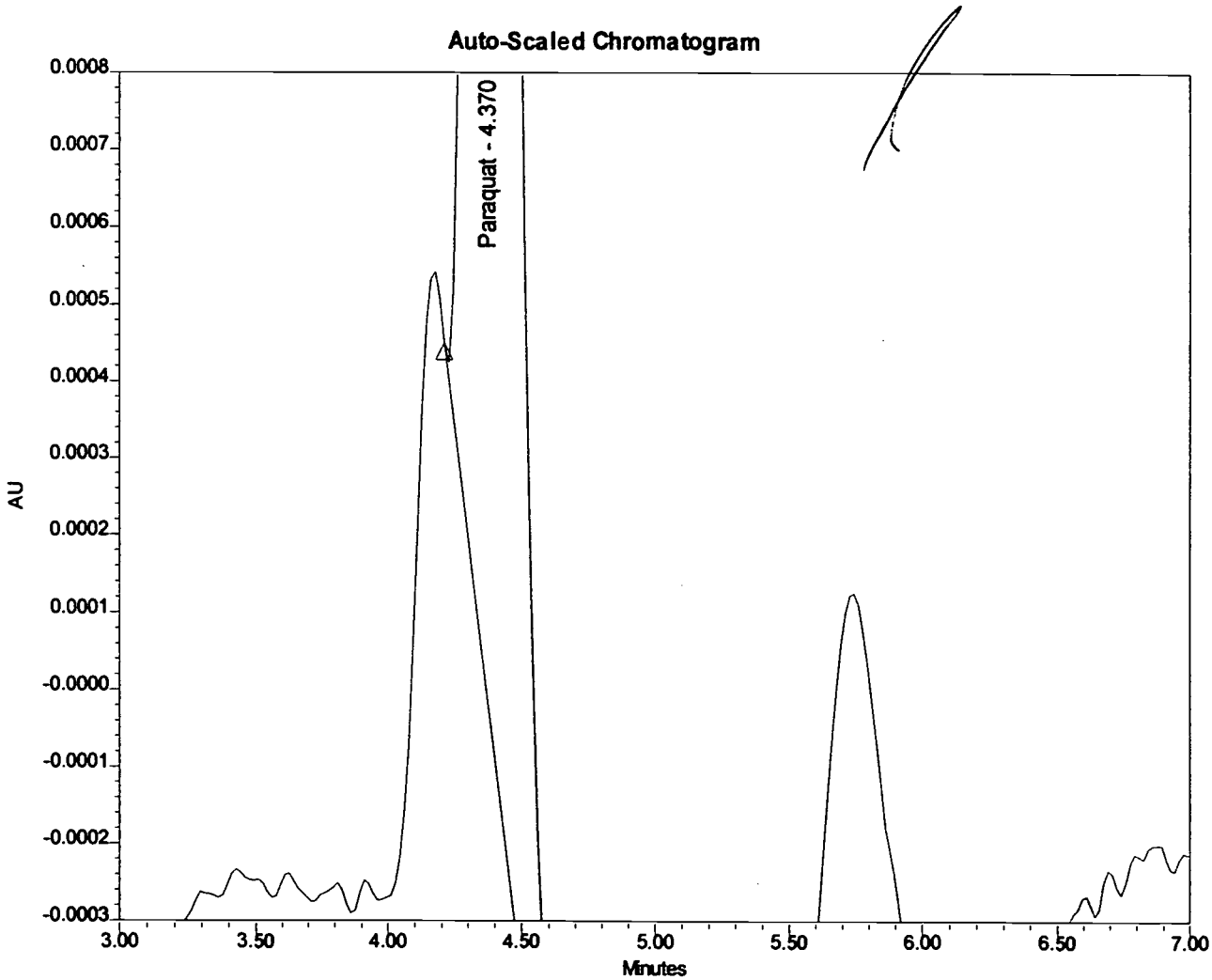
Channel Id 8823

Dilution 5.00

Injection Volume 100.00 ul

SampleWeight 100.00

Date Acquired 10/10/2000 1:50:16 PM



Peak Results

	Name	RT	Area	Amount
1	Diquat	4.220		
2	Paraquat	4.370	54553	3.885

SampleName A533487 MS

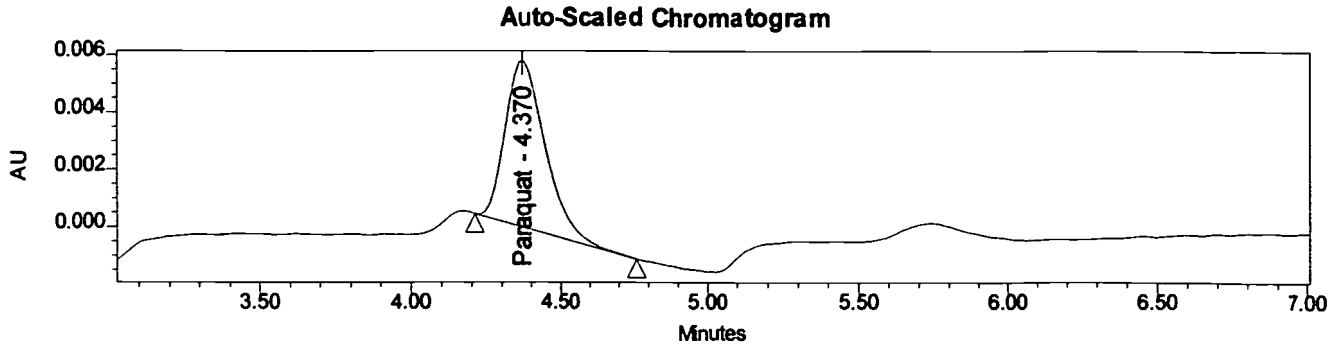
Channel Id 8823

Dilution 5.00

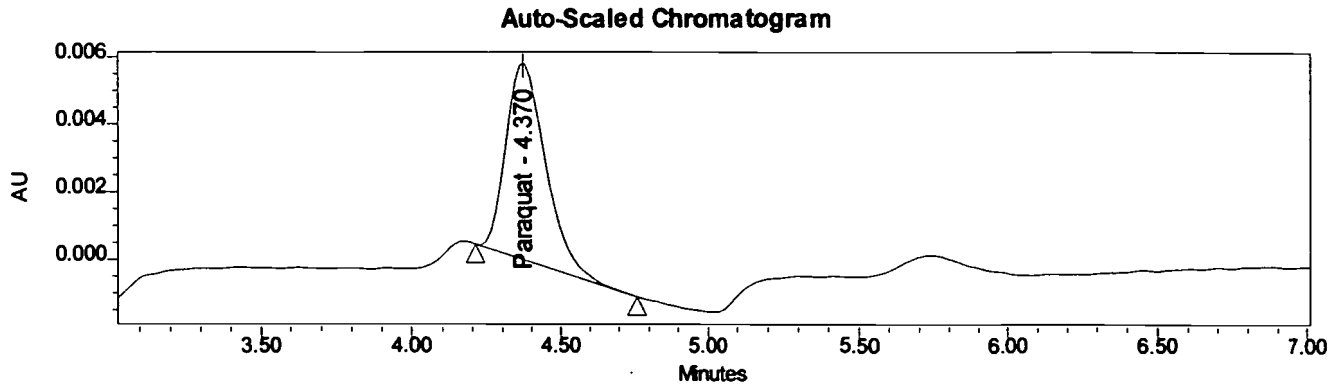
Injection Volume 100.00 ul

SampleWeight 100.00

Date Acquired 10/10/2000 1:50:16 PM



SampleName A533487 MS Vial 15 Injection 1 Channel 996 Date Acquired 10/10/2000 1:50:16 PM



SampleName A533487 MSD

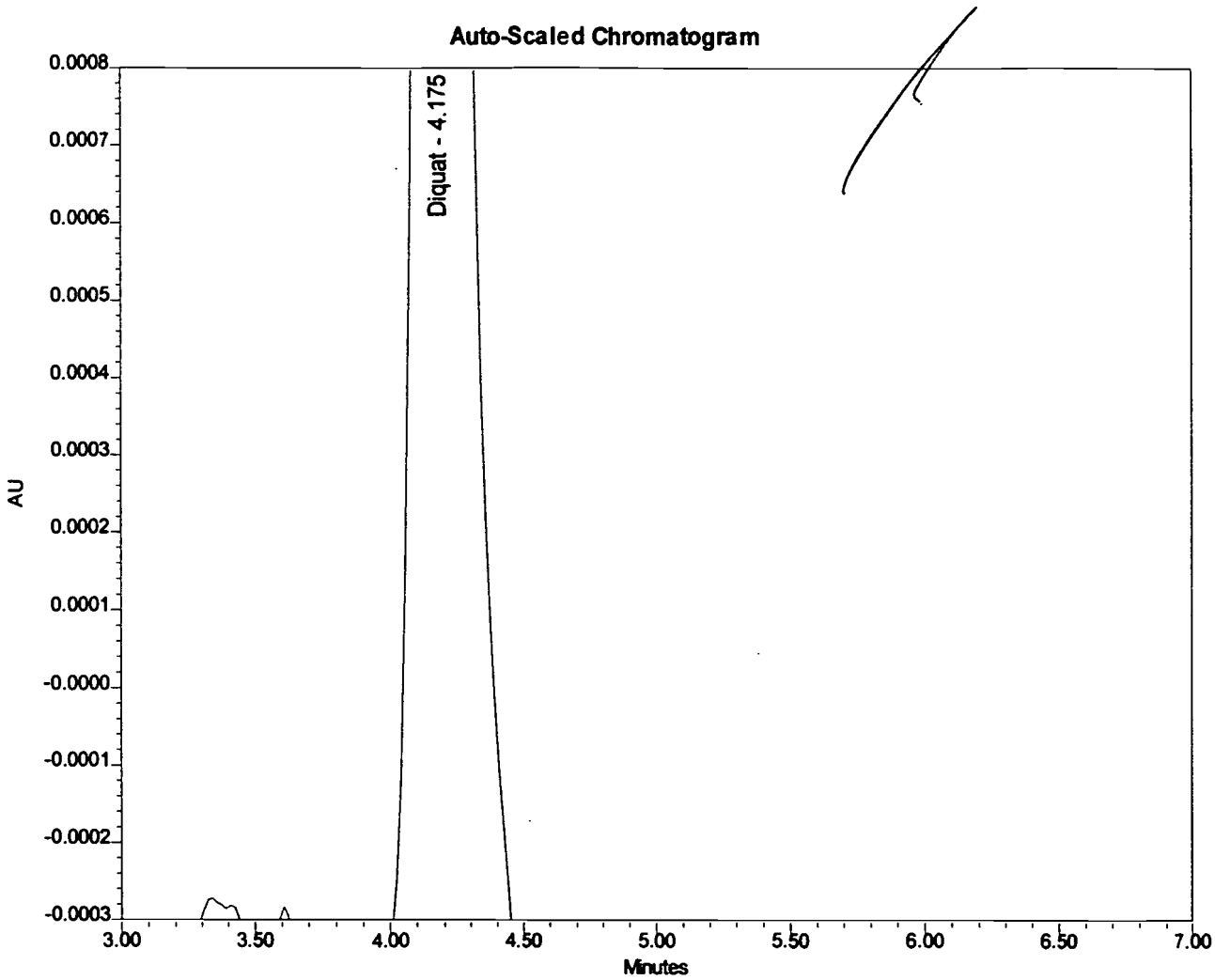
Channel Id 8826

Dilution 5.00

Injection Volume 100.00 ul

SampleWeight 100.00

Date Acquired 10/10/2000 2:01:52 PM



Peak Results

	Name	RT	Area	Amount
1	Diquat	4.175	54403	4.267
2	Paraquat	4.480		

SampleName A533487 MSD

Channel Id 8826

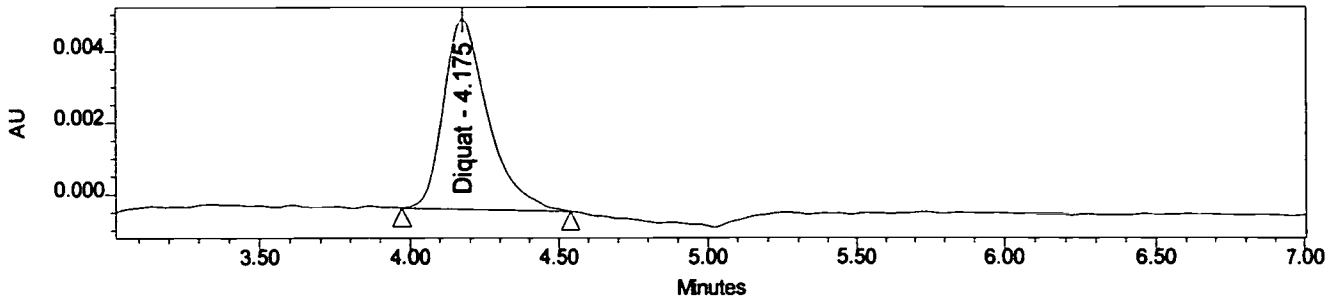
Dilution 5.00

Injection Volume 100.00 ul

SampleWeight 100.00

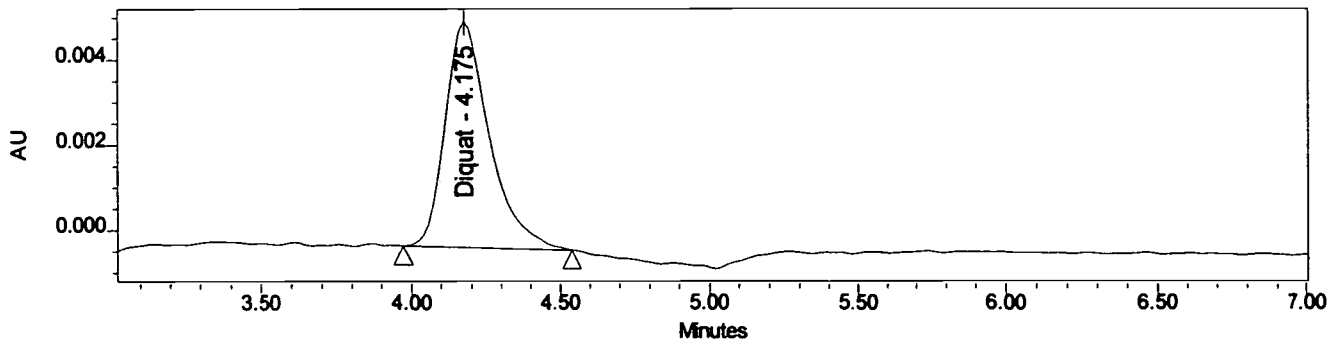
Date Acquired 10/10/2000 2:01:52 PM

Auto-Scaled Chromatogram



SampleName A533487 MSD Vial 16 Injection 1 Channel 996 Date Acquired 10/10/2000 2:01:52 PM

Auto-Scaled Chromatogram



SampleName A533487 MSD

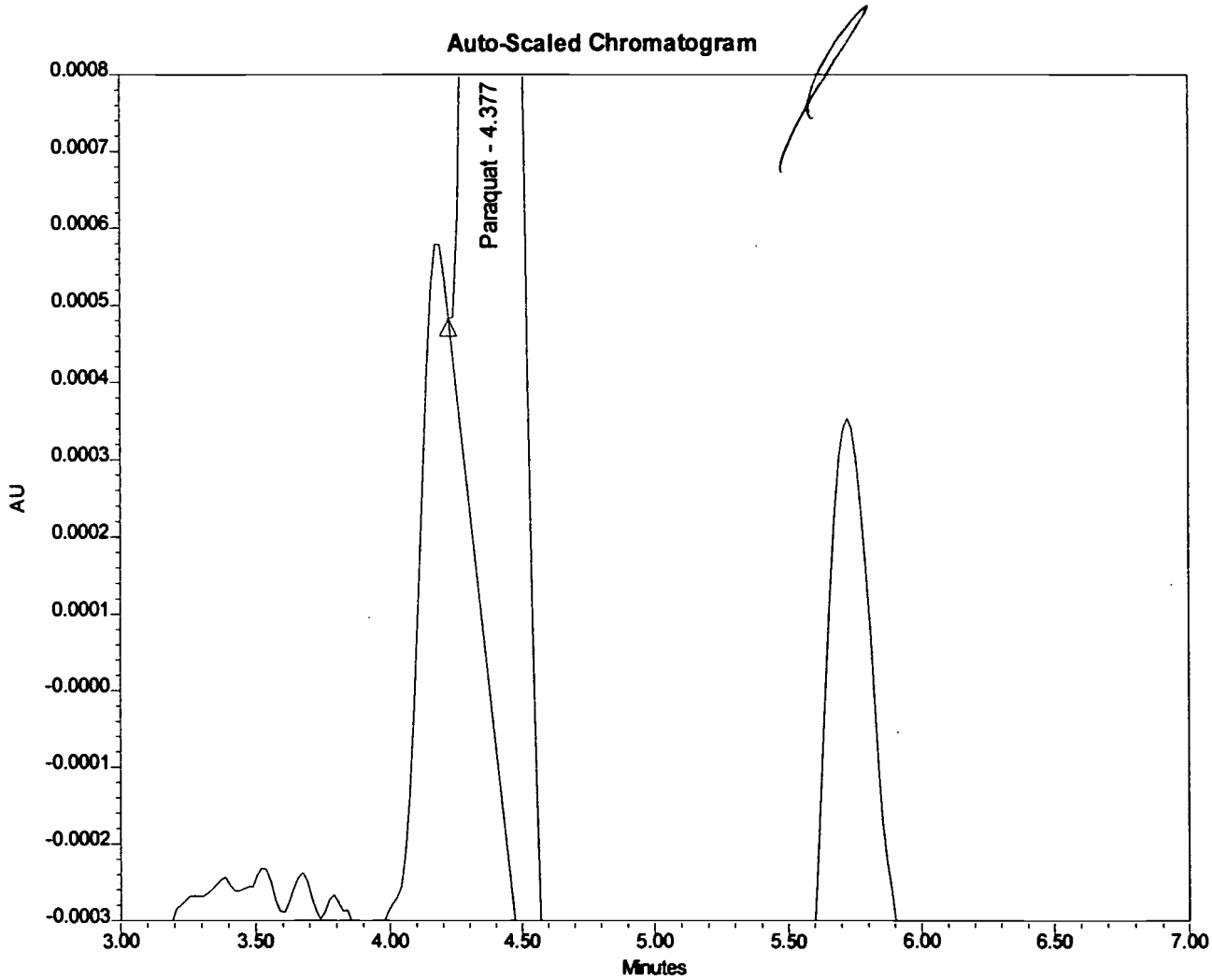
Channel Id 8826

Dilution 5.00

Injection Volume 100.00 ul

SampleWeight 100.00

Date Acquired 10/10/2000 2:01:52 PM



Peak Results

	Name	RT	Area	Amount
1	Diquat	4.220		
2	Paraquat	4.377	51807	3.688

SampleName A533487 MSD

Channel Id 8826

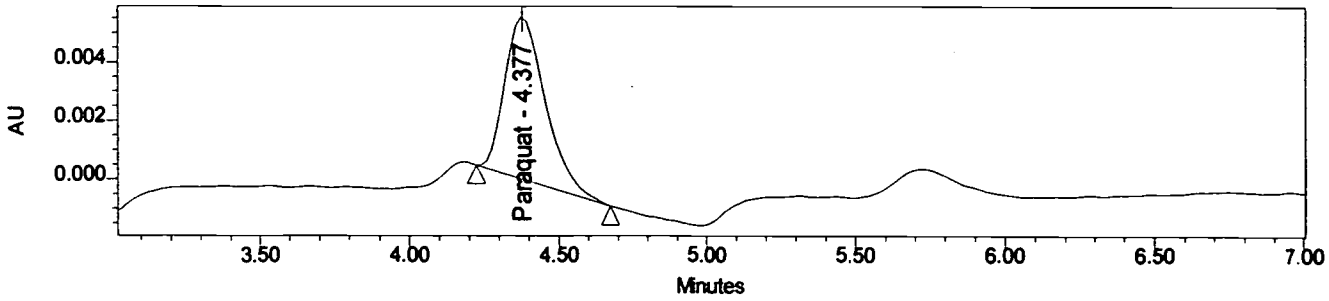
Dilution 5.00

Injection Volume 100.00 ul

SampleWeight 100.00

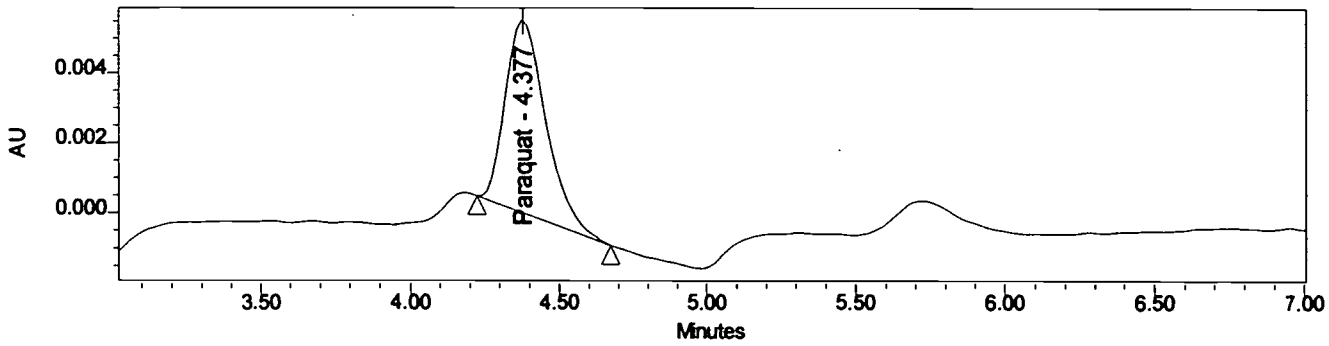
Date Acquired 10/10/2000 2:01:52 PM

Auto-Scaled Chromatogram



SampleName A533487 MSD Vial 16 Injection 1 Channel 996 Date Acquired 10/10/2000 2:01:52 PM

Auto-Scaled Chromatogram



SampleName CCV L3

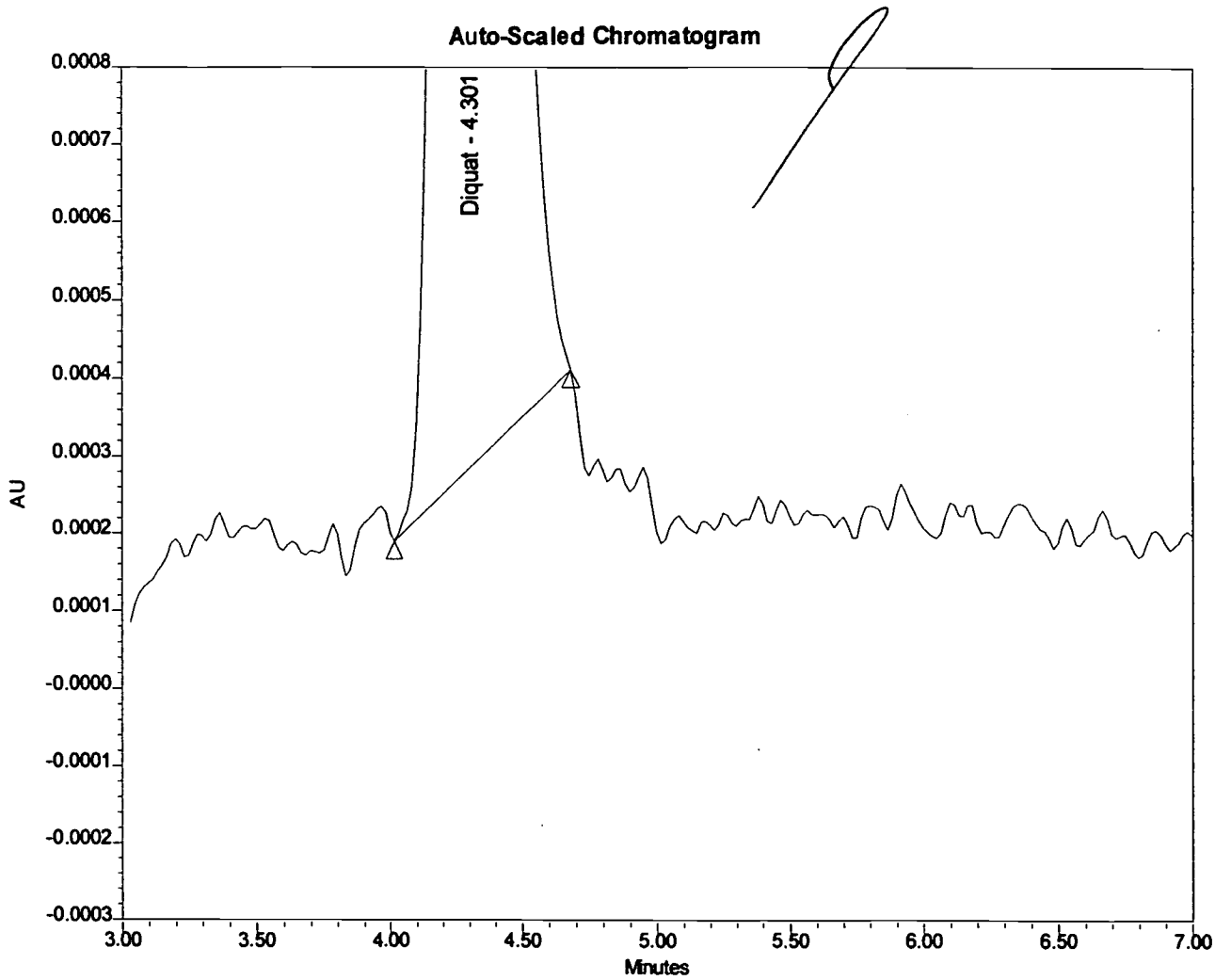
Channel Id 8829

Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

Date Acquired 10/10/2000 2:13:31 PM



Peak Results

	Name	RT	Area	Amount
1	Diquat	4.301	60299	94.513
2	Paraquat	4.480		

SampleName CCV L3

Channel Id 8829

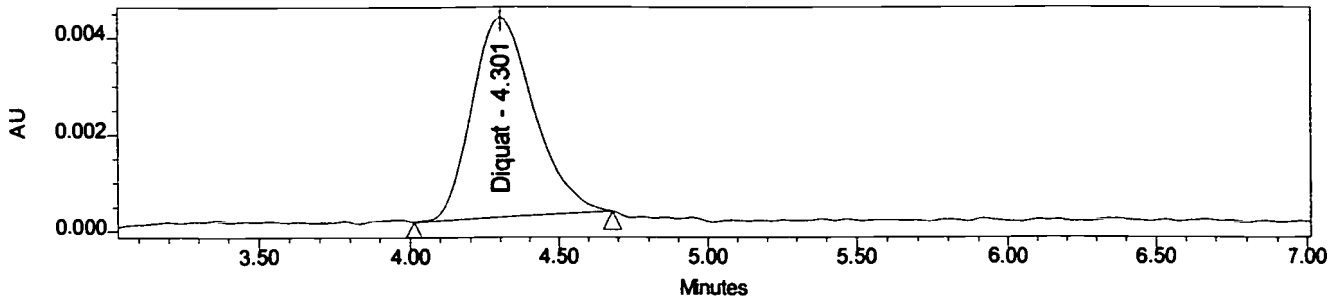
Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

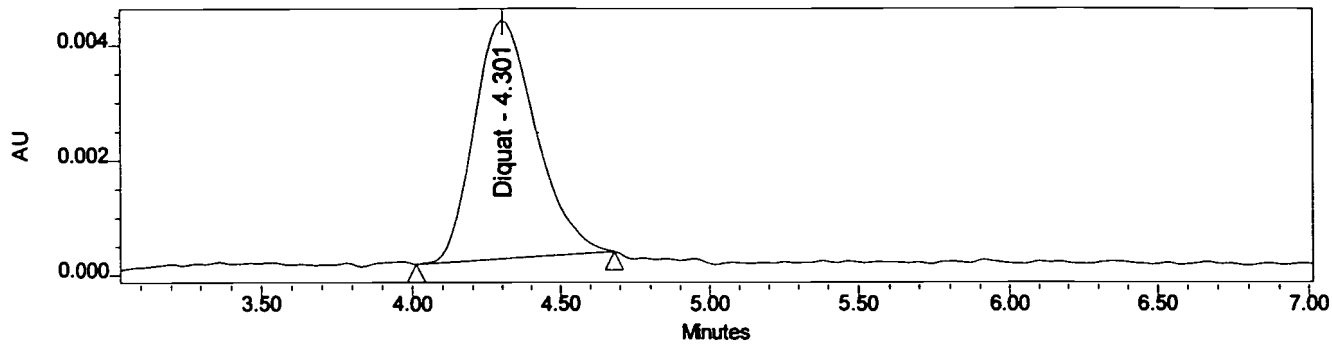
Date Acquired 10/10/2000 2:13:31 PM

Auto-Scaled Chromatogram



SampleName CCV L3 Vial 17 Injection 1 Channel 996 Date Acquired 10/10/2000 2:13:31 PM

Auto-Scaled Chromatogram



SampleName CCV L3

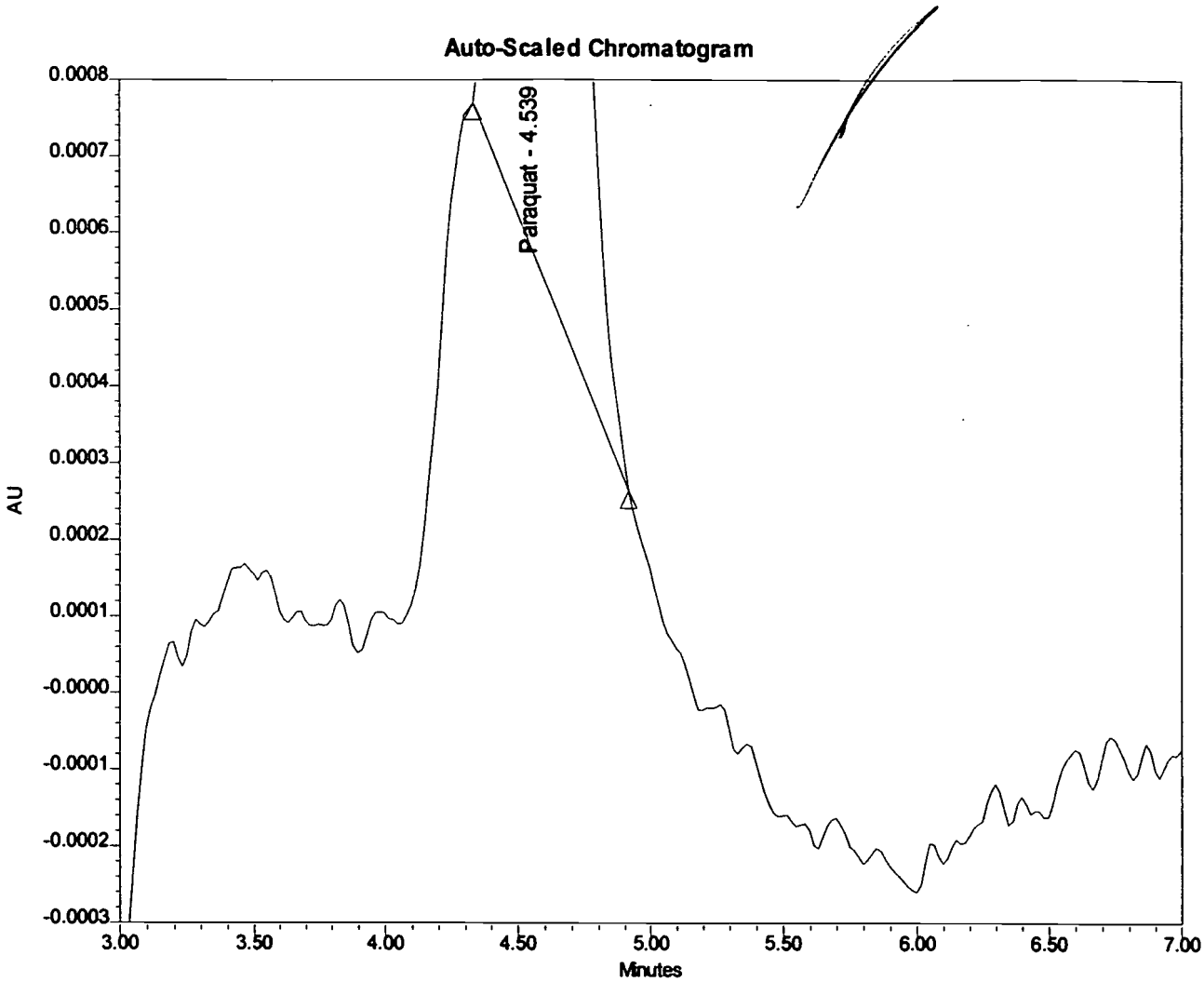
Channel Id 8829

Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

Date Acquired 10/10/2000 2:13:31 PM



Peak Results

	Name	RT	Area	Amount
1	Diquat	4.220		
2	Paraquat	4.539	68672	97.912

SampleName CCV L3

Channel Id 8829

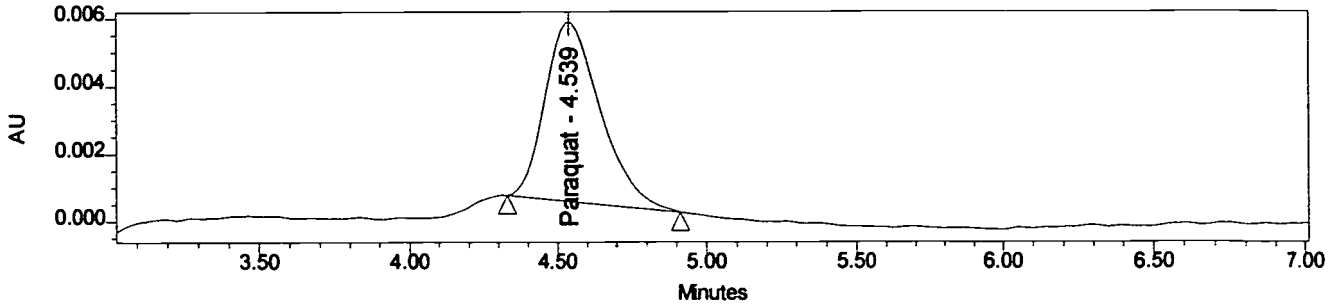
Dilution 1.00

Injection Volume 100.00 ul

SampleWeight 1.00

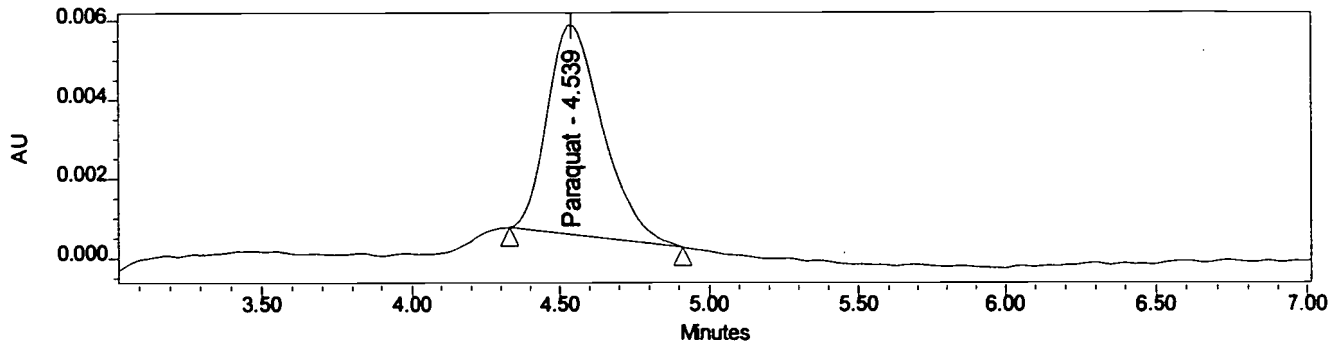
Date Acquired 10/10/2000 2:13:31 PM

Auto-Scaled Chromatogram



SampleName CCV L3 Vial 17 Injection 1 Channel 996 Date Acquired 10/10/2000 2:13:31 PM

Auto-Scaled Chromatogram



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
INDIANAPOLIS

OFFICE MEMORANDUM

DATE: January 10, 2001

TO: Jim Harris
Ground Water Section

THRU: Martha Clark, Section Chief
Ground Water

FROM: Mitt Denney
Ground Water Section

SUBJECT: DK27069

I have reviewed the attached results and have determined that the results are acceptable for use. The results have been evaluated for the quality criteria contained in the Ground Water Quality Assurance Program Plan and BAA 97-044. Reviews are confined to the Regulated Drinking Water Contaminants and positive detects of chemical compounds. Unless specified otherwise in this memorandum, analytical results for compounds listed on the Primary and Secondary Drinking Water Standards Lists, for the sample(s) identified in the specified analytical report, are acceptable for quantitative purposes. Any qualification for the acceptance of these results will be identified in this memorandum. This memorandum should remain attached to the original results.

QA/QC Samples

QA/QC samples relevant to the identification of a chemical were acceptable for both glyphosate (547) and diquat/paraquat (549.2) analyses. QA/QC samples used for the quantification of samples were not within acceptable limits for glyphosate and were acceptable for diquat/paraquat. The sample is suitable for chemical identification of glyphosate and diquat/paraquat. The sample is suitable for quantification of diquat/paraquat and not for quantification of glyphosate.

Results

None of the target compounds were detected.

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, LLC COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	05-OCT-00		A533487
	Complete	PO Number	
	19-OCT-00	98-653298-287C*	
	Printed	Sampled	
	19-OCT-00	04-OCT-00 15:00	

Report To	Bill To
MITT L. DENNEY INDIANA DEPT. OF ENVIRONMENTAL MANAGEMEN 2525 NORTH SHADELAND AVENUE BUILDING 30 INDIANAPOLIS, IN 46219	DEBBIE HILTON (SHADELAND) INDIANA DEPT. OF ENVIRONMENTAL MANAGEMEN 100 N. SENATE AVENUE PO BOX 6015 INDIANAPOLIS, IN 46206

Sample Description

CLIENT ID: DK27069
MATRIX TYPE: DRINKING WATER, PUBLIC OR PRIVATE SUPPLY

GLYPHOSATE IN DRINKING WATER BY HPLC EPA 547

Analyst: A. SAUERLAND Analysis Date: 18-OCT-00 12:05 Instrument: HPLC Test: 0547.0.0

Parameter	Result	Det. Limit	Units
WET WEIGHT RESULTS			
GLYPHOSATE	BDL	70	ug/L

PREP FOR DIQUAT BY LIQ/SOLID EXTRACTION EPA 549.2

Analyst: B. WOOD Analysis Date: 09-OCT-00 18:30 Instrument: PREP Test: P549.0.0

Parameter	Result	Det. Limit	Units
WET WEIGHT RESULTS			
INITIAL WEIGHT OR VOLUME	100		mL
FINAL VOLUME	5		mL

DIQUAT IN DRINKING WATER BY LIQ/SOLID EXTRACTION BY HPLC (UV EPA 549.2

Analyst: B. BELL Analysis Date: 10-OCT-00 13:38 Instrument: HPLC Test: 0549.0.0

Prep: PREP FOR DIQUAT BY LIQ/SOLID EXTRACTION EPA 549.2 P549.0.0

Parameter	Result	Det. Limit	Units
WET WEIGHT RESULTS			
DIQUAT	BDL	2.0	ug/L
PARAQUAT	BDL	2.0	ug/L

Sample Comments

BDL Below Detection Limit

Sample was received on ice.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.
The sample results relate only to the analytes of interest tested or to the sample as received by the lab.

Approved : GABusch, QAO

HERITAGE ENVIRONMENTAL SERVICES, LLC

GLYPHOSATE IN DRINKING WATER BY HPLC EPA 547 — 0547.0

Run: R401350 Analyst.: A SAUERLAND Run Date...: 18-OCT-00 Instrument: HPLC
ANALYTICAL Reviewer: S BROTHERTON Review Date: 19-OCT-00

QC Type	Lab ID	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
BLA01	Q1161578		GLYPHOSATE			BDL 70	ug/L		
LFB01	Q1161579		GLYPHOSATE	100		148	ug/L	148	
SAMPLE	A533487		See Cert. of Analysis, Rep: 0						
SPI01	Q1161580	A533487	GLYPHOSATE	0	100	157	ug/L	157	
DPS01	Q1161581	A533487	GLYPHOSATE	0	100	158	ug/L	158	.6
CCV	Q1161582		GLYPHOSATE	400		550	ug/L	137.5	

DIQUAT IN DRINKING WATER BY LIQ/SOLID EXTRACTION BY EPA 549.2 — 0549.0

Prep: PREP FOR DIQUAT BY LIQ/SOLID EXTRACTION EPA 549.2

Run: R400802 Analyst.: B WOOD Run Date...: 09-OCT-00
PREP Reviewer: B BELL Review Date: 09-OCT-00

QC Type	Lab ID	Source	Anal Run
SAMPLE	A533487	Rep: 0	R400921
BLA02	Q1158146		R400921
SPI02	Q1158147	A533487	R400921
DPS02	Q1158148	A533487	R400921
LFB02	Q1158149		R400921

Run: R400921 Analyst.: B BELL Run Date...: 10-OCT-00 Instrument: HPLC
ANALYTICAL Reviewer: S BROTHERTON Review Date: 11-OCT-00

QC Type	Lab ID	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
BLA02	Q1158146		DIQUAT			BDL 2	ug/L		
BLA02	Q1158146		PARAQUAT			BDL 2	ug/L		
LFB02	Q1158149		DIQUAT	5		4.06	ug/L	81.2	
LFB02	Q1158149		PARAQUAT	5		3.85	ug/L	77	
SAMPLE	A533487		See Cert. of Analysis, Rep: 0						
SPI02	Q1158147	A533487	DIQUAT	0	5	4.42	ug/L	88.4	
SPI02	Q1158147	A533487	PARAQUAT	0	5	3.89	ug/L	77.8	
DPS02	Q1158148	A533487	DIQUAT	0	5	4.27	ug/L	85.4	3.5
DPS02	Q1158148	A533487	PARAQUAT	0	5	3.69	ug/L	73.8	5.3
CCVL	Q1158918		DIQUAT	100		94.5	ug/L	94.5	
CCVL	Q1158918		PARAQUAT	100		97.9	ug/L	97.9	

QC Sample Comments

BDL Below Detection Limit

Approved by: G.A. Burch, QAO

QUALITY ASSURANCE REPORT

Service Location
HERITAGE ENVIRONMENTAL SERVICES, LLC
COMMERCIAL LABORATORY OPERATIONS
7901 W. MORRIS ST.
INDIANAPOLIS, IN 46231
(317)243-8304

Report Date
19-OCT-00

Submitter
INDIANA DEPARTMENT OF ENVIRONMENTAL MGMT
.
P O BOX 6015
INDIANAPOLIS, IN 46206

Client ID	Lab ID	Date-Time Sampled	Date Received	Date Complete	Description
DK27069	A533487	04-OCT-00 15:00	05-OCT-00	19-OCT-00	