Present Landfill Administrative Record File (Buffer Zone Operable Unit)

In Response to CDPHE Comment number 8 on the Draft Interim Measure/Interim Remedial Action (IM/IRA) for OU 7 (IHSS 1114) and RCRA Closure of the RFETS Present Landfill, attached is the Methane Data associated with the PU&D Monitoring Well Number 02097 Initially these results were reported in the 2000 Annual RFCA Groundwater Monitoring Report under Plume Degradation Monitoring associated with the PU&D Yard Plume

Attached is

- Single Page from 2000 Annual Groundwater Monitoring Report From Section 7 4
- Database summary of Methane results associated with well 02097 for 2001 and 2002
- Methane Data For Well 02097, from the Southwest Research Institute Analyzed in March 2002, August 2002, January 2003 and August 2003

RECEIVED
MAR - 9 2004

1/98

ADMIN RECORD

BZ-A-000677

An additional component of the PU&D Yard Plume investigation was the identification of wells suitable for evaluating plume degradation As with other plume degradation projects, wells were chosen so as to be along the contaminant migration pathway in the plume This cross section along the plume was defined by well 01097, which is upgradient of the known source, well 30900, which is in the source, and wells 01497, 70693 and 02097 which are located in the plume, downgradient of the source Plume degradation parameters were collected from these wells and are listed in Table 7-4

Table 7-5 PU&D Yard Sample Results

WELL	DATE	CARBON TETRACHLORIDE	CHLOROFORM	METHYLENE CHLORIDE	CHLOROMETHANE	METHANE		
01097	1/24/01	1	1	0 88	1	1		
30900	1/17/01	0 3	1	1	1	5		
01497	1/24/01	7	1	0 1	1	1		
70693	1/24/01	2	0 8	1	2	1		
02097	1/24/01	1	0 9	0 2	2	17000		
WELL	DATE	1,1-DICHLOROETHANE	BROMOCHLOROMETHANE	CHLOROETHANE	ETHANE			
01097	1/24/01	1	1	1	2			
30900	1/17/01	1	1	1	2 5			
01497	1/24/01	0 7	0 7	1	2			
70693	1/24/01	38	0 3	1	2			
02097	1/24/01	13	4	1	2			
WELL	DATE	TETRACHLOROETHANE	TRICHLOROETHANE	cis-1,2-DICHLOROETHENE	1,4-DICHLOROBENZENE	VINYL CHLORIDE	ETHENE	
01097	1/24/01	1	1	1	0 5	1	2	
30900	1/17/01	120	9	1 2	0 5	1	2	
01497	1/24/01	15	33	2	79	1	2	
70693	1/24/01	5	9	0 3	25	1	2	
02097	1/24/01	5	30	0 3	9	0 9	2	
WELL	DATE	SULFATE mg/L	SULFIDE mg/L	DISSOLVED OXYGEN mg/L	CHLORIDE mg/L	FERROUS IRON mg/L	TOC mg/L	[illegible] mg/L
01097	1/24/01	16	0 079	3 5	7 3	NA	0 649	2 5
30900	1/17/01	15	0 056	NA	6 4	NA	1 4	0 05
01497	1/24/01	23	0 08	5	11	NA	0 5	0 05
70693	1/24/01	24	0 031	NA	11	NA	0 62	0 05
02097	1/24/01	32	0 002	NA	16	NA	8 2	0 5

NA = not analyzed

7 4.1 Electron Donors

Figure 7-11 shows results for total organic carbon for the first quarter 2001 TOC is approximately 0 65 mg/L in upgradient well 01097, and increases to 1 4 mg/L in source well 30900 The TOC values then decrease again to approximately 0 5 – 0 6 mg/L in wells 01497and 70693, then rise again to 8 2 mg/L in well 02097 Wiedemeier et al (1996) suggest that TOC values above 20 mg/L ensure that enough carbon is present to drive dechlorination Therefore, the limited amount of carbon in groundwater may be retarding the rate of reductive dechlorination in the PU&D Yard area

2

LOCATION_	COLLECTION	COLLI	DESCRIPTION	SAMPLE_QC_	RESULT_TYP	RESULT	UNIT_C(	LAB_RESULT_	VALID/	DETECTI	SS_DILUTION_	IMP WELL CLASS
02097	1/30/2001	1555	METHANE	REAL	TR1	4500	ug/l	E		1	1	Plume Degradation
02097	1/30/2001	1555	METHANE	REAL	MS1	94	%REC			550	1	Plume Degradation
02097	1/30/2001	1555	METHANE	REAL	MS1	94	%REC			550	1	Plume Degradation
02097	1/30/2001	1555	METHANE	REAL	MD1	94	%REC			550	1	Plume Degradation
02097	1/30/2001	1555	METHANE	REAL	MD1	94	%REC			550	1	Plume Degradation
02097	1/30/2001	1555	METHANE	REAL	DL1	17000	ug/l	D		300	1	Plume Degradation
02097	9/6/2001	1151	METHANE	REAL	TR1	240	UG/L	E		1	1	Plume Degradation
02097	3/5/2002	1300	METHANE	REAL	MS1	300	%REC			1	1	Plume Degradation
02097	3/5/2002	1300	METHANE	REAL	MD1	300	%REC			1	1	Plume Degradation
02097	3/5/2002	1300	METHANE	REAL	TR1	370	UG/L	E		1	1	Plume Degradation
02097	3/5/2002	1300	METHANE	REAL	DL1	360	UG/L	D		6	6	Plume Degradation
02097	7/30/2002	1338	METHANE	REAL	TR1	500	UG/L			1	1	Plume Degradation

TEST_METHOD_NAME	LAB_CODE	LAB_SAMPLE_NO	LAB_BATCH_ID	AST_RIN	SRT_BOTTLE_NUM	CUST_SAMP_NUM	LINE_ITEM_CODE	CAS_NO
Method 8015	SWRI	156501	SDG155220	01D0349	01D0349-003 011	GW07397RG	TR01A161	74-82-8
Method 8015	SWRI	156501	SDG155220	01D0347	01D0349-003 011	GW07397RG	TR01A161	74-82-8
Method 8015	SWRI	156501	SDG155220	01D0349	01D0349-003 011	GW07397RG	TR01A161	74-82-8
Method 8015	SWRI	156501	SDG155220	01D0347	01D0349-003 011	GW07397RG	TR01A161	74-82-8
Method 8015	SWRI	156501	SDG155220	01D0349	01D0349-003 011	GW07397RG	TR01A161	74-82-8
Method 8015	SWRI	156501DL	SDG155220	01D0349	01D0349-003 011	GW07397RG	TR01A161	74-82-8
SW-846 8015 METHOD	SWRI	167334	167186	01D1417	01D1417-012 008	GW07736RG	TR01A245	74-82-8
SW-846 8015 METHOD	SWRI	199766/MSD	199547	02D0923	02D0923-006 004	GW08011RG	TR01A257	74-82-8
SW-846 8015 METHOD	SWRI	199766/MSD	199547	02D0923	02D0923-006 004	GW08011RG	TR01A257	74-82-8
SW-846 8015 METHOD	SWRI	199766	199547	02D0923	02D0923-006 004	GW08011RG	TR01A257	74-82-8
SW-846 8015 METHOD	SWRI	199766/DL	199547	02D0923	02D0923-006 004	GW08011RG	TR01A257	74-82-8
SW-846 8015 METHOD	SWRI	210440	GW08459RG	02D1412	02D1412-002 001	GW08471RG	TSK-A-020	74-82-8

SOUTHWEST RESEARCH INSTITUTE
CLIENT: KAISER-HILLCOMPANY, LLC
SDG: 199547
SwRI Project Number: 045756.04.006
SwRI Work Order No.: 21975, 21997
VTSR: March 6 and 8, 2002

RIN# 0200923

NARRATIVE

5

SwRI CASE NARRATIVE

1 Seven (7) water samples were submitted for dissolved Methane, Ethene, and Ethane analysis by Method 8015

SwRI ID	Customer ID
199547	GR230300
199548	GW08008RG
199765	GW07993RG
199766	GW08011RG
199767	GW08012RG
199768	GW08013RG
199769	GW08014RG

2 Samples were received at SwRI on March 6 and 8, 2002 for a twenty-eight (28) day hardcopy turnaround time from Validated Time of Sample Receipt (VTSR)

3 The Chain of Custody (COC) was not relinquished to the lab (see attached) For sample GW080112RG the collection date listed on the COC does not match the date listed on the container label (1) Bottle #02D0923-003 004 and 005 read 02/28/02 on the COC The label was listed as 02/28/02 but was crossed out by the client with ink The date was changed to 03/06/02 in blue ink

4 Quality Control Sample Identification
GR230300MS/MSD
GW08008RG D
GW08011RG MS/MSD

ANALYSIS FOR METHANE, ETHENE AND ETHANE BY METHOD 8015:

1 MS, MSD was performed on assigned samples GR230300 and GW08011RG, the target analytes were not within the tentative recovery range but had no method requirements No further actions were performed In addition, the Fortified Blank sample was analyzed as a quality control sample Target analytes were recovered within the 70-130% criteria limits

2 Prior to analysis by GC/FID, headspace was created in all standards, blanks, QC samples, and samples by displacing 4mL of water from the 40mL VOA vials with high purity helium

3 All standards, blanks, QC samples, and samples were then placed in a 40°C water bath and gently agitated for 30 minutes At the end of 30 minutes all vials were removed and allowed to cool to room temperature before analysis by GC/FID

6

4 Initial and continuing calibration met QC criteria of %RSD <30% target analytes Form 6 &7 were reported with the data package

5 All samples were analyzed at Dilution Factor of one to meet the contract detection limit Detected target analytes were reported on the Form 1

6 Sample Calculation

25ppb CALI STD,
Area of 25ppb methane = 287930
RRF025 (STD) of methane = 287930/25 2421ppb = 11406 7 (Form 6)
Mean RRF = 12961 9

Sample ID GW08011RG
Area of methane = 772638
Conc of Sample, ppb = (772638) / 12961 9 x DF (6) = 357.7μg/L
Reported 360ppb for Methane(Form 1)

"I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Director or his designee, as verified by the following signature. This report shall not be reproduced except in full, without the written approval of SwRI."

for Jeanette G. Garcia
Jo Ann Boyd,
Manager, Quality Assurance Unit

4.3.02
Date

7

SOUTHWEST RESEARCH INSTITUTE
CLIENT: KAISER-HILLCOMPANY, LLC
SDG: 199547
SwRI Project Number: 045756.04.006
SwRI Work Order No.: 21975, 21997
VTSR: March 6 and 8, 2002

CHAIN OF CUSTODY

8

RTG RFETS	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	COC 02D0923#002	Page 1 of 1

Sampler(s) (time/date)	Contact/Requester JOHNSEN, SHELLY	Telephone No 6401
RIN 02D0923	Sampling Origin	Purchase Order/Charge Code GR230300
Project Title GW MONITORING 1ST CY2002	Logbook No	Ice Chest No Temp
To (Lab) Southwest Research	Method of Shipment FED EX	Bill of Lading/Air Bill No
Protocol MONITORING	Related COC (if any)	PRE 011205-T130C-008

POSSIBLE SAMPLE HAZARDS/REMARKS

Are acid preserved samples DOT hazardous per 40 CFR Part 136 3 Table II? YES NO
Are other known hazardous substances present? YES NO
** ** **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time

ALL SAMPLES COLLECTED ACCORDING TO OPS-PRO 113

Bottle No	Customer Number	Matrix	Date/ Time	Location	Container (size/type)	Sample Analysis [Field-Filtered] LIC (Method Title) [TAT]/{Parameter List}	Preservative, Packing
02D0923 -001 004	GR230300	AQUEOUS	03/04/02 13 45	30900	40-ML G	TR01A257 (Dissolved Methane,Ethane,Ethene by SW846 8015) [Routine] {Ethane, Ethene, Methane}	H2S04 4 degrees C
02D0923 -001 005	GR230300	AQUEOUS	03/04/02 13 45	30900	40-ML G	TR01A257 (Dissolved Methane,Ethane,Ethene by SW846 8015) [Routine] {Ethane, Ethene, Methane}	H2S04 4 degrees C
02D0923 -001 006	GR230300	AQUEOUS	03/04/02 13 45	30900	40-ML G	TR01A257 (Dissolved Methane,Ethane,Ethene by SW846 8015) [Routine] {Ethane, Ethene, Methane}	H2S04 4 degrees C
02D0923 -001 007	GR230300	AQUEOUS	03/04/02 13 45	30900	40-ML G	TR01A257 (Dissolved Methane,Ethane,Ethene by SW846 8015) [Routine] {Ethane, Ethene, Methane}	H2S04 4 degrees C
02D0923 -002 002	GW08008RG	AQUEOUS	03/05/02 09 07	31001	40-ML G	TR01A257 (Dissolved Methane,Ethane,Ethene by SW846 8015) [Routine] {Ethane, Ethene, Methane}	H2S04 4 degrees C
02D0923 -002 003	GW08008RG	AQUEOUS	03/05/02 09 07	31001	40-ML G	TR01A257 (Dissolved Methane,Ethane,Ethene by SW846 8015) [Routine] {Ethane, Ethene, Methane}	H2S04 4 degrees C

ORIGINAL

Temp. 2.5°C
#026

000003

Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By Khalid	Date/Time 3/6/02 0925

FINAL SAMPLE DISPOSITION Disposal Method (e g returned to customer, disposed of per lab procedure, used in analytical process) Disposed By

Date/Time COC printed 03/05/02 10 22

TO

1357

RTG RFETS	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	COC: 02D0923#002	Page 1 of 1

Sampler(s) (time/date)	Contact/Requester JOHNSEN, SHELLY	Telephone No. 6401
RIN 02D0923	Sampling Origin	Purchase Order/Charge Code GR230300
Project Title GW MONITORING 1ST CY2002	Logbook No.	Ice Chest No. Temp.
To (Lab) Southwest Research	Method of Shipment FED EX	Bill of Lading/Air Bill No.
Protocol MONITORING	Related COC (if any)	PRE 011205-T130C-008

POSSIBLE SAMPLE HAZARDS/REMARKS

Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES NO
Are other known hazardous substances present? YES NO
** ** **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time
ALL SAMPLES COLLECTED ACCORDING TO OPS-PRO 113

Bottle No	Customer Number	Matrix	Date/ Time	Location	Container (size/type)	Sample Analysis [Field-Filtered] LIC (Method Title) [TAT]/{Parameter List}	Preservative Packing
02D0923 -001 004	GR230300	AQUEOUS	03/04/02 13.45	30900	40-ML G	TR01A257 (Dissolved Methane,Ethane,Ethene by SW846 8015) [Routine] {Ethane, Ethene, Methane}	H2S04 4 degrees C
02D0923 -001 005	GR230300	AQUEOUS	03/04/02 13.45	30900	40-ML G	TR01A257 (Dissolved Methane,Ethane,Ethene by SW846 8015) [Routine] {Ethane, Ethene, Methane}	H2S04 4 degrees C
02D0923 -001.006	GR230300	AQUEOUS	03/04/02 13 45	30900	40-ML G	TR01A257 (Dissolved Methane,Ethane,Ethene by SW846 8015) [Routine] {Ethane, Ethene, Methane}	H2S04 4 degrees C
02D0923 -001.007	GR230300	AQUEOUS	03/04/02 13 45	30900	40-ML G	TR01A257 (Dissolved Methane,Ethane,Ethene by SW846 8015) [Routine] {Ethane, Ethene, Methane}	H2S04 4 degrees C
02D0923 -002.002	GW08008RG	AQUEOUS	03/05/02 09-07	31001	40-ML G	TR01A257 (Dissolved Methane,Ethane,Ethene by SW846 8015) [Routine] {Ethane, Ethene, Methane}	H2S04 4 degrees C
02D0923 -002.003	GW08008RG	AQUEOUS	03/05/02 09-07	31001	40-ML G	TR01A257 (Dissolved Methane,Ethane,Ethene by SW846 8015) [Routine] {Ethane, Ethene, Methane}	H2S04 4 degrees C

ORIGINAL

Temp. 59
#026

Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
[signature]	3/5/02 1530						
						[signature]	3/6/02 0925

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., returned to customer, disposed of per lab procedure, used in analytical process) Disposed By

Date/Time COC printed: 03/06/02 11.35

MAR-06-2002 WED 11:42 AM T130C FAX NO. 303 966 3578 P. 02

000004

1385

RTG RFETS	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	COC 02D0923#005	Page 1 of 2

Sampler(s) (time/date)	Contact/Requester JOHNSEN, SHELLY	Telephone No 6401
RIN 02D0923	Sampling Origin	Purchase Order/Charge Code HAD511LB
Project Title GW MONITORING 1ST CY2002	Logbook No	Ice Chest No Temp
To (Lab) Southwest Research	Method of Shipment FED EX	Bill of Lading/Air Bill No
Protocol MONITORING	Related COC (Any)	PRE 011205-T130C-008

ORIGINAL

POSSIBLE SAMPLE HAZARDS/REMARKS

Are acid preserved samples DOT hazardous per 40 CFR Part 136 3 Table II? YES NO
Are other known hazardous substances present? YES NO
** ** **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time

ALL SAMPLES COLLECTED ACCORDING TO OPS-PRO 113

Bottle No	Customer Number	Matrix	Date/ Time	Location	Container (size/type)	Sample Analysis [Field-Filtered] LIC (Method Title) [TAT]/{Parameter List}	Preservative, Packing
02D0923 -003 004	GW08012RG	AQUEOUS	02/28/02 14 40	70693	40-ML AG	TR01A257 (Dissolved Methane,Ethane,Ethene by SW846 8015) [Routine] {Ethane, Ethene, Methane}	H2S04 4 degrees C
02D0923 -003 005	GW08012RG	AQUEOUS	02/28/02 14 40	70693	40-ML AG	TR01A257 (Dissolved Methane,Ethane,Ethene by SW846 8015) [Routine] {Ethane, Ethene, Methane}	H2S04 4 degrees C
02D0923 -004 004	GW08013RG	AQUEOUS	03/06/02 14 41	70693	40-ML G	TR01A257 (Dissolved Methane,Ethane,Ethene by SW846 8015) [Routine] {Ethane, Ethene, Methane}	H2S04 4 degrees C
02D0923 -004 005	GW08013RG	AQUEOUS	03/06/02 14 41	70693	40-ML G	TR01A257 (Dissolved Methane,Ethane,Ethene by SW846 8015) [Routine] {Ethane, Ethene, Methane}	H2S04 4 degrees C
02D0923 -005 004	GW08014RG	AQUEOUS	03/06/02 15 40	70693	40-ML G	TR01A257 (Dissolved Methane,Ethane,Ethene by SW846 8015) [Routine] {Ethane, Ethene, Methane}	H2S04 4 degrees C
02D0923 -005.005	GW08014RG	AQUEOUS	03/06/02 15 40	70693	40-ML G	TR01A257 (Dissolved Methane,Ethane,Ethene by SW846 8015) [Routine] {Ethane, Ethene, Methane}	H2S04 4 degrees C
[redacted]							

Temp #022 2.2°C

Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
Erin Martin	3/7/02 1500					Jessica Romero	3/8/02 9:25
Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time

FINAL SAMPLE Disposal Method (e g , returned to customer, disposed of per lab procedure, used in analytical process) Disposed By

Date/Time COC printed 03/07/02 14 23

12

RTG	011205-7730C-008 CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	COC 02D0923#005	Page 2 of 2
RFETS			

RIN	Contact/Requester	Telephone No
02D0923	JOHNSEN, SHELLY	6401

Bottle No	Customer Number	Matrix	Date/ Time	Location	Container (size/type)	Sample Analysis [Field-Filtered] LIC (Method Title) [TAT]/{Parameter List}	Preservative, Packing
[redacted]							
[redacted]							
02D0923 -007.004	GW07993RG	AQUEOUS	03/06/02 11 26	90099	40-ML G	TR01A257 (Dissolved Methane,Ethane,Ethene by SW846 8015) [Routine] {Ethane, Ethene, Methane}	H2S04 4 degrees C
02D0923 -007 005	GW07993RG	AQUEOUS	03/06/02 11 26	90099	40-ML G	TR01A257 (Dissolved Methane,Ethane,Ethene by SW846 8015) [Routine] {Ethane, Ethene, Methane}	H2S04 4 degrees C

ORIGINAL

000006

Temp #026 2.2C.

Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
[illegible]	3-7-02 1500					Marie G. Palomo	3/8/02 09 25
Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time

FINAL SAMPLE | Disposal Method (e g , returned to customer, disposed of per lab procedure, used in analytical process) | Disposed By

Date/Time COC printed 03/07/02 14 23

SOUTHWEST RESEARCH INSTITUTE
CLIENT: Kaiser Hill
WORK ORDER: 21975, 21997
CASE: 02D0923
SDG: 199547
VTSR: MARCH 06, 08, 2002
PROJECT NO.: 04756.02.003

SAMPLE DATA
METHANE, ETHENE, & ETHANE
MODIFIED METHOD 8015

13

FORM I
METHOD 8015 MODIFIED DATA REPORTING FORM

Lab Name SwRI **Client ID** Kaiser Hill **FID Temp** 230 °C **Sample ID** GW08011RG
LIMS ID 199766

Lab Code SwRI **Case No** 02D0923 **SDG No** 199547

GC Column HayeSep Q 80/100 8' x 1/8" SS **GC ramp** 90ºC Isothermal

Instrument ID FID **Analysis Date** 03/12/02 **Proj No** 01 04756 ~~04-006~~ 02-003 **Analyst** JLR

Std Vol Inj.µL) 300 **Sample vol Inj (µL)** 300 **Dil factor** 1 **VTSR** 03/08/02

CAS #	COMPOUND	RESULT(µg/L)	FLAG
74-82-8	Methane	370	E
74-85-1	Ethene	2	U
74-84-0	Ethane	2	U

E- This Flag indicates compounds whose concentrations **Exceed** the calibration range
U- Indicates that the compound was analyzed for but not detected within the calibration range
D- Indicates that the reported concentration was derived from a **Diluted** sample
B- Indicates that the analyte was also found in the **blank**

010019

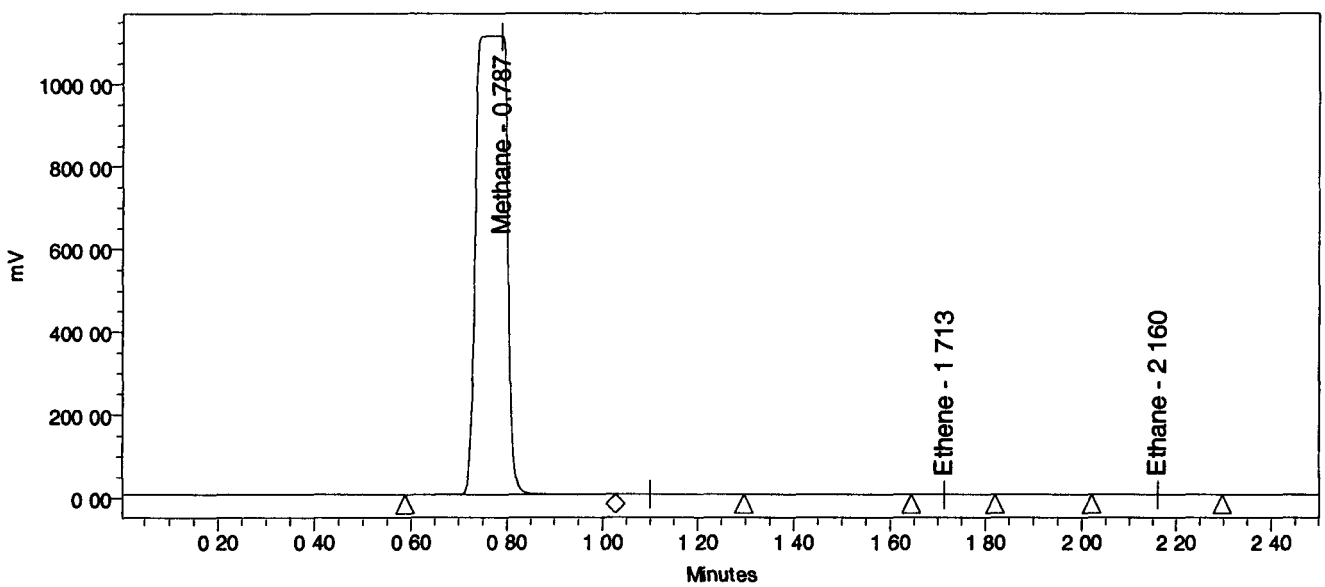
Project Name C1_C2HSP
User Name jrodriguez
Software Version 3 20

Report Method Name chrom_rpt
Current Date 03/12/02

SampleName GW08011RG
Injection Volume 300 ul
Channel SATIN
Run Time 2 5 Minutes

Date Acquired 03/12/02 11 18 40 AM
Acq Method Set C1_C2HSP_mset
Processing Method C1C2_HSP_pmet1
Date Processed 03/12/02 11 21 26 AM

Auto-Scaled Chromatogram



Peak Results

	Name	RT	Area	Height
1	Methane	0 787	4756689	1137771
2	Ethene	1 713	543	110
3	Ethane	2 160	2154	328

15

FORM I
METHOD 8015 MODIFIED DATA REPORTING FORM

Lab Name	SwRI	**Client ID**	Kaiser Hill	**FID Temp**	230 °C	**Sample ID**	GW08011RG/DL
						LIMS ID	199766/DL
Lab Code	SwRI	**Case No**	02D0923	**SDG No**	199547		
GC Column	HayeSep Q 80/100 8' x 1/8" SS			**GC ramp**	90ºC Isothermal		
Instrument ID	FID	**Analysis Date**	03/12/02	**Proj No**	01 04756 ~~04 000~~ 07-003	**Analyst**	JLR
Std Vol Inj.µL)	300	**Sample vol Inj (µL)**	50	**Dil factor**	6	**VTSR**	03/08/02

CAS #	COMPOUND	RESULT(µg/L)	FLAG
74-82-8	Methane	360	D
74-85-1	Ethene	11	U
74-84-0	Ethane	11	U

E- This Flag indicates compounds whose concentrations **Exceed** the calibration range
U- Indicates that the compound was analyzed for but not detected within the calibration range
D- Indicates that the reported concentration was derived from a **Diluted** sample
B- Indicates that the analyte was also found in the **blank**

010021

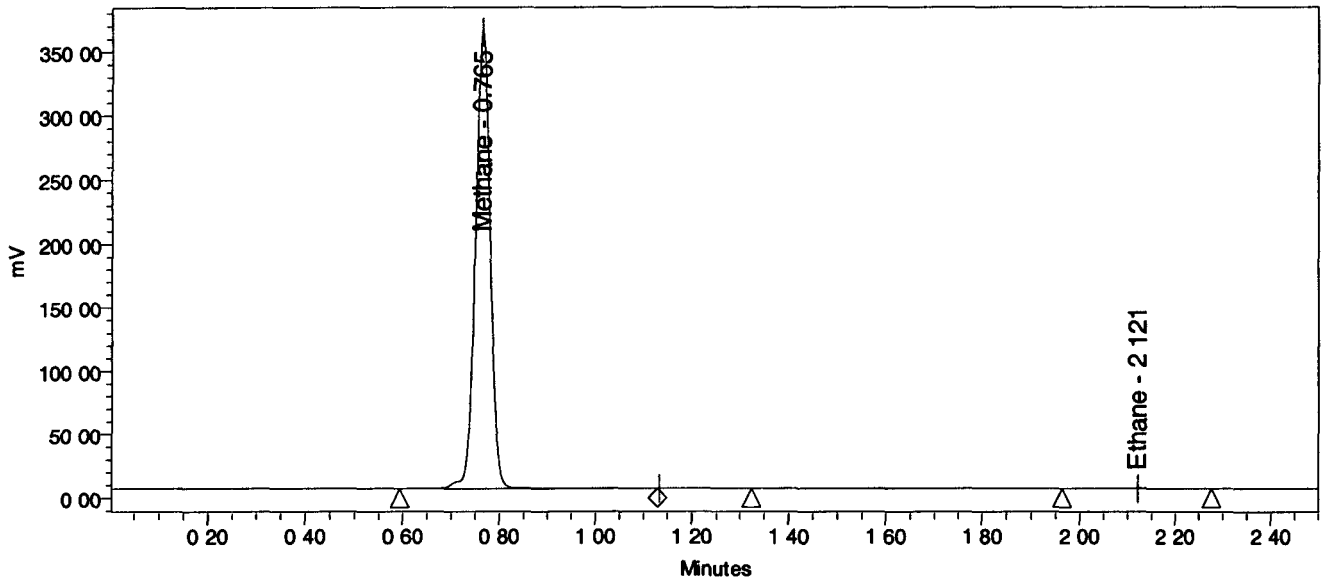
Project Name C1_C2HSP
User Name jrodriguez
Software Version 3 20

Report Method Name chrom_rpt
Current Date 03/12/02

SampleName GW08011RG/DL
Injection Volume 50 ul
Channel SATIN
Run Time 2 5 Minutes

Date Acquired 03/12/02 11 21 46 AM
Acq Method Set C1_C2HSP_mset
Processing Method C1C2_HSP_pmet1
Date Processed 03/12/02 11 24 32 AM

Auto-Scaled Chromatogram



Peak Results

	Name	RT	Area	Height
1	Methane	0 765	772638	360219
2	Ethene	1 533		
3	Ethane	2 121	1526	188

17

SOUTHWEST RESEARCH INSTITUTE™

6220 CULEBRA RD 78238 5166 • P O DRAWER 28510 78228 0510 • SAN ANTONIO TEXAS USA • (210) 684 5111 • WWW SWRI ORG
Chemistry and Chemical Engineering Division
Department of Analytical and Environmental Chemistry

August 29, 2002

RECEIVED SEP 3 2002

Kaiser-Hill Company, LLC–Analytical Services
Rocky Flats Environmental Technology Site
Building T130C
State Highway 93 and Cactus Road
Arvada, CO 80007

ENTERED

Attn Laura Johnson

Subject	Analysis by Method 8015M	
	RIN	02D1412
	Purchase Order	HAD511LB
	SDG Number	210436(GW08459RG)
	SwRI Project Number	04756 02 003
	SwRI Work Order Number	22941
	Samples Received	August 2, 2002

Dear Ms Johnson,

Enclosed please find the analytical data for the above referenced project The delivery and receipt of this data deliverable constitutes an invoice for payment for this data deliverable If you should have any questions, please do not hesitate to call me at (210) 522-2356

Sincerely,

Chee-Kai Tan, PhD
Group Leader

APPROVED

Reza Karimi, Ph D
Director

CKT dr

18

SOUTHWEST RESEARCH INSTITUTE
CLIENT: KAISER HILL
SDG: 210436(GW08459RG)
SwRI Project Number: 04756.02.003
SwRI Work Order No.: 22941
VTSR: August 2, 2002

NARRATIVE

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CLIENT: KAISER HILL
PROJECT NO.: 04756.02.003
SDG: 210436(GW08459RG)
PAGE. 1

SwRI CASE NARRATIVE

1 Seven (7) water samples were submitted for methane, ethene, ethane and methanol by Method 8015M analysis

SwRI ID	Customer ID	SwRI ID	Customer ID
210436	GW08459RG	210440	GW08471RG
210437	GW08462RG	210441	GW08452RG
210438	GW08469RG	210442	GW08550RG
210439	GW08470RG		

2 Samples were received at SwRI on August 2, 2002, for a twenty-eight (28) day hardcopy turnaround time from Validated Time of Sample Receipt (VTSR)

3 Samples were received preserved with blue ice and vermiculite at 1 0° C Sample Discrepancy Report has forwarded to Kaiser Hill for resolving

4 Quality Control Sample Identification
LCS01
GW08470RG

METHOD 8015M ANALYSIS:

1 MS, MSD was performed on assigned sample GW08470RG The target analyte ethene was not within the tentative recovery range but had no method requirements No further actions were performed In addition, the Fortified Blank sample was analyzed as a quality control sample Target analytes were recovered within the 70-130% criteria limits

2 Prior to analysis by GC/FID, headspace was created in all standards, blanks, QC samples, and samples by displacing 4mL of water from the 40mL VOA vials with high purity helium

3 All standards, blanks, QC samples, and samples were then placed in a 40°C water bath and gently agitated for 30 minutes At the end of 30 minutes all vials were removed and allowed to cool to room temperature before analysis by GC/FID

4 Initial calibration met QC criteria of %RSD <30% target analytes And continuing calibration met QC criteria of %D <30% target analytes Form VI & VII were reported with the data package

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CLIENT: KAISER HILL
PROJECT NO.: 04756.02.003
SDG: 210436(GW08459RG)
PAGE: 2

5 All samples were analyzed at Dilution Factor of one to meet the contract detection limit Detected target analytes were reported on the Form 1

6 Sample Calculation

Calculation for Methane, Ethane, and Ethene

100µg/L CALI STD,
Area of 100µg/L methane = 33543
RRF100 (STD) of methane = 33543/100µg/L = 335 (Form VI)
Mean RRF = 348

Sample ID GW08471RG
Area of methane = 175505
Conc of Sample, µg/L = (175505) / 348 x DF (1) = 504 3µg/L
Reported 500µg/L for Methane (Form 1)

Calculation for Methanol

100mg/L CALI STD,
Area of 100mg/L methanol = 7628
RRF100 (STD) of methanol = 7628/100mg/L = 76 28 (Form VI)
Mean RRF = 65 2

Sample ID LCS01
Area of methanol = 7634
Conc of Sample, mg/L = (7634) / 65 2 x DF (1) = 117 1mg/L
Reported 120mg/L for Methanol (Form 1)

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CLIENT: KAISER HILL
PROJECT NO.: 04756.02.003
SDG: 210436(GW08459RG)
PAGE. 3

"I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Director or his designee, as verified by the following signature. This report shall not be reproduced except in full, without the written approval of SwRI."

Jo Ann Boyd,
Manager, Quality Assurance Unit

8/27/02
Date

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SOUTHWEST RESEARCH INSTITUTE
CLIENT: KAISER HILL
SDG: 210436(GW08459RG)
SwRI Project Number: 04756.02.003
SwRI Work Order No.: 22941
VTSR: August 2, 2002

CHAIN OF CUSTODY

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RTG RFETS	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	COC 02D1412#001	Page 1 of 2

Sampler(s) (time/date) BETTEZ, EMILE, MICHAEL, RAY	Contact/Requester JOHNSEN, SHELLY / MARTIN, CATHERINE	Telephone No 6401 / 4924
RIN 02D1412	Sampling Origin	Purchase Order/Charge Code HAD511LB
Project Title GW MONITORING 3rd QUARTER CY2002	Logbook No	Ice Chest No Temp
To (Lab) Southwest Research	Method of Shipment FED EX	Bill of Lading/Air Bill No 8335 2145 3695
Protocol MONITORING	Related COC (if any)	PRE 011205-T130C-008

POSSIBLE SAMPLE HAZARDS/REMARKS

Are acid preserved samples DOT hazardous per 40 CFR Part 136 3 Table II? YES NO
Are other known hazardous substances present? YES NO
** ** **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time

All samples collected in accordance with OPS- PRO 113

Rec'd Intact

Temp. 1.0°C, #027

Bottle No	Customer Number	Matrix	Date/Time	Location	Container (size/type)	Sample Analysis [Field-Filtered] LIC (Method Title) [TAT]/{Parameter List}	Preservative, Packing
02D1412 -001 001	GW08470RG	AQUEOUS	07/30/02 10 43	01497	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane,) [28dF] {Ethane, Ethene, Methane, Methanol}	H2SO4/4 C, 4 degrees C
02D1412 -001 002	GW08470RG	AQUEOUS	07/30/02 10 43	01497	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane,) [28dF] {Ethane, Ethene, Methane, Methanol}	H2SO4/4 C, 4 degrees C
02D1412 -001.003	GW08470RG	AQUEOUS	07/30/02 10 43	01497	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane,) [28dF] {Ethane, Ethene, Methane, Methanol}	H2SO4/4 C, 4 degrees C
02D1412 -001 004	GW08470RG	AQUEOUS	07/30/02 10 43	01497	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane,) [28dF] {Ethane, Ethene, Methane, Methanol}	H2SO4/4 C, 4 degrees C
[redacted]							
[redacted] -003 001						[redacted] ane,) [28dF] {Ethane, Ethene, Methane, Methanol}	H2SO4/4 C, 4 degrees C
02D1412 -003 002	GW08472RG	AQUEOUS	07/30/02 15 02	70693	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane,) [28dF] {Ethane, Ethene, Methane, Methanol}	H2SO4/4 C, 4 degrees C
02D1412 -004 001	GW08469RG	AQUEOUS	07/31/02 09 52	01097	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane,) [28dF] {Ethane, Ethene, Methane, Methanol}	H2SO4/4 C, 4 degrees C

Relinquished By / Date/Time	Received By / Date/Time	Relinquished By / Date/Time	Received By / Date/Time
C Martin 8-1-02 1500	Fed Ex		Kaelel Eo 8/1/02 0910

000004

FINAL SAMPLE DISPOSITION: Disposal Method (e g , returned to customer, disposed of per lab procedure, used in analytical process) Disposed By

Date/Time COC printed 08/01/02 07 30 (Version coc_r19 rpt)

2727

RTG RFETS	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	COC 02D1412#001	Page 2 of 2

RIN 02D1412

Contact/Requester JOHNSEN, SHELLY / MARTIN, CATHERINE

Telephone No 6401 / 4924

Bottle No	Customer Number	Matrix	Date/Time	Location	Container (size/type)	Sample Analysis [Field-Filtered] LIC (Method Title) [TAT]/{Parameter List}	Preservative, Packing
02D1412 -004.002	GW08469RG	AQUEOUS	07/31/02 09 52	01097	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane,) [28dF] {Ethane, Ethene, Methane, Methanol}	H2SO4/4 C, 4 degrees C
02D1412 -005.001	GW08550RG	AQUEOUS	07/31/02 11 38	01397	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane,) [28dF] {Ethane, Ethene, Methane, Methanol}	H2SO4/4 C, 4 degrees C
02D1412 -005.002	GW08550RG	AQUEOUS	07/31/02 11 38	01397	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane,) [28dF] {Ethane, Ethene, Methane, Methanol}	H2SO4/4 C, 4 degrees C
02D1412 -006.001	GW08462RG	AQUEOUS	07/31/02 14 34	90399	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane,) [28dF] {Ethane, Ethene, Methane, Methanol}	H2SO4/4 C, 4 degrees C
02D1412 -006.002	GW08462RG	AQUEOUS	07/31/02 14 34	90399	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane,) [28dF] {Ethane, Ethene, Methane, Methanol}	H2SO4/4 C, 4 degrees C
02D1412 -007 001	GW08459RG	AQUEOUS	07/31/02 15 37	90099	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane,) [28dF] {Ethane, Ethene, Methane, Methanol}	H2SO4/4 C, 4 degrees C
02D1412 -007.002	GW08459RG	AQUEOUS	07/31/02 15 37	90099	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane,) [28dF] {Ethane, Ethene, Methane, Methanol}	H2SO4/4 C, 4 degrees C

Rec'd intact

Temp. 1.0°C, #027

000005

Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
C Martin	8-1-02 1500	Fed Ex				[illegible]	8/2/02 0910
Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time

FINAL SAMPLE DISPOSITION: Disposal Method (e g., returned to customer, disposed of per lab procedure, used in analytical process) Disposed By

Date/Time COC printed 08/01/02 07 30 (Version coc_r19 rpt)

SOUTHWEST RESEARCH INSTITUTE
CLIENT: KAISER HILL
WORK ORDER: 22941
SDG: 210436(GW08459RG)
VTSR: August 02, 2002
PROJECT NUMBER: 04756.02.003

SAMPLE DATA
METHOD 8015

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FORM I

METHOD 8015 DATA REPORTING FORM

Sample ID
GW08471RG

Lab Name	SwRI	**Client ID**	KAISER HILL	**Project No**	04756 02 003
Lab Code	SwRI	**Case No**	02D1412	**SDG No**	GW08459RG
Matrix	Water			**LIMs ID**	210440
Std Vol Inj (µL)	300			**Analysis Date**	08/02/02
Sample vol Inj (µL)	300	**Inj Dil factor**	1	**Date Received.**	08/02/02
GC Column	HayeSep D 100/120 10' x 1/8" SS				

CAS #	COMPOUND	RESULT(µg/L)	FLAG
74-82-8	Methane	500	
74-85-1	Ethene	2	U
74-84-0	Ethane	2	U

B- This Flag indicates compounds whose concentrations were found in the **Blank**
E- This Flag indicates compounds whose concentrations **Exceed** the calibration range
U- Indicates that the compound was analyzed for but not detected within the calibration range
D- Indicates that the reported concentration was derived from a **Diluted** sample
***- See case narrative**

Project Name C1_C2HSP
User Name Lab37
Software Version 3 20

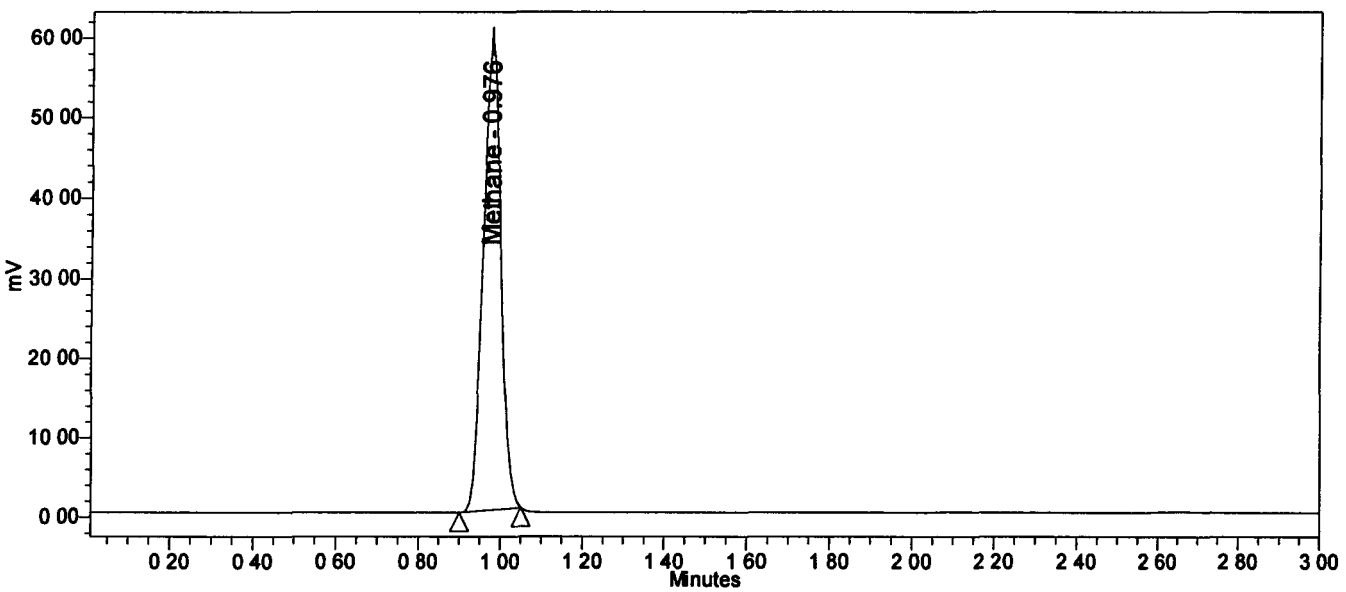
Report Method Name chrom_rpt
Current Date 08/02/02

010024

SampleName GW08471RG
Injection Volume 300 ul
Channel SATIN
Run Time 3 0 Minutes

Date Acquired 08/02/02 3 58 16 PM
Acq Method Set C1_C2HSP2_mset
Processing Method C1C2_HSP_pmet2
Date Processed 08/02/02 4 01 31 PM

Auto-Scaled Chromatogram



Peak Results

	Name	RT	Area	Height
1	Methane	0 976	175505	59020
2	Ethene	2 051		
3	Ethane	2 578		

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FORM I
METHOD 8015 MODIFIED DATA REPORTING FORM

Lab Name	SwRI	**Client ID**	Kaiser Hill	**FID Temp**	230 °C	**Client ID**	GW08471RG
						LIMs ID	210440
Lab Code	SwRI	**Case No**	02D1412	**SDG No**	GW08459RG		
GC Column	RTX-502 2 30m X (0 53mm)			**GC ramp**	60°C Isothermal		
Instrument ID	GC09	**Analysis Date**	08/10/02	**Proj No**	04756 02 003	**Analyst**	JLR
Std Vol Inj µL)	1	**Sample vol Inj (µL)**	1	**Inj Dil factor**	1	**VTSR**	08/02/02

CAS #	COMPOUND	RESULT(mg/L)	FLAG
67-56-1	Methanol	1.0	U

E- This Flag indicates compounds whose concentrations **Exceed** the calibration range
U- Indicates that the compound was analyzed for but not detected within the calibration range
D- Indicates that the reported concentration was derived from a **Diluted** sample

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SampleName 210440

Date Acquired 08/10/02 2 44 38 PM

Column RTX-502 2 30Meter x (0 53mm)ID

Column Conditions 60 Deg Isothermal

CYCLES 92

Client Kaiser Hill
Project 04756 02 003
Reference Method
TAP01-0405-013
ANALYSIS BY GC

Client_ID GW08471RG

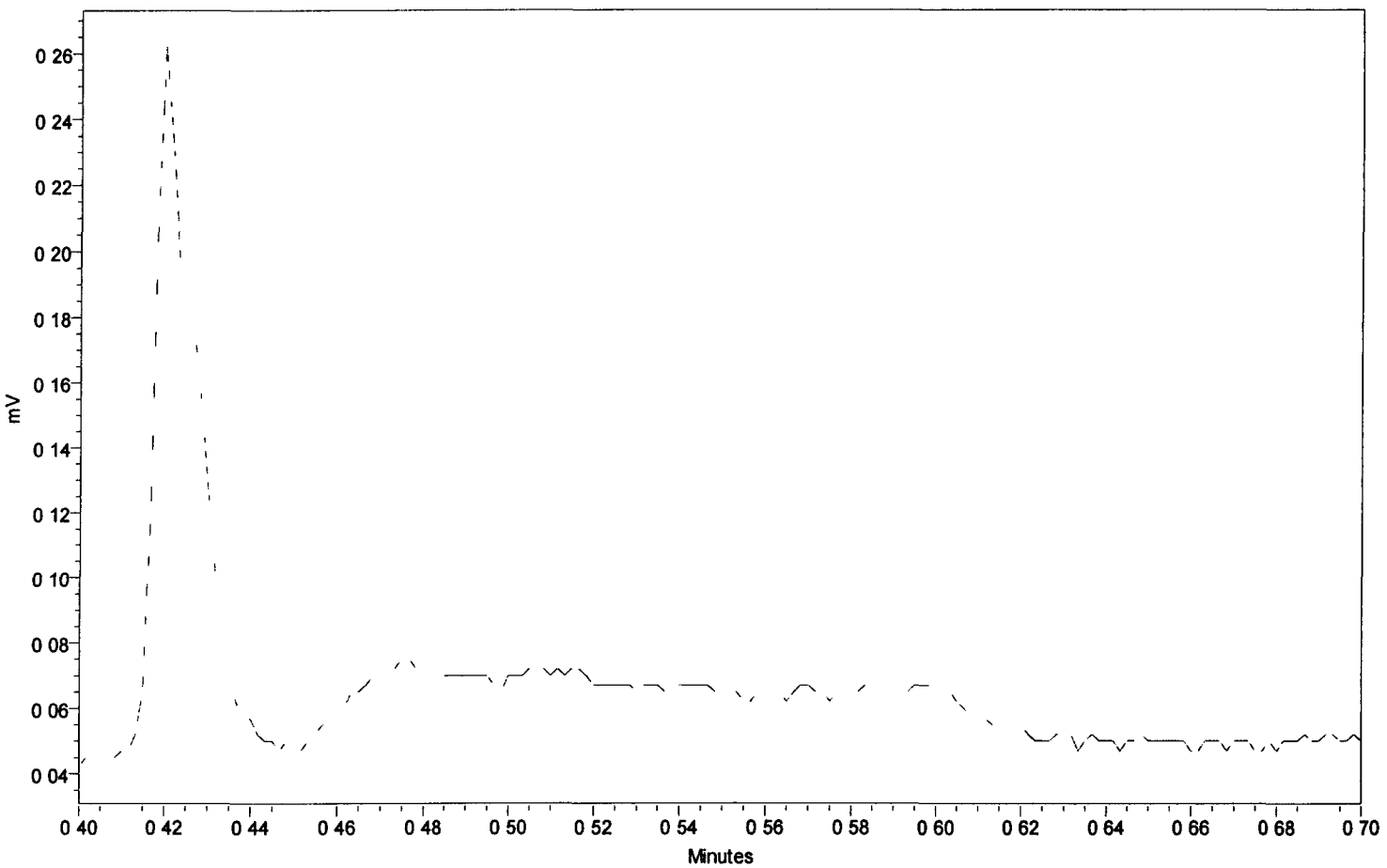
SDG 208787 010026

System Name GC09_CH2

Project Folder GASES_MISC_2002

Injection Volume 1 ul

Dilution 1



Concentration Found

	Name	RT	Area
1	Methanol	0 506	

30

Report Method Name Kaiser_gc09_2002

CLIENT: KAISER HILL
PROJECT NO.: 04756.02.003
SDG: 219609(GW10247ST)
PAGE: 1

SwRI CASE NARRATIVE

1 Five-aqueous samples were submitted for methane, ethene, ethane, and methanol analysis

SwRI ID	Customer ID
219609(2)	GW10247ST
219610(2)	GW10248ST
219611(2)	GW10249ST
219612(2)	GW10250ST
219613(2)	GW10251ST
219609MS(1)	GW10247STMS
219609MSD(4)	GW10247STMSD

2 Samples were received at SwRI on January 30, 2003 for a twenty-eight (28) day hardcopy turnaround time from Validated Time of Sample Receipt (VTSR)

3 Quality Control Sample Identification
LCS
GW10247ST MS/MSD

ANALYSIS BY METHOD 8015

1 Two separate sequences were run The number in parenthesis () designates the container number One for headspace analysis (methane, ethane, ethane), the other for methanol MS, MSD was performed on assigned sample GW10247ST for both headspace and methanol analysis The target analytes were within the tentative recovery range for the headspace analysis In the methanol analysis MS/MSD recoveries were below QC limits RPD was also out of QC limits The MS/MSD QC numbers are advisory only In addition, a Fortified Blank (LCS) sample was analyzed for both analysis, headspace and methanol, as a quality control sample Target analytes were recovered within the 70-130% criteria limits for both analysis

2 A Lab blank was run for each analysis and found to be free of target analytes

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CLIENT: KAISER HILL
PROJECT NO.: 04756.02.003
SDG: 219609(GW10247ST)
PAGE: 2

3 Prior to analysis by GC/FID for methane, ethane and ethene, headspace was created in all standards, blanks, QC samples, and samples by displacing 4mL of water from the 40mL VOA vials with high purity helium For Methanol analysis direct injection of liquid was used to determine methanol in aqueous solution

4 For methane, ethane and ethene, all standards, a blank, QC samples, and samples were then placed in a 40°C water bath and gently agitated for 30 minutes At the end of 30 minutes all vials were removed and allowed to cool to room temperature before analysis by GC/FID

5 The continuing calibration met QC criteria of %D<30% target analytes Form 6 &7 were reported with the data package

6 All samples were analyzed at Dilution Factor of one to meet the contract detection limit Detected target analytes were reported on the Form 1

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Director or his designee, as verified by the following signature. This report shall not be reproduced except in full, without the written approval of SwRI."

for Jeanette Garcia
Jo Ann Boyd,
Manager, Quality Assurance Unit

Feb. 26, 2007
Date

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SOUTHWEST RESEARCH INSTITUTE

CLIENT:	**KAISER HILL**
WORK ORDER:	**23736**
SDG:	**219609(GW10247ST))**
VTSR:	**January 30, 2003**
PROJECT:	**04756.02.003**

CHAIN OF CUSTODY

33

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4471

STOLLER RFETS	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	COC 03D0456#006	Page 1 of 2

Sampler(s) (time/date) BETTEZ, EMILE, KENKEL, VERONICA, MALCZYK, NIC	Contact/Requester JOHNSEN, SHELLY / MARTIN, CATHERINE	Telephone No 6401 / 4924
RIN 03D0456	Sampling Origin	Purchase Order/Charge Code HAD51100
Project Title GW MONITORING 1st QUARTER CY2003	Logbook No	Ice Chest No 9 lbs Temp
To (Lab) Southwest Research	Method of Shipment FED EX	Bill of Lading/Air Bill No 6285 7194 9619
Protocol MONITORING	Related COC (if any)	PRE 020924-T130C-006

POSSIBLE SAMPLE HAZARDS/REMARKS

Are acid preserved samples DOT hazardous per 40 CFR Part 136 3 Table II? YES NO
Are other known hazardous substances present? YES NO
** ** **

IF COOLER IS <2C OR >6C PLEASE TAKE AN INTERNAL TEMPERATURE OF ONE SAMPLE TO VERIFY

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time

ALL SAMPLES COLLECTED IN ACCORDANCE WITH OPS-PRO 113

ORIGINAL

Bottle No	Customer Number	Matrix	Date/Time	Location	Container (size/type)	Sample Analysis [Field-Filtered] LIC (Method Title) [TAT]/{Parameter List}	Preservative, Packing
03D0456 -007 005	GW10247ST	AQUEOUS	01/27/03 15 29	01097	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {Ethane, Ethene, Methane, Methanol}	H2SO4/4 C, 4 degrees C
03D0456 -007 006	GW10247ST	AQUEOUS	01/27/03 15 29	01097	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {Ethane, Ethene, Methane, Methanol}	H2SO4/4 C 4 degrees C
03D0456 -007 007	GW10247ST	AQUEOUS	01/27/03 15 29	01097	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {Ethane, Ethene, Methane, Methanol}	H2SO4/4 C, 4 degrees C
03D0456 -007 008	GW10247ST	AQUEOUS	01/27/03 15 29	01097	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {Ethane, Ethene, Methane, Methanol}	H2SO4/4 C, 4 degrees C
03D0456 -008 005	GW10248ST	AQUEOUS	01/27/03 11 25	01497	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {Ethane, Ethene, Methane, Methanol}	H2SO4/4 C, 4 degrees C
03D0456 -008 006	GW10248ST	AQUEOUS	01/27/03 11 25	01497	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {Ethane, Ethene, Methane, Methanol}	H2SO4/4 C, 4 degrees C
03D0456 -014 007	GW10251ST	AQUEOUS	01/28/03 10 33	01397	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {Ethane, Ethene, Methane, Methanol}	4 C, 4 C w/zhs
03D0456 -014 008	GW10251ST	AQUEOUS	01/28/03 10 33	01397	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {Ethane, Ethene, Methane, Methanol}	4 C, 4 C w/zhs

Temp. 20C #026
Seal intact

Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
[illegible]	1-29-03 1500	C. Martin	1-29-03 1500	C. Martin	1-29-03 1500	Fed Ex	
		[illegible]	1/30/03 0925				

FINAL SAMPLE DISPOSITION: Disposal Method (e g , returned to customer, disposed of per lab procedure, used in analytical process) Disposed By

Date/Time COC printed 01/29/03 11 51 (Version coc_r20 rpt)

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4471

STOLLER RFETS	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	COC 03D0456#006	Page 2 of 2

RIN	Contact/Requester	Telephone No
03D0456	JOHNSEN, SHELLY / MARTIN, CATHERINE	6401 / 4924

Bottle No	Customer Number	Matrix	Date/Time	Location	Container (size/type)	Sample Analysis [Field-Filtered] LIC (Method Title) [TAT]/{Parameter List}	Preservative, Packing
03D0456 -015.007	GW10249ST	AQUEOUS	01/28/03 14 02	02097	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {Ethane, Ethene, Methane, Methanol}	4 C, 4 C w/zhs
03D0456 -015.008	GW10249ST	AQUEOUS	01/28/03 14 02	02097	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {Ethane, Ethene, Methane, Methanol}	4 C, 4 C w/zhs
03D0456 -017 007	GW10250ST	AQUEOUS	01/29/03 10 04	70693	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {Ethane, Ethene, Methane, Methanol}	4 C, 4 C w/zhs
03D0456 -017 008	GW10250ST	AQUEOUS	01/29/03 10 04	70693	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {Ethane, Ethene, Methane, Methanol}	4 C, 4 C w/zhs

Temp. 2.0°C, #026
Reel intact

ORIGINAL

000004

Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
R. King 5	1-29-03 1500	C. Martin	1-29-03 1500	C. Martin	1-29-03 1500	Fed Ex	

FINAL SAMPLE DISPOSITION | Disposal Method (e g returned to customer, disposed of per lab procedure used in analytical process) | Disposed By

Date/Time COC printed 01/29/03 11 51 (Version coc_r20 rpt)

SOUTHWEST RESEARCH INSTITUTE
CLIENT: Kaiser Hill
WORK ORDER: 23736
SDG: 219609
VTSR: January 30, 2003
PROJECT: 04756.02.003

METHANE, ETHANE, ETHENE ANALYSIS METHOD 8015

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ORIGINAL

SOUTHWEST RESEARCH INSTITUTE
CLIENT: Kaiser Hill
WORK ORDER: 23736
SDG: 219609
VTSR: January 30, 2003
PROJECT: 04756.02.003

QC SUMMARY
METHOD 8015

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FORM 3
METHOD 8015 MODIFIED LAB CONTROL SPIKE RECOVERY

Lab Name SwRI

Lab Code SwRI

Instrument ID FID

GC Column HayeSep Q 80/100 8' x 1/8" SS

Client ID KAISER HILL

Case No 03D0456

SDG No 219609

Matrix Aqueous

Date analyzed 02/01/03

Sample ID LCS

LIMS ID STD2003 23 03

COMPOUND	SPIKE ADDED (µg/L)	LCS CONC. (µg/L)	LCS %REC	#	QC LIMITS
Methane	100	94	94		70-130%
Ethene	175.8	152	87		70-130%
Ethane	187 5	171	91		70-130%

* Values outside of QC limits

Spike recovery 0 out of 3 ouside limits

FORM 3
MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name SwRI | Client ID KAISER HILL

Lab Code SwRI | Case No 03D0456

Instrument ID FID | SDG No 219609

GC Column HayeSep Q 80/100 8' x 1/8" SS | Matrix Aqueous

Sample ID GW10247ST(1)MS | LIMS ID 219609MS

COMPOUND	SPIKE ADDED (µg/L)	SAMPLE CONC (µg/L)	MS CONC. (µg/L)		MS %REC	#	QC LIMITS
Methane	100	0 00	105		105		70-130%
Ethene	176	0 00	181		103		70-130%
Ethane	188	0 00	186		99		70-130%

COMPOUND	SPIKE ADDED (µg/L)	MSD CONC (µg/L)	MSD %REC	#	%RPD	#	%REC LIMITS	%RPD LIMITS
Methane	100	108	108		3		70-130%	30
Ethene	176	182	104		1		70-130%	30
Ethane	188	189	101		2		70-130%	30

Column used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD 0 out of 3 outside limits
Spike recovery 0 out of 6 outside limits

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FORM 4
METHOD 8015 MODIFIED METHOD BLANK SUMMARY

Lab Name	SwRI	Blank ID	PREP_BLANK_01FEB03
Lab File ID	SwRI	Case No	03D0456
Instrument ID	FID	SDG No	219609
GC Column	HayeSep Q 80/100 8' x 1/8" SS	Date Analyzed	02/01/03
Client ID	KAISER HILL	Time Analyzed	22 07

This blank applies to the following samples

CLIENT SAMPLE ID		LAB SAMPLE ID			DATE ANALYZED	TIME ANALYZED
GW10247ST(2)		219609			2/1/03	22·19
GW10248ST(2)		219610			2/1/03	22 25
GW10249ST(2)		219611			2/1/03	22.31
GW10250ST(2)		219612			2/1/03	22.44
GW10251ST(2)		219613			2/1/03	22 56
GW10247ST(1)MS		219609MS			2/1/03	23 01
GW10247ST(4)MSD		219609MSD			2/1/03	23 07

40

SOUTHWEST RESEARCH INSTITUTE
CLIENT: Kaiser Hill
WORK ORDER: 23736
SDG: 219609
VTSR: January 30, 2003
PROJECT: 04756.02.003

SAMPLE DATA
METHOD 8015

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FORM I
METHOD 8015 MODIFIED DATA REPORTING FORM

Lab Name SwRI **Client ID** KAISER HILL **FID Temp** 230 °C **Sample ID** GW10247ST(2)

LIMS ID 219609

Lab Code SwRI **Case No** 03D0456 **SDG No** 219609

GC Column HayeSep Q 80/100 8' x 1/8" SS **GC ramp** 90°C Isothermal

Instrument ID FID **Analysis Date** 02/01/03 **Proj No** 04756 02 003 **Analyst** EF

Std Vol Inj µL) 300 **Sample vol Inj (µL)** 300 **Dil factor** 1 **VTSR** 01/30/03

CAS #	COMPOUND	RESULT(µg/L)	FLAG
74-82-8	Methane	1.96	U
74-85-1	Ethene	3.43	U
74-84-0	Ethane	3.69	U

E- This Flag indicates compounds whose concentrations **Exceed** the calibration range
U- Indicates that the compound was analyzed for but not detected within the calibration range
D- Indicates that the reported concentration was derived from a **Diluted** sample

42

SampleName GW10247ST(2)

Date Acquired 02/01/03 10 19 25 PM

GC Column Hayesep D [10' X 1/8"]

Column Conditions 90 Deg Isothermal

Injection Volume 300 ul

Client KAISER HILL
Project 04756.02 003
Method 8015 Modified

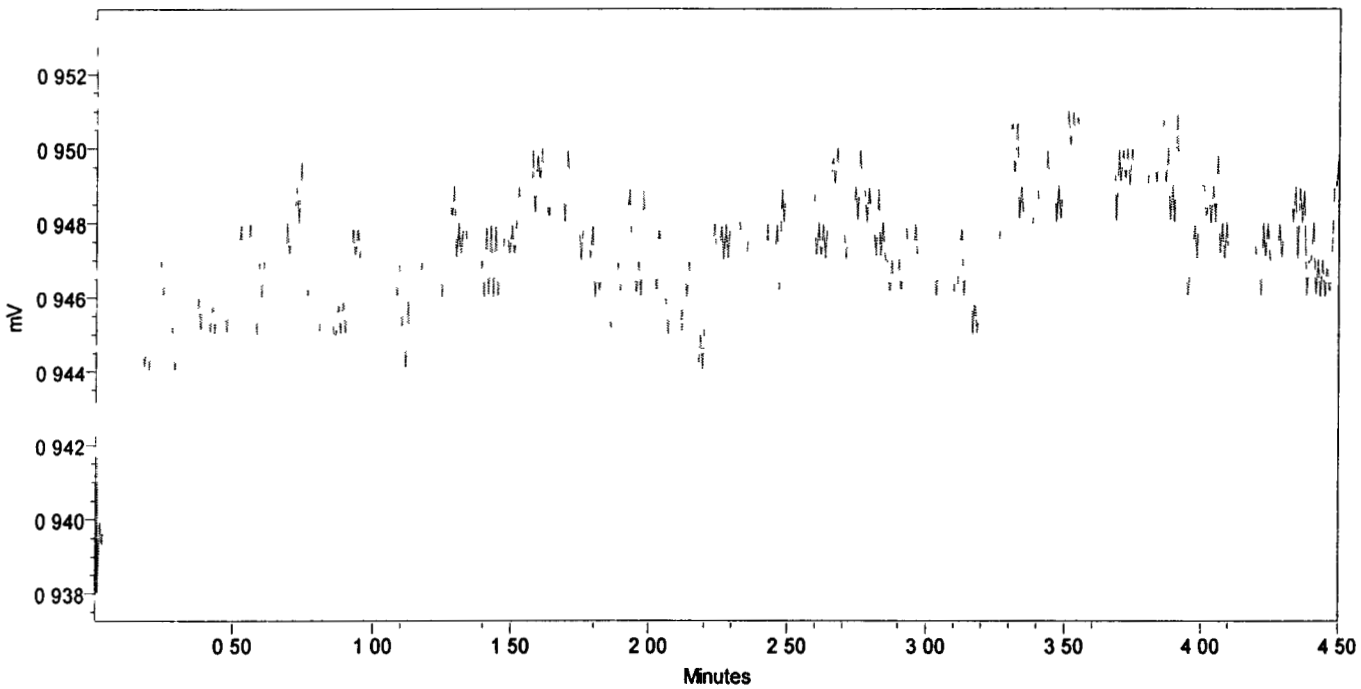
LIMs_ID 219609

020005

SDG 219609 Case 03D0456

System Name GC01_System

Project Folder GC01_HEADSPACE_2



CYCLES 20 SampleName GW10247ST(2) Date Acquired 02/01/03 10 19 25 PM

	Name	RT	Area	Amount [ug/L]
1	Methane	1 306		
2	Ethene	2 835		
3	Ethane	3 587		

Best Available Copy

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Report Method Name KH_Report_2003

Processing Method GC01_HS_44mL_01FEB03

FORM I
METHOD 8015 MODIFIED DATA REPORTING FORM

Lab Name SwRI **Client ID** KAISER HILL **FID Temp** 230 °C **Sample ID** GW10248ST(2)

LIMS ID 219610

Lab Code SwRI **Case No** 03D0456 **SDG No** 219609

GC Column HayeSep Q 80/100 8' x 1/8" SS **GC ramp** 90°C Isothermal

Instrument ID FID **Analysis Date** 02/01/03 **Proj No** 04756 02 003 **Analyst** EF

Std Vol Inj µL) 300 **Sample vol Inj (µL)** 300 **Dil factor** 1 **VTSR** 01/30/03

CAS #	COMPOUND	RESULT(µg/L)	FLAG
74-82-8	Methane	1.96	U
74-85-1	Ethene	3.43	U
74-84-0	Ethane	3.69	U

E- This Flag indicates compounds whose concentrations **Exceed** the calibration range
U- Indicates that the compound was analyzed for but not detected within the calibration range
D- Indicates that the reported concentration was derived from a **Diluted** sample

SampleName GW10248ST(2)

Date Acquired 02/01/03 10 25 36 PM

GC Column Hayesep D [10' X 1/8"]

Column Conditions 90 Deg Isothermal

Injection Volume 300 ul

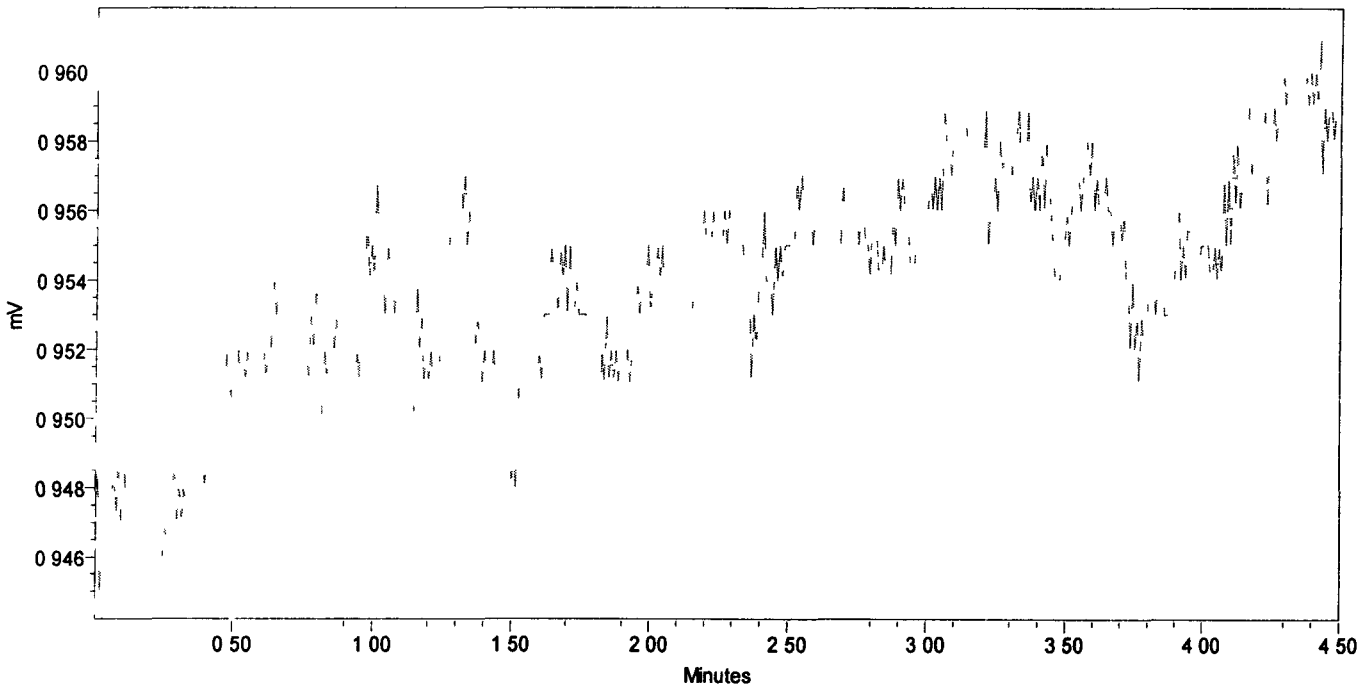
Client KAISER HILL
Project 04756 02 003
Method. 8015 Modified

LIMs_ID 219610 020007

SDG 219609 Case 03D0456

System Name GC01_System

Project Folder GC01_HEADSPACE_2



CYCLES 21 SampleName GW10248ST(2) Date Acquired 02/01/03 10 25 36 PM

	Name	RT	Area	Amount [ug/L]
1	Methane	1 306		
2	Ethene	2 835		
3	Ethane	3 587		

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Report Method Name KH_Report_2003

Processing Method GC01_HS_44mL_01FEB03

FORM I
METHOD 8015 MODIFIED DATA REPORTING FORM

Lab Name SwRI **Client ID** KAISER HILL **FID Temp** 230 °C **Sample ID** [redacted]

LIMS ID 219611

Lab Code SwRI **Case No** 03D0456 **SDG No** 219609

GC Column HayeSep Q 80/100 8' x 1/8" SS **GC ramp** 90°C Isothermal

Instrument ID FID **Analysis Date** 02/01/03 **Proj No** 04756 02 003 **Analyst** EF

Std Vol Inj µL) 300 **Sample vol Inj (µL)** 300 **Dil factor** 1 **VTSR** 01/30/03

CAS #	COMPOUND	RESULT(µg/L)	FLAG
74-82-8	Methane	740	
74-85-1	Ethene	3.43	U
74-84-0	Ethane	3 69	U

E- This Flag indicates compounds whose concentrations **Exceed** the calibration range
U- Indicates that the compound was analyzed for but not detected within the calibration range
D- Indicates that the reported concentration was derived from a **Diluted** sample

46

SampleName GW10249ST(2)

Date Acquired 02/01/03 10 31 52 PM

GC Column Hayesep D [10' X 1/8"]

Column Conditions 90 Deg Isothermal

Injection Volume 300 ul

Client KAISER HILL
Project 04756 02 003
Method 8015 Modified

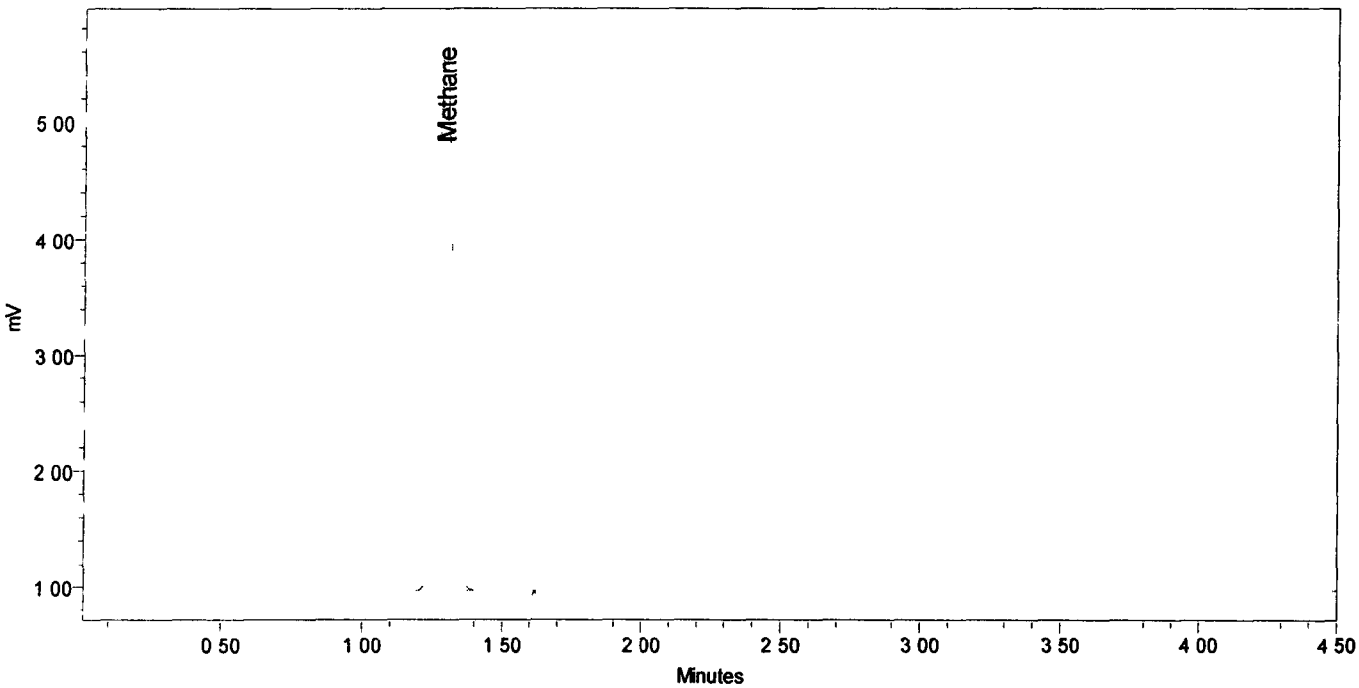
LIMs_ID 219611

020009

SDG 219609 Case 03D0456

System Name GC01_System

Project Folder GC01_HEADSPACE_2



CYCLES 22 SampleName GW10249ST(2) Date Acquired 02/01/03 10 31 52 PM

	Name	RT	Area	Amount [ug/L]
1	Methane	1 291	17987	739 82
2	Ethene	2 835		
3	Ethane	3 587		

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Report Method Name KH_Report_2003

Processing Method GC01_HS_44mL_01FEB03

FORM I
METHOD 8015 MODIFIED DATA REPORTING FORM

Lab Name SwRI **Client ID** KAISER HILL **FID Temp** 230 °C **Sample ID** GW10250ST(2)

LIMS ID 219612

Lab Code SwRI **Case No** 03D0456 **SDG No** 219609

GC Column HayeSep Q 80/100 8' x 1/8" SS **GC ramp** 90°C Isothermal

Instrument ID FID **Analysis Date** 02/01/03 **Proj No** 04756 02 003 **Analyst** EF

Std Vol Inj µL) 300 **Sample vol Inj (µL)** 300 **Dil factor** 1 **VTSR** 01/30/03

CAS #	COMPOUND	RESULT(µg/L)	FLAG
74-82-8	Methane	85.1	
74-85-1	Ethene	3.43	U
74-84-0	Ethane	3.69	U

E- This Flag indicates compounds whose concentrations **Exceed** the calibration range
U- Indicates that the compound was analyzed for but not detected within the calibration range
D- Indicates that the reported concentration was derived from a **Diluted** sample

48

SampleName GW10250ST(2)

Date Acquired 02/01/03 10 44 58 PM

GC Column Hayesep D [10' X 1/8"]

Column Conditions 90 Deg Isothermal

Injection Volume 300 ul

Client: KAISER HILL
Project 04756 02 003
Method. 8015 Modified

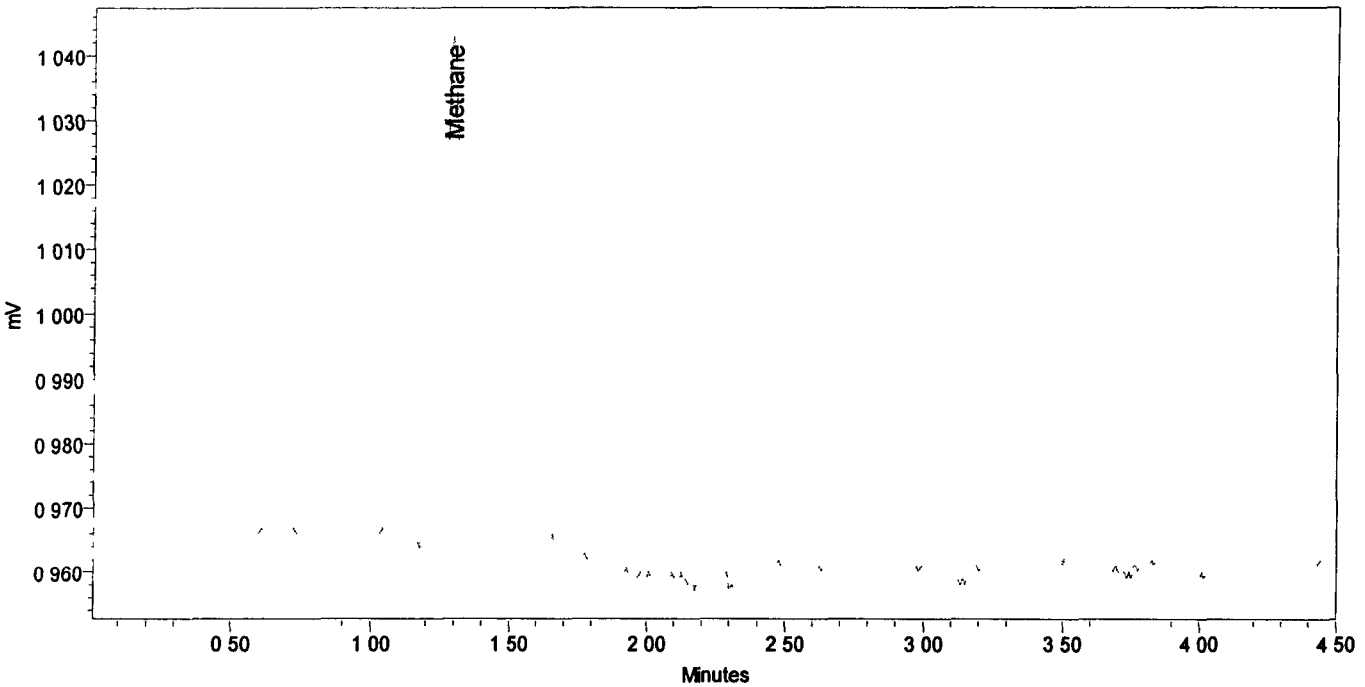
LIMs_ID 219612

020011

SDG 219609 Case 03D0456

System Name GC01_System

Project Folder GC01_HEADSPACE_2



CYCLES 23 SampleName GW10250ST(2) Date Acquired 02/01/03 10 44 58 PM

	Name	RT	Area	Amount [ug/L]
1	Methane	1 292	318	85 12
2	Ethene	2 835		
3	Ethane	3 587		

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Report Method Name KH_Report_2003

Processing Method GC01_HS_44mL_01FEB03

FORM I
METHOD 8015 MODIFIED DATA REPORTING FORM

Lab Name SwRI **Client ID** KAISER HILL **FID Temp** 230 °C **Sample ID** GW10251ST(2)

LIMS ID 219613

Lab Code SwRI **Case No** 03D0456 **SDG No** 219609

GC Column HayeSep Q 80/100 8' x 1/8" SS **GC ramp** 90°C Isothermal

Instrument ID FID **Analysis Date** 02/01/03 **Proj No** 04756 02 003 **Analyst** EF

Std Vol Inj µL) 300 **Sample vol Inj (µL)** 300 **Dil factor** 1 **VTSR** 01/30/03

CAS #	COMPOUND	RESULT(µg/L)	FLAG
74-82-8	Methane	1.96	U
74-85-1	Ethene	3.43	U
74-84-0	Ethane	3.69	U

E- This Flag indicates compounds whose concentrations **Exceed** the calibration range
U- Indicates that the compound was analyzed for but not detected within the calibration range
D- Indicates that the reported concentration was derived from a **Diluted** sample

SampleName ( )251ST(2)

Date Acquired 02/01/03 10 56 00 PM

GC Column Hayesep D [10' X 1/8"]

Column Conditions 90 Deg Isothermal

Injection Volume 300 ul

Client KAISER HILL
Project 04756.02.003
Method 8015 Modified

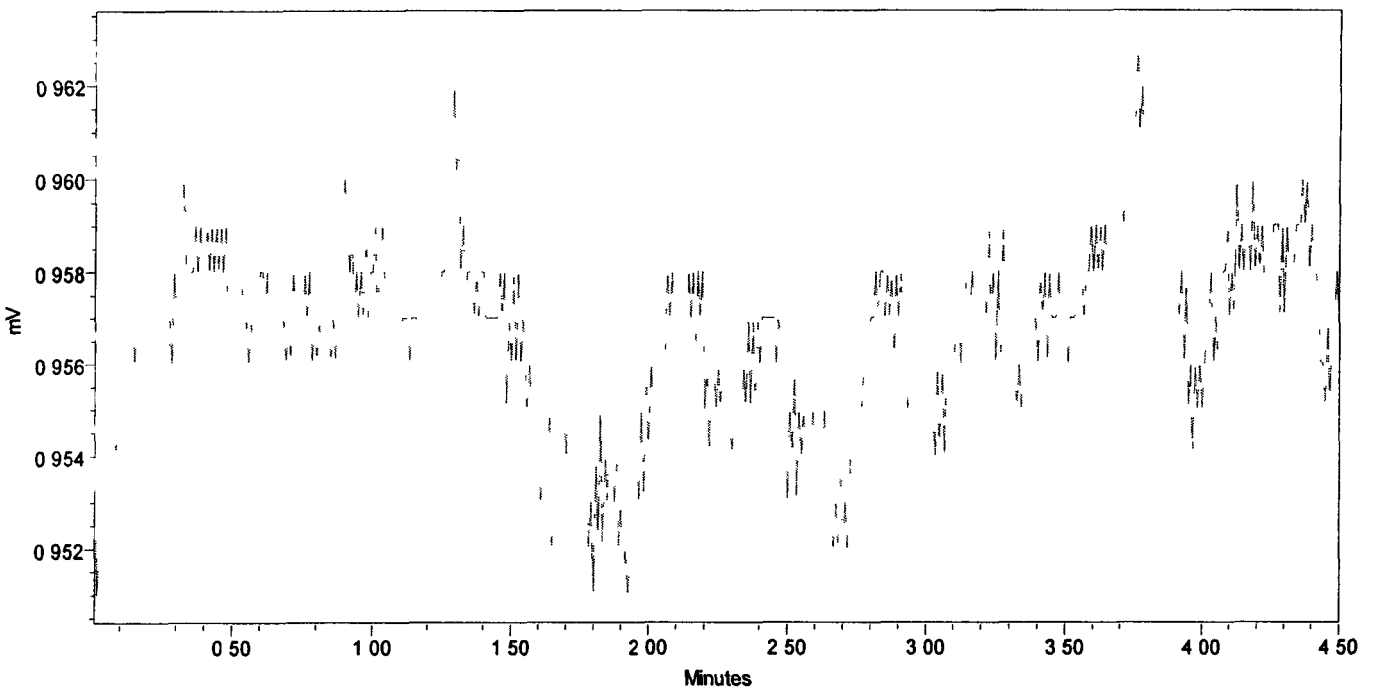
LIMs_ID 219613

020013

SDG 219609 Case 03D0456

System Name GC01_System

Project Folder GC01_HEADSPACE_2



CYCLES 24 SampleName GW10251ST(2) Date Acquired 02/01/03 10 56 00 PM

	Name	RT	Area	Amount [ug/L]
1	Methane	1 306		
2	Ethene	2 835		
3	Ethane	3 587		

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Report Method Name KH_Report_2003

Processing Method GC01_HS_44mL_01FEB03

FORM I
METHOD 8015 MODIFIED DATA REPORTING FORM

Lab Name SwRI Client ID KAISER HILL FID Temp 230 °C Sample ID GW10247ST(1)MS

LIMS ID 219609MS

Lab Code SwRI Case No 03D0456 SDG No 219609

GC Column HayeSep Q 80/100 8' x 1/8" SS GC ramp 90°C Isothermal

Instrument ID FID Analysis Date 02/01/03 Proj No 04756 02 003 Analyst EF

Std Vol Inj µL) 300 Sample vol Inj (µL) 300 Dil factor 1 VTSR: 01/30/03

CAS #	COMPOUND	RESULT(µg/L)	FLAG
74-82-8	Methane	105	
74-85-1	Ethene	181	
74-84-0	Ethane	186	

E- This Flag indicates compounds whose concentrations **Exceed** the calibration range
U- Indicates that the compound was analyzed for but not detected within the calibration range
D- Indicates that the reported concentration was derived from a **Diluted** sample

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SampleName GW10247ST(1)MS

Date Acquired 02/01/03 11 01 43 PM

GC Column Hayesep D [10' X 1/8"]

Column Conditions 90 Deg Isothermal

Injection Volume 300 ul

Client KAISER HILL
Project 04756.02.003
Method: 8015 Modified

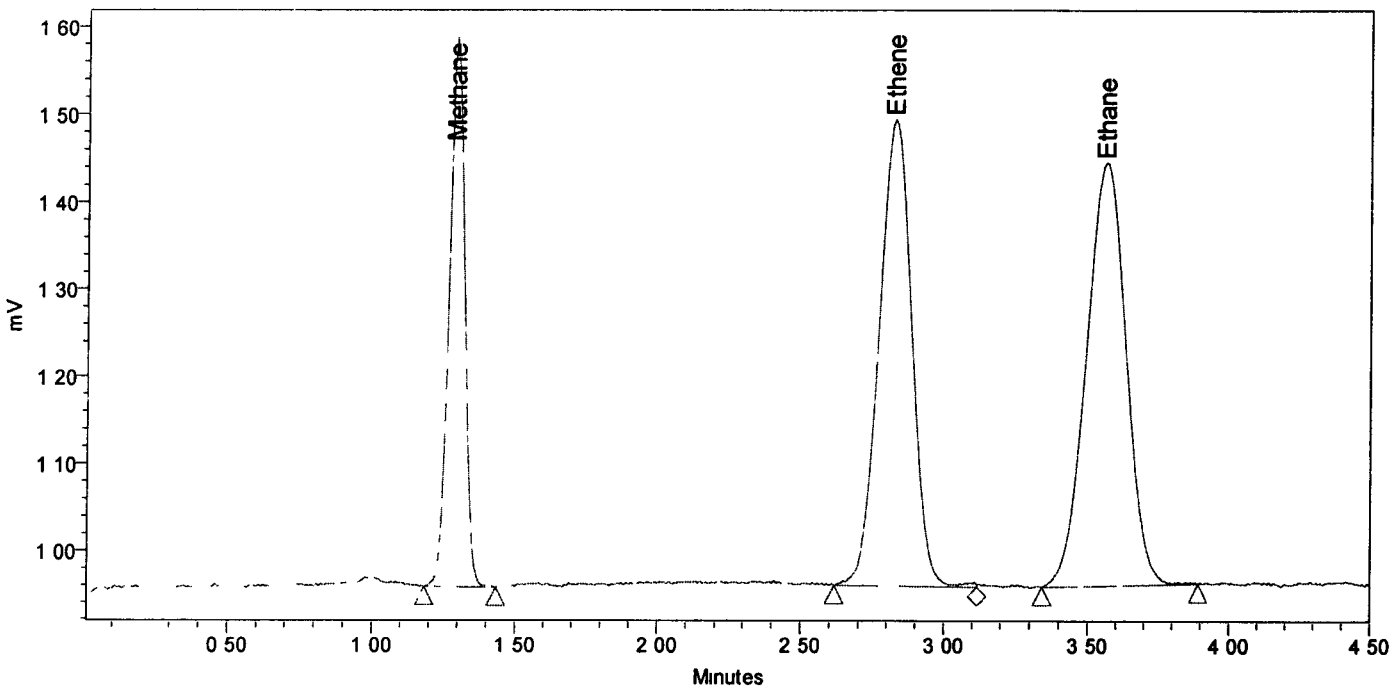
LIMs_ID 219609MS

020032

SDG 219609 Case 03D0456

System Name GC01_System

Project Folder GC01_HEADSPACE_20(



CYCLES 25 SampleName GW10247ST(1)MS Date Acquired 02/01/03 11 01 43 PM

	Name	RT	Area	Amount [ug/L]
1	Methane	1 292	2376	105 04
2	Ethene	2 826	4255	180 86
3	Ethane	3 562	4769	186 37

53

Report Method Name KH_Report_2003

Processing Method GC01_HS_44mL_01FEB03

FORM I
METHOD 8015 MODIFIED DATA REPORTING FORM

Lab Name SwRI **Client ID** KAISER HILL **FID Temp** 230 °C **Sample ID** GW10247ST(4)MSD

LIMS ID· 219609MSD

Lab Code SwRI **Case No** 03D0456 **SDG No** 219609

GC Column HayeSep Q 80/100 8' x 1/8" SS **GC ramp** 90°C Isothermal

Instrument ID FID **Analysis Date** 02/01/03 **Proj No** 04756 02 003 **Analyst** EF

Std Vol Inj µL) 300 **Sample vol Inj (µL)** 300 **Dil factor** 1 **VTSR** 01/30/03

CAS #	COMPOUND	RESULT(µg/L)	FLAG
74-82-8	Methane	108	
74-85-1	Ethene	182	
74-84-0	Ethane	189	

E- This Flag indicates compounds whose concentrations **Exceed** the calibration range
U- Indicates that the compound was analyzed for but not detected within the calibration range
D- Indicates that the reported concentration was derived from a **Diluted** sample

54

SampleName GW10247ST(4)MSD

Date Acquired 02/01/03 11 07 16 PM

GC Column Hayesep D [10' X 1/8"]

Column Conditions 90 Deg Isothermal

Injection Volume 300 ul

Client. KAISER HILL
Project· 04756.02.003
Method: 8015 Modified

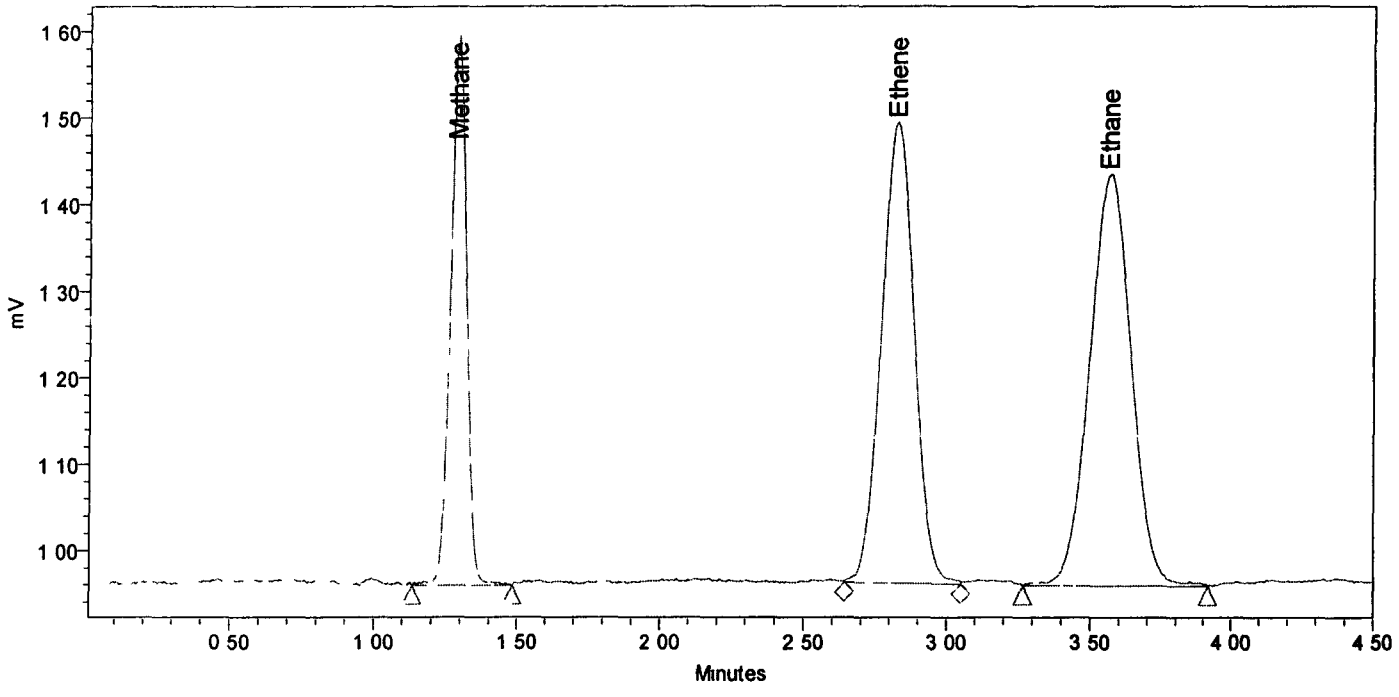
LIMs_ID· 219609MSD

020034

SDG 219609 Case 03D0456

System Name GC01_System

Project Folder GC01_HEADSPACE_20(



CYCLES 26 SampleName GW10247ST(4)MSD Date Acquired 02/01/03 11 07 16 PM

	Name	RT	Area	Amount [ug/L]
1	Methane	1 290	2445	108 05
2	Ethene	2 826	4291	182 40
3	Ethane	3 567	4842	189 21

55

Report Method Name KH_Report_2003

Processing Method GC01_HS_44mL_01FEB03

SOUTHWEST RESEARCH INSTITUTE
CLIENT: KAISER HILL
TASK ORDER: 030821-12
SAMPLE RECEIPT NO.: 24839
SDG: 233192
VTSR: August 21, 2003
PROJECT#: 04756.02.003

NARRATIVE

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CLIENT: KAISER HILL
PROJECT NO.: 04756.02.003
SDG: 233192
PAGE: 1

SwRI CASE NARRATIVE

1 Seven (7) aqueous samples were submitted for analysis by Method 8015M

SwRI ID	Customer ID
233192	GW10958ST
233193	GW10954ST
233194	GW10955ST
233195	GW10956ST
233196	GW10957ST
233197	GW10959ST
233198	GW10960ST

2 Samples were received at SwRI on August 21, 2003 for a twenty-eight (28) day hardcopy turnaround time from Validated Time of Sample Receipt (VTSR)

3 Quality Control Sample Identification
GW10954ST MS/MSD MS/MSD
LCS
LCS_25AUG03 (Methanol)

ANALYSIS

Note The initial calibration date used on forms, generated by our internal form generation program, uses the initial date the sequence containing samples was begun See injection logbook or sample data for each specific injection's start date of analysis Due to the limits of our internal form generation program, an artificial compound named RTREF was generated for reference only The internal form generation program used has specific sequences labeled as a "Basename" located in the lower right hand of each form The Basenames used were 03G0222H and 03G1525H

A) Procedure

The method used to analyze samples was Method 8015 modified Two separate analytical sequences were run One is for headspace analysis (methane, ethene, ethane), the other is for methanol Prior to analysis by GC/FID for methane, ethane and ethene, headspace was created in all standards, blanks, QC samples, and samples by displacing 4 mL of water from the 40 mL VOA vials with high purity helium All standards, a blank, QC samples, and samples were then placed in a 40°C water bath and gently agitated for 30 minutes At the end of 30 minutes all vials were removed and allowed to cool to room temperature before analysis by GC/FID

CLIENT: KAISER HILL
PROJECT NO.: 04756.02.003
SDG: 233192
PAGE: 2

B) Initial Calibration

The headspace analysis was performed using a FID detector equipped with HAYESEP Q 80/100 8'X1/8" column A five-point calibration curve was generated for the analytes The average %RSD for the compounds was within the 30% criteria These in turn were used to generate mean calibration factors, which were used for quantitation against the samples

The direct injection of methanol analysis was performed using a FID detector equipped with RTX502 2 (0 53 mm) ID with a packed pre-column A five-point calibration curve was generated for the analyte The average %RSD for the compound was within the 30% criteria This in turn was used to generate a mean calibration factor, which was used for quantitation against the samples

C) Continuing Calibration

For both analyses, an average of 30% was set for continuing calibration criteria This criterion was met for all CCV's

D) QC

The method blanks did not contain any of the analytes of interest above the detection limit The LCS recoveries were within the QC limits of 70-130% The MS/MSD recoveries and RPD were within the QC limits for methanol analysis For methane, ethane and ethane analysis, the RPD were outside the QC limits Since the RPD criterion is advisory No corrective action is necessary

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Director or his designee, as verified by the following signature. This report shall not be reproduced except in full, without the written approval of SwRI."

Jo Ann Boyd 9/8/03

Jo Ann Boyd, **Date**
Manager
Division 01, Quality Assurance

SOUTHWEST RESEARCH INSTITUTE
CLIENT: KAISER HILL
TASK ORDER: 030821-12
SAMPLE RECEIPT NO.: 24839
SDG: 233192
VTSR: August 21, 2003
PROJECT#: 04756.02.003

CHAIN OF CUSTODY

60

6010

STOLLER RFETS	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	COC 03D2111#002	Page 1 of 2

Sampler(s) (time/date) KENKEL, VERONICA	Contact/Requester JOHNSEN, SHELLY / MARTIN, CATHERINE	Telephone No 6401 / 4924
RIN 03D2111	Sampling Origin	Purchase Order/Charge Code HAD51100
Project Title Groundwater 3rd Quarter 2003	Logbook No	Ice Chest No JM / Temp 4.0°C #026
To (Lab) Southwest Research	Method of Shipment FED EX	Bill of Lading/Air Bill No 6285 7195 9929
Protocol MONITORING	Related COC (if any)	PRE 020924-T130C-006

POSSIBLE SAMPLE HAZARDS/REMARKS

Are acid preserved samples DOT hazardous per 40 CFR Par 136 3 Table II? YES NO
Are other known hazardous substances present? YES NO
** ** **

IF COOLER IS <2C OR >6C PLEASE TAKE INTERNAL TEMPERATURE OF ONE SAMPLE TO VERIFY

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time

ALL SAMPLES COLLECTED IN ACCORDANCE WITH OPS-PRO 113

Return to Client 8/21/03

Bottle No	Customer Number	Matrix	Date/Time	Location	Container (size/type)	Sample Analysis [Field-Filtered] LIC (Method Title) [TAT]/{Parameter List}	Preservative, Packing
03D2111 -001 008	GW10954ST	AQUEOUS	08/18/03 14 03	01097	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {ETHANE, ETHENE, METHANE, METHANOL}	4 C, 4 C
03D2111 -001.009	GW10954ST	AQUEOUS	08/18/03 14 03	01097	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {ETHANE, ETHENE, METHANE, METHANOL}	4 C, 4 C
03D2111 -001.010	GW10954ST	AQUEOUS	08/18/03 14 03	01097	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {ETHANE, ETHENE, METHANE, METHANOL}	4 C, 4 C
03D2111 -001 011	GW10954ST	AQUEOUS	08/18/03 14 03	01097	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {ETHANE, ETHENE, METHANE, METHANOL}	4 C, 4 C
03D2111 -002.008	GW10955ST	AQUEOUS	08/18/03 11 14	01497	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {ETHANE, ETHENE, METHANE, METHANOL}	4 C, 4 C
03D2111 -002 009	GW10955ST	AQUEOUS	08/18/03 11 14	01497	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {ETHANE, ETHENE, METHANE, METHANOL}	4 C, 4 C
03D2111 -003.008	GW10956ST	AQUEOUS	08/19/03 13 29	02097	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {ETHANE, ETHENE, METHANE, METHANOL}	4 C, 4 C
03D2111 -003.009	GW10956ST	AQUEOUS	08/19/03 13 29	02097	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {ETHANE, ETHENE, METHANE, METHANOL}	4 C, 4 C

Intact

Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
[signature]	8-20-03 1500	[signature]	8-20-03 1500	[signature]	8-20 03 1500	Fed Ex	
		Khaled Edrisi [signature]	8/21/03 0830				

FINAL SAMPLE Disposal Method (e g., returned to customer, disposed of per lab procedure, used in analytical process) Disposed By

Date/Time COC printed 08/20/03 08 45 (Version coc r21 rpt)

6010

STOLLER RFETS	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	COC 03D2111#002	Page 2 of 2

RIN	Contact/Requester	Telephone No
03D2111	JOHNSEN, SHELLY / MARTIN, CATHERINE	6401 / 4924

Bottle No	Customer Number	Matrix	Date/Time	Location	Container (size/type)	Sample Analysis [Field-Filtered] LIC (Method Title) [TAT]/{Parameter List}	Preservative, Packing
03D2111 -004 008	GW10957ST	AQUEOUS	08/19/03 09 20	70693	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {ETHANE, ETHENE, METHANE, METHANOL}	4 C, 4 C
03D2111 -004 009	GW10957ST	AQUEOUS	08/19/03 09 20	70693	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {ETHANE, ETHENE, METHANE, METHANOL}	4 C, 4 C
03D2111 -005 008	GW10958ST	AQUEOUS	08/19/03 09 21	70693	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {ETHANE, ETHENE, METHANE, METHANOL}	4 C, 4 C
03D2111 -005.009	GW10958ST	AQUEOUS	08/19/03 09 21	70693	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {ETHANE, ETHENE, METHANE, METHANOL}	4 C, 4 C
03D2111 -006.008	GW10959ST	AQUEOUS	08/19/03 10 14	70693	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {ETHANE, ETHENE, METHANE, METHANOL}	4 C, 4 C
03D2111 -006.009	GW10959ST	AQUEOUS	08/19/03 10 14	70693	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {ETHANE, ETHENE, METHANE, METHANOL}	4 C, 4 C
03D2111 -007.008	GW10960ST	AQUEOUS	08/19/03 15 14	01397	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {ETHANE, ETHENE, METHANE, METHANOL}	4 C, 4 C
03D2111 -007 009	GW10960ST	AQUEOUS	08/19/03 15 14	01397	40-ML AG	TSK-A-020 (SW-846 8015 Dissolved Methane, ?) [28dF] {ETHANE, ETHENE, METHANE, METHANOL}	4 C, 4 C

intact

4.0°C #026

NOT COPY ONE LOCATED

Return to Client 8/21/03

400004

Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
Ref 5	8-20 03 1500	C Martin	8-20-03 1500	C Martin	8-20-03 1500	Fed Ex	
		Khaled Edris	8/21/03 0830				

FINAL SAMPLE DISPOSITION: Disposal Method (e g returned to customer disposed of per lab procedure, used in analytical process) | Disposed By | Date/Time COC printed 08/20/03 08 45 (Version coc_r21 rpt)

SOUTHWEST RESEARCH INSTITUTE
CLIENT: KAISER HILL
TASK ORDER: 030821-12
SAMPLE RECEIPT NO.: 24839
SDG: 233192
VTSR: August 21, 2003
PROJECT#: 04756.02.003

SAMPLE DATA

62

Method 8015M ORGANIC ANALYTES DATA SHEET

Client Sample ID

GW10954ST

010007

Lab Name SwRI	Client KAISER HILL	Project 04756 02 003
Lab Code SwRI	Case # 03D2111	SDG 233192
Matrix Aqueous	Sample wt/vol 1 0 L	Lab Sample ID 233193
% Moisture 0	Decanted (Y/N) N	SwRI ID 233193
Extraction (SEPF/Cont/Sonc) NA		Date Analyzed 8/25/2003
Concentrated Extract Volume 1000 uL		Date Received 8/21/2003
Injection Volume 300 uL	pH NA	Date Extracted NA
GPC Cleanup (Y/N) N	Dilution Factor 1	

CAS NO		COMPOUND	CONCENTRATION UNITS ug/L	Q
74-84-0	--------	Ethane	12 4	
74-85-1	--------	Ethene	16 1	
74-82-8	--------	Methane	5 57	

DATA REPORTING QUALIFIERS

U - Indicates compound was analyzed for but not detected at the reported concentration

63

03G0222H
version 03-10-03

010008

SampleName 233193

Column HAYESEP Q 80/100 8'X1/8"

Column Conditions 90 Deg Isothermal

Dates Acquired 08/25/03 10 41 53

Injection Volume 300 ul

Client KIASER HILL
Project 04756 02 003
Method Analysis by GC-FID

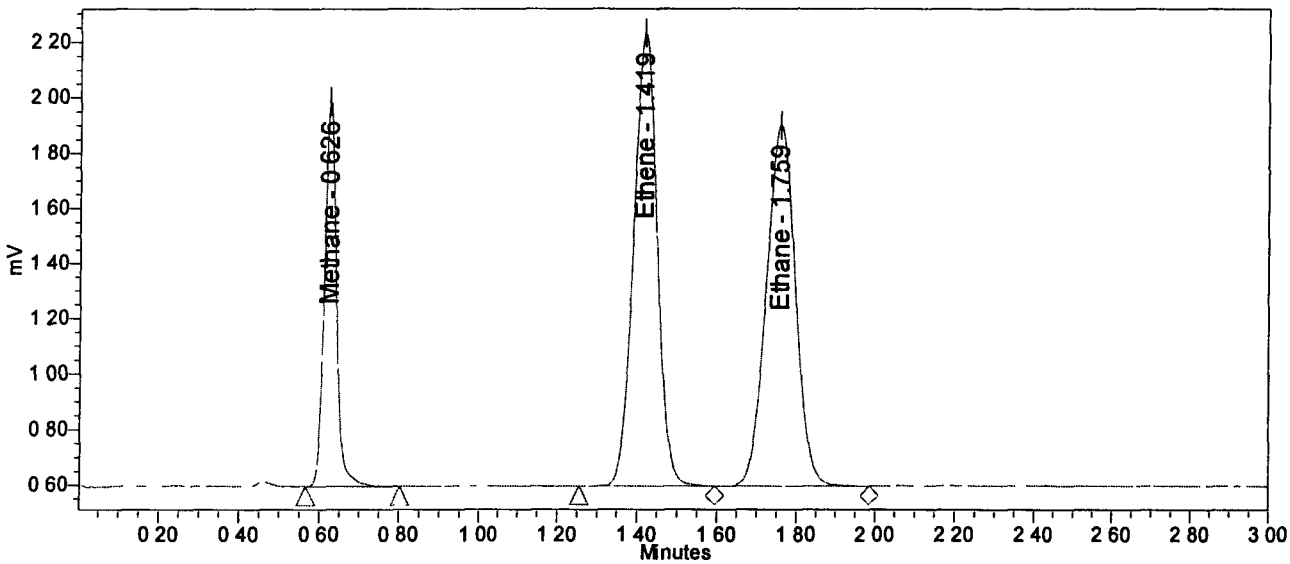
Client_ID GW10954ST

SDG 233192 Case 03D2111

System Name GC02_FID

Project Folder GC02_FID_2003

Chromatogram



Peak Results

	Name	RT	Area	Height
1	Methane	0 626	2888	1401
2	Ethene	1 419	6704	1640
3	Ethane	1 759	6643	1306

8/27/03

9/3/03

64

SOUTHWEST RESEARCH INSTITUTE

010009

PEAK DATA

Cycle a03G0222H13 Client KAISER HILL Project 04756 02 003

Lab Sample ID 233193 Case # 03D2111 SDG 233192

COMPOUND	RT	AREA	CONC
Methane	0 63	2888	5 565
Ethene	1 42	6704	16 12
Ethane	1 76	6643	12 37

65

03G0222H
version 03-10-03

Method 8015M ORGANIC ANALYTES DATA SHEET

Client Sample ID

GW10954ST

Lab Name SwRI
Lab Code SwRI
Matrix Aqueous
% Moisture 0
Extraction (SEPF/Cont/Sonc) DIR
Concentrated Extract Volume 1000 uL
Injection Volume 2 0 uL
GPC Cleanup (Y/N) N

Client KAISER HILL
Case # 03D2111
Sample wt/vol 1 0 L
Decanted (Y/N) N
pH NA
Dilution Factor 1

Project 04756 02 003
SDG 233192
Lab Sample ID 233193
SwRI ID 233193
Date Analyzed 8/25/2003
Date Received 8/21/2003
Date Extracted NA

010010

CAS NO		COMPOUND	CONCENTRATION UNITS ug/L	Q
67-56-01	----------	Methanol	5000	U

U = Undetected
D = Dilution
DIR = Direct injection of sample

66

03G1525H
version 03-10-03

SampleName 233193

Date Acquired 08/25/03 13 37 38

Column RTX-502 2 30M w/packed precolumn

Column Conditions 50D-2 5Mn-25D/Mn-230D

CYCLES 12

Client· KAISER HILL
Project· 04756.02.003
Case#· 03D2111

Client_ID GW10954ST

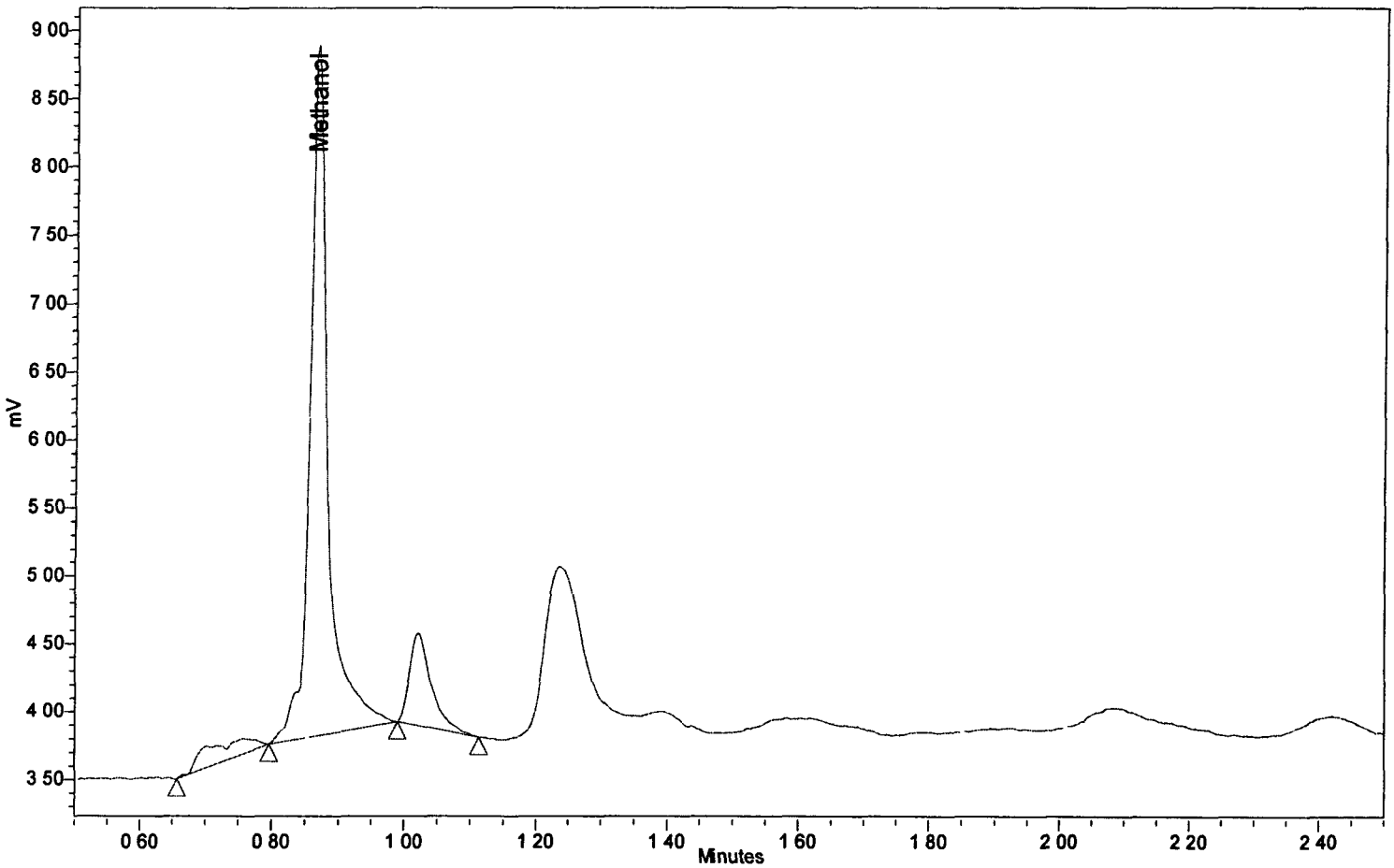
SDG 233192 610011

System Name GC15_SYS

Project Folder GC15_Project_2003

Injection Volume 2 0 ul

Dilution 1



PEAK AREA RESULTS

	Name	RT	Area	Height
1		0 703	708	159
2	Methanol	0 866	9537	5079
3		1 021	1555	685

67

Report Method Name KH_MEOH_SPL

Processing Method KH_ MEOH_25AUG_2003

Method 8015M ORGANIC ANALYTES DATA SHEET

Client Sample ID

GW10955ST

010012

Lab Name SwRI	Client KAISER HILL	Project 04756 02 003
Lab Code SwRI	Case # 03D2111	SDG 233192
Matrix Aqueous	Sample wt/vol 1 0 L	Lab Sample ID 233194
% Moisture 0	Decanted (Y/N) N	SwRI ID 233194
Extraction (SEPF/Cont/Sonc) NA		Date Analyzed 8/25/2003
Concentrated Extract Volume 1000 uL		Date Received 8/21/2003
Injection Volume 300 uL	pH NA	Date Extracted NA
GPC Cleanup (Y/N) N	Dilution Factor 1	

CAS NO		COMPOUND	CONCENTRATION UNITS ug/L	Q
74-84-0	--------	Ethane	11 1	
74-85-1	--------	Ethene	11 5	
74-82-8	--------	Methane	5 12	

DATA REPORTING QUALIFIERS

U - Indicates compound was analyzed for but not detected at the reported concentration

68

03G0222H
version 03-10-03

010013

SampleName 233194

Column HAYESEP Q 80/100 8'X1/8"

Column Conditions 90 Deg Isothermal

Dates Acquired 08/25/03 11 11 07

Injection Volume 300 ul

Client KIASER HILL

Project 04756 02 003

Method Analysis by GC-FID

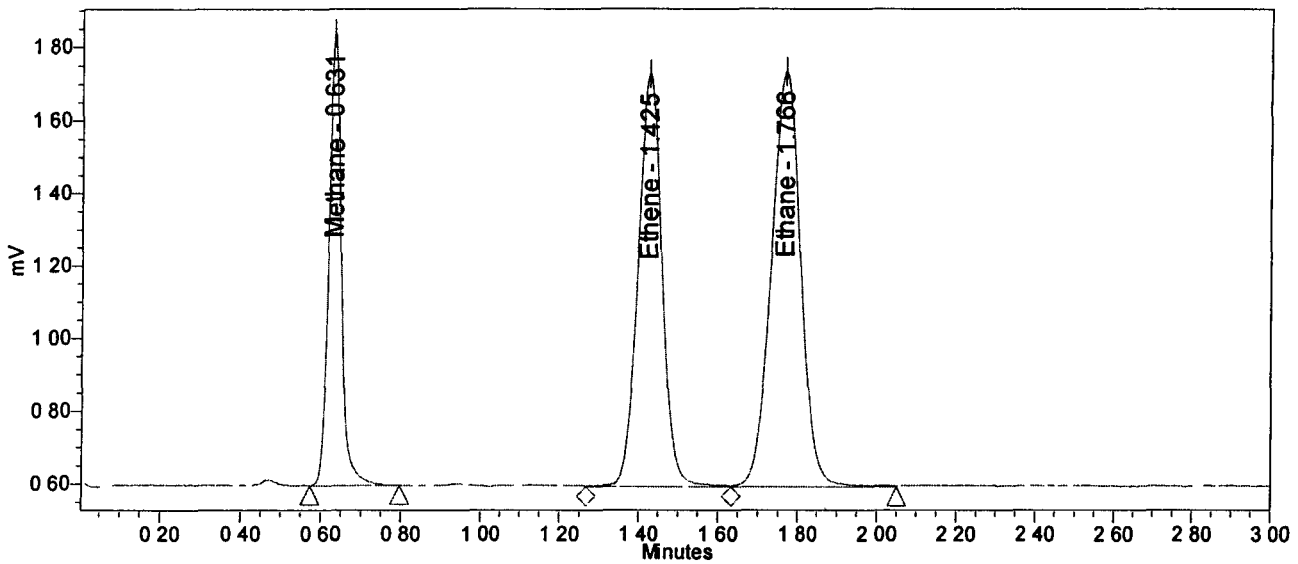
Client_ID GW10955ST

SDG 233192 Case 03D2111

System Name GC02_FID

Project Folder GC02_FID_2003

Chromatogram



Peak Results

	Name	RT	Area	Height
1	Methane	0 631	2655	1251
2	Ethene	1 425	4776	1137
3	Ethane	1 766	5936	1142

69

SOUTHWEST RESEARCH INSTITUTE

010014

PEAK DATA

Cycle a03G0222H18 Client KAISER HILL Project 04756 02 003

Lab Sample ID 233194 Case # 03D2111 SDG 233192

COMPOUND	RT	AREA	CONC
Methane	0 63	2655	5 116
Ethene	1 42	4776	11 48
Ethane	1 77	5936	11 05

70

03G0222H
version 03-10-03

Method 8015M ORGANIC ANALYTES DATA SHEET

Client Sample ID

GW10955ST

010015

Lab Name SwRI
Lab Code SwRI
Matrix Aqueous
% Moisture 0
Extraction (SEPF/Cont/Sonc) DIR
Concentrated Extract Volume 1000 uL
Injection Volume 2 0 uL
GPC Cleanup (Y/N) N

Client KAISER HILL
Case # 03D2111
Sample wt/vol 1 0 L
Decanted (Y/N) N
pH NA
Dilution Factor 1

Project 04756 02 003
SDG 233192
Lab Sample ID 233194
SwRI ID 233194
Date Analyzed 8/25/2003
Date Received 8/21/2003
Date Extracted NA

CAS NO		COMPOUND	CONCENTRATION UNITS ug/L	Q
67-56-01	———	Methanol	5000	U

U = Undetected
D = Dilution
DIR = Direct injection of sample

71

03G1525H
version 03-10-03

SampleName 233194

Date Acquired 08/25/03 15 15 54

Column RTX-502 2 30M w/packed precolumn

Column Conditions 50D-2 5Mn-25D/Mn-230D

CYCLES 17

Client: KAISER HILL
Project: 04756.02.003
Case#· 03D2111

Client_ID GW10955ST

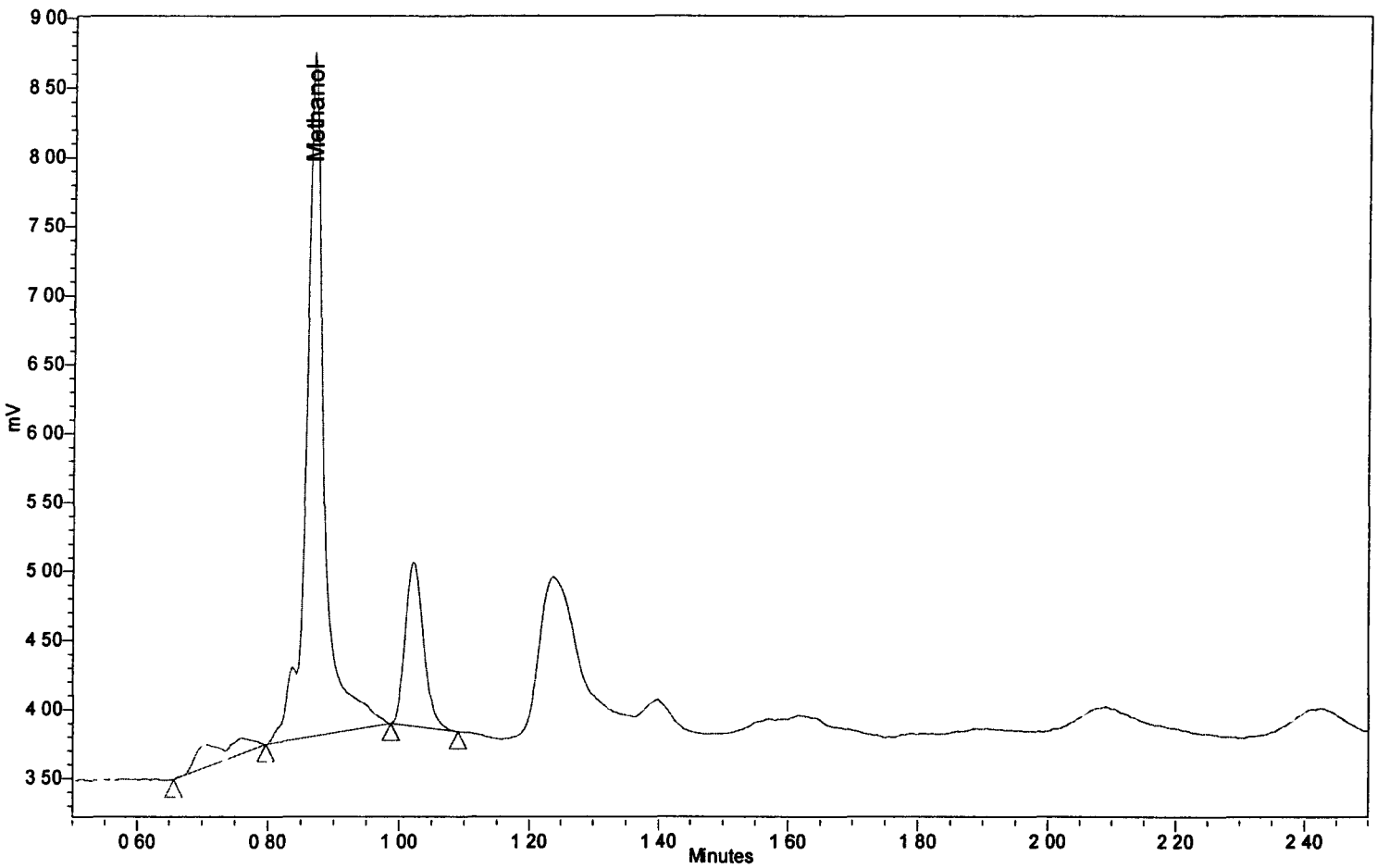
SDG 233192 010016

System Name GC15_SYS

Project Folder GC15_Project_2003

Injection Volume 2 0 ul

Dilution 1



PEAK AREA RESULTS

	Name	RT	Area	Height
1		0 704	673	166
2	Methanol	0 868	9426	4952
3		1 021	2313	1192

72

Report Method Name KH_MEOH_SPL

Processing Method KH_ MEOH_25AUG_2003

Method 8015M ORGANIC ANALYTES DATA SHEET

Client Sample ID

GW10956ST

010017

Lab Name SwRI	Client KAISER HILL	Project 04756 02 003
Lab Code SwRI	Case # 03D2111	SDG 233192
Matrix Aqueous	Sample wt/vol 1 0 L	Lab Sample ID 233195
% Moisture 0	Decanted (Y/N) N	SwRI ID 233195
Extraction (SEPF/Cont/Sonc) NA		Date Analyzed 8/25/2003
Concentrated Extract Volume 1000 uL		Date Received 8/21/2003
Injection Volume 300 uL	pH NA	Date Extracted NA
GPC Cleanup (Y/N) N	Dilution Factor 1	

CAS NO		COMPOUND	CONCENTRATION UNITS ug/L	Q
74-84-0	--------	Ethane	3 69	U
74-85-1	--------	Ethene	3 43	U
74-82-8	--------	Methane	[illegible]	

DATA REPORTING QUALIFIERS

U - Indicates compound was analyzed for but not detected at the reported concentration

73

03G0222H
version 03-10-03

010018

SampleName 233195

Column HAYESEP Q 80/100 8'X1/8"

Column Conditions 90 Deg Isothermal

Dates Acquired 08/25/03 11 17 02

Injection Volume 300 ul

Client KIASER HILL

Project 04756 02 003

Method Analysis by GC-FID

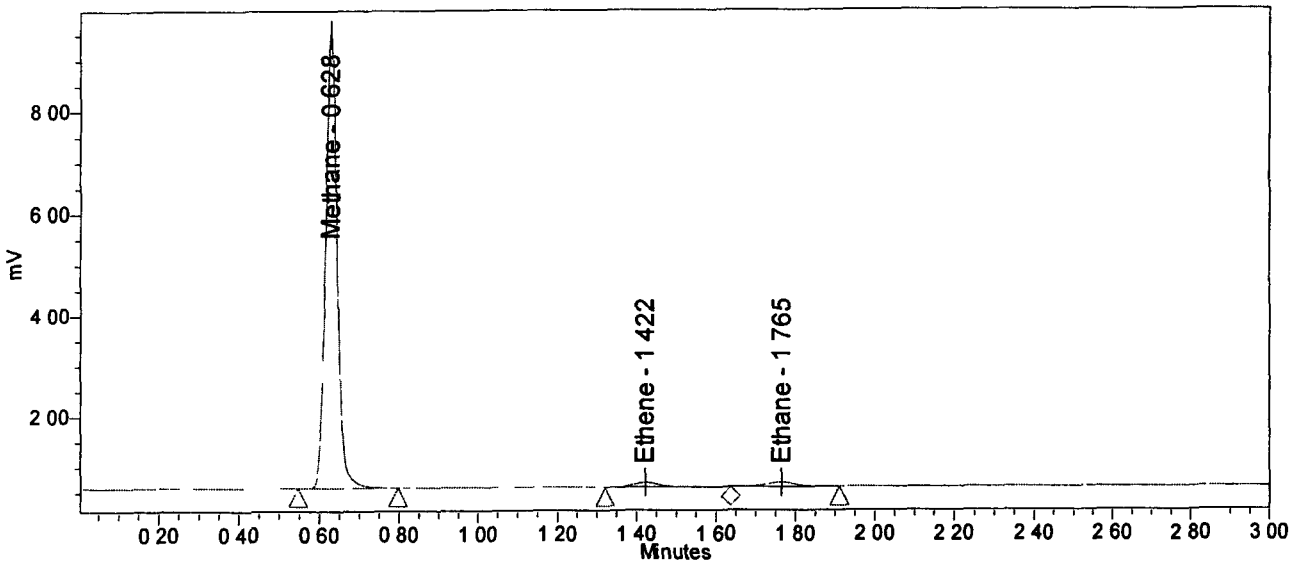
Client_ID GW10956ST

SDG 233192 Case 03D2111

System Name GC02_FID

Project Folder GC02_FID_2003

Chromatogram



Peak Results

	Name	RT	Area	Height
1	Methane	0 628	18233	8988
2	*Ethene*	1 422	*385*	87
3	*Ethane*	1 765	*461*	87

74

SOUTHWEST RESEARCH INSTITUTE

010019

PEAK DATA

Cycle a03G0222H19 Client KAISER HILL Project 04756 02 003

Lab Sample ID 233195 Case # 03D2111 SDG 233192

COMPOUND	RT	AREA	CONC
Methane	0 63	18233	35 13

75

03G0222H
version 03-10-03

Method 8015M ORGANIC ANALYTES DATA SHEET

Client Sample ID

GW10956ST

010020

Lab Name SwRI
Lab Code SwRI
Matrix Aqueous
% Moisture 0
Extraction (SEPF/Cont/Sonc) DIR
Concentrated Extract Volume 1000 uL
Injection Volume 2 0 uL
GPC Cleanup (Y/N) N

Client KAISER HILL
Case # 03D2111
Sample wt/vol 1 0 L
Decanted (Y/N) N
pH NA
Dilution Factor 1

Project 04756 02 003
SDG 233192
Lab Sample ID 233195
SwRI ID 233195
Date Analyzed 8/25/2003
Date Received 8/21/2003
Date Extracted NA

CAS NO		COMPOUND	CONCENTRATION UNITS ug/L	Q
67-56-01	--------	Methanol	5000	U

U = Undetected
D = Dilution
DIR = Direct injection of sample

76

03G1525H
version 03-10-03

SampleName 233195

Date Acquired 08/25/03 15 35 30

Column RTX-502 2 30M w/packed precolumn

Column Conditions 50D-2 5Mn-25D/Mn-230D

CYCLES 18

Client. KAISER HILL
Project· 04756.02.003
Case#: 03D2111

Client_ID GW10956ST

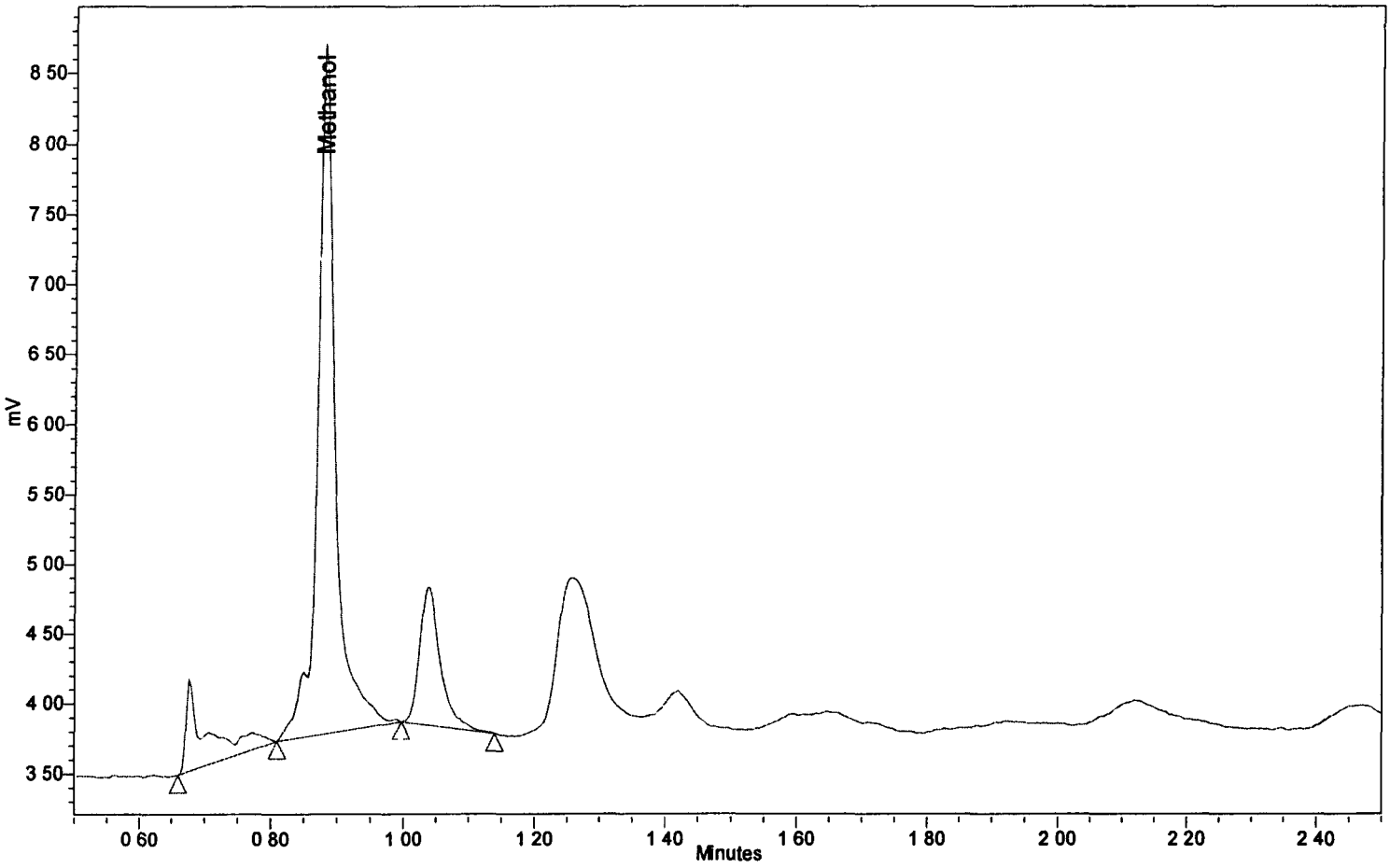
SDG 233192 10021

System Name GC15_SYS

Project Folder GC15_Project_2003

Injection Volume 2 0 ul

Dilution 1



PEAK AREA RESULTS

	Name	RT	Area	Height
1		0 678	1453	640
2	Methanol	0 881	9208	4929
3		1 038	2179	991

77

Report Method Name KH_MEOH_SPL

Processing Method KH_ MEOH_25AUG_2003

Method 8015M ORGANIC ANALYTES DATA SHEET

Client Sample ID

GW10957ST

010022

Lab Name SwRI
Lab Code SwRI
Matrix Aqueous
% Moisture 0
Extraction (SEPF/Cont/Sonc) NA
Concentrated Extract Volume 1000 uL
Injection Volume 300 uL
GPC Cleanup (Y/N) N

Client KAISER HILL
Case # 03D2111
Sample wt/vol 1 0 L
Decanted (Y/N) N
pH NA
Dilution Factor 1

Project 04756 02 003
SDG 233192
Lab Sample ID 233196
SwRI ID 233196
Date Analyzed 8/25/2003
Date Received 8/21/2003
Date Extracted NA

CAS NO		COMPOUND	CONCENTRATION UNITS ug/L	Q
74-84-0	---------	Ethane	3 69	U
74-85-1	---------	Ethene	3 43	U
74-82-8	---------	Methane	1 96	U

DATA REPORTING QUALIFIERS

U - Indicates compound was analyzed for but not detected at the reported concentration

78

03G0222H
version 03-10-03

010023

SampleName 233196

Column HAYESEP Q 80/100 8'X1/8"

Column Conditions 90 Deg Isothermal

Dates Acquired 08/25/03 11 22 47

Injection Volume 300 ul

Client KIASER HILL

Project 04756 02 003

Method Analysis by GC-FID

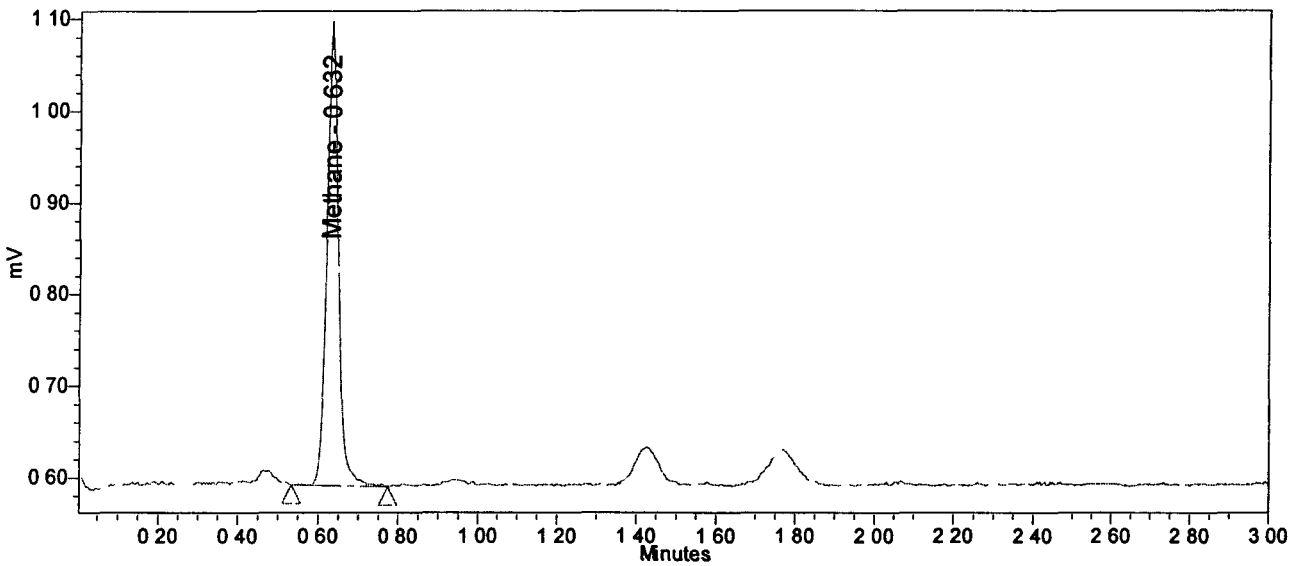
Client_ID GW10957ST

SDG 233192 Case 03D2111

System Name GC02_FID

Project Folder GC02_FID_2003

Chromatogram



Peak Results

	Name	RT	Area	Height
1	***Methane***	0 632	***1009***	494
2	***Ethene***	1 397		
3	***Ethane***	1 737		

79

Method 8015M ORGANIC ANALYTES DATA SHEET

Client Sample ID

GW10957ST

Lab Name SwRI
Lab Code SwRI
Matrix Aqueous
% Moisture 0
Extraction (SEPF/Cont/Sonc) DIR
Concentrated Extract Volume 1000 uL
Injection Volume 2 0 uL
GPC Cleanup (Y/N) N

Client KAISER HILL
Case # 03D2111
Sample wt/vol 1 0 L
Decanted (Y/N) N
pH NA
Dilution Factor 1

Project 04756 02 003
SDG 233192
Lab Sample ID 233196
SwRI ID 233196
Date Analyzed 8/25/2003
Date Received 8/21/2003
Date Extracted NA

010024

CAS NO		COMPOUND	CONCENTRATION UNITS ug/L	Q
67-56-01	———	Methanol	5000	U

U = Undetected
D = Dilution
DIR = Direct injection of sample

80

03G1525H
version 03-10-03

SampleName 233196

Date Acquired 08/25/03 15 55 10

Column RTX-502 2 30M w/packed precolumn

Column Conditions 50D-2 5Mn-25D/Mn-230D

CYCLES 19

Client: KAISER HILL
Project: 04756.02.003
Case#: 03D2111

Client_ID GW10957ST

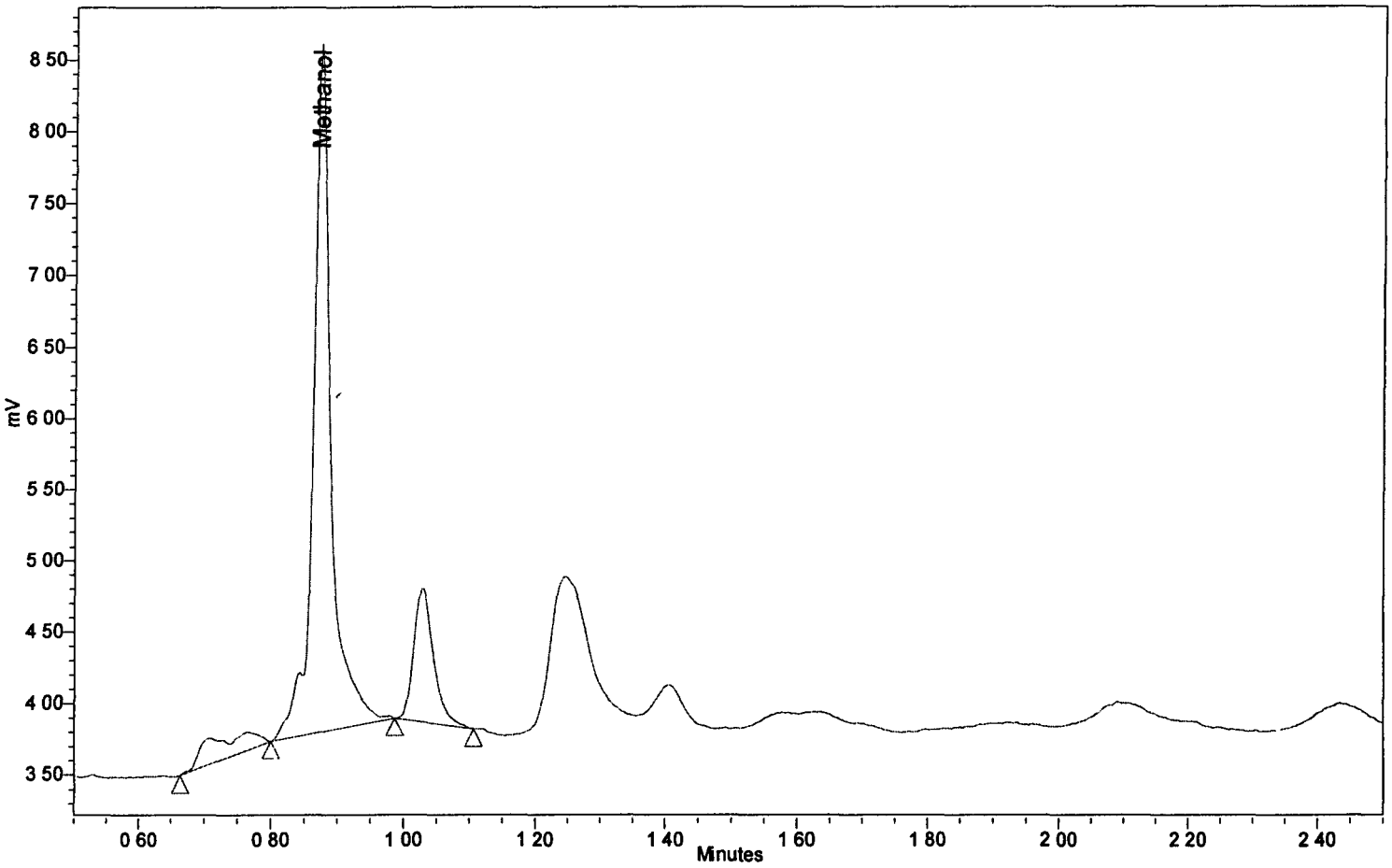
SDG 233192 010025

System Name GC15_SYS

Project Folder GC15_Project_2003

Injection Volume 2 0 ul

Dilution 1



PEAK AREA RESULTS

	Name	RT	Area	Height
1		0 708	786	184
2	Methanol	0 873	8999	4796
3		1 029	1947	933

81

Report Method Name KH_MEOH_SPL

Processing Method KH_ MEOH_25AUG_2003

Method 8015M ORGANIC ANALYTES DATA SHEET

Client Sample ID

GW10958ST

010026

Lab Name SwRI
Lab Code SwRI
Matrix Aqueous
% Moisture 0
Extraction (SEPF/Cont/Sonc) NA
Concentrated Extract Volume 1000 uL
Injection Volume 300 uL
GPC Cleanup (Y/N) N

Client KAISER HILL
Case # 03D2111
Sample wt/vol 1 0 L
Decanted (Y/N) N
pH NA
Dilution Factor 1

Project 04756 02 003
SDG 233192
Lab Sample ID 233192
SwRI ID 233192
Date Analyzed 8/25/2003
Date Received 8/21/2003
Date Extracted NA

CAS NO		COMPOUND	CONCENTRATION UNITS ug/L	Q
74-84-0	---------	Ethane	10 0	
74-85-1	---------	Ethene	11 0	
74-82-8	---------	Methane	4 85	

DATA REPORTING QUALIFIERS

U - Indicates compound was analyzed for but not detected at the reported concentration

82

03G0222H
version 03-10-03

SampleName 233192

Column HAYESEP Q 80/100 8'X1/8"

Column Conditions 90 Deg Isothermal

Dates Acquired 08/25/03 10 55 03

Injection Volume 300 ul

Client KIASER HILL

Project 04756 02 003

Method Analysis by GC-FID

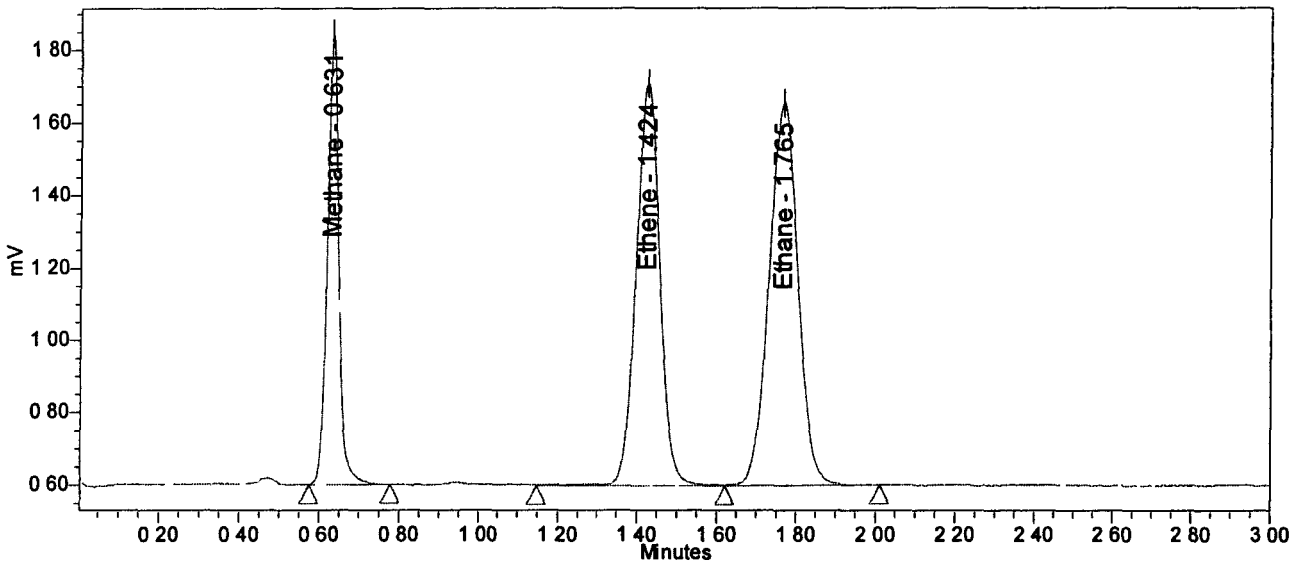
Client_ID GW10958ST

SDG 233192 Case 03D2111

System Name GC02_FID

Project Folder GC02_FID_2003

Chromatogram



Peak Results

	Name	RT	Area	Height
1	Methane	0 631	2517	1252
2	Ethene	1 424	4575	1111
3	Ethane	1 765	5368	1055

83

SOUTHWEST RESEARCH INSTITUTE

010028

PEAK DATA

Cycle a03G0222H16 Client KAISER HILL Project 04756 02 003

Lab Sample ID 233192 Case # 03D2111 SDG 233192

COMPOUND	RT	AREA	CONC
Methane	0 63	2517	4 850
Ethene	1 42	4575	11 00
Ethane	1 76	5368	9 996

84

03G0222H
version 03-10-03

Method 8015M ORGANIC ANALYTES DATA SHEET

Client Sample ID

GW10958ST

Lab Name SwRI	Client KAISER HILL	Project 04756 02 003
Lab Code SwRI	Case # 03D2111	SDG 233192
Matrix Aqueous	Sample wt/vol 1 0 L	Lab Sample ID 233192
% Moisture 0	Decanted (Y/N) N	SwRI ID 233192
Extraction (SEPF/Cont/Sonc) DIR		Date Analyzed 8/25/2003
Concentrated Extract Volume 1000 uL		Date Received 8/21/2003
Injection Volume 2 0 uL	pH NA	Date Extracted NA
GPC Cleanup (Y/N) N	Dilution Factor 1	

010029

CAS NO		COMPOUND	CONCENTRATION UNITS ug/L	Q
67-56-01	———	Methanol	5000	U

U = Undetected

D = Dilution

DIR = Direct injection of sample

85

03G1525H
version 03-10-03

SampleName 233192

Date Acquired 08/25/03 13 17 59

Column RTX-502 2 30M w/packed precolumn

Column Conditions 50D-2 5Mn-25D/Mn-230D

CYCLES 11

Client: KAISER HILL
Project: 04756.02.003
Case#: 03D2111

Client_ID GW10958ST

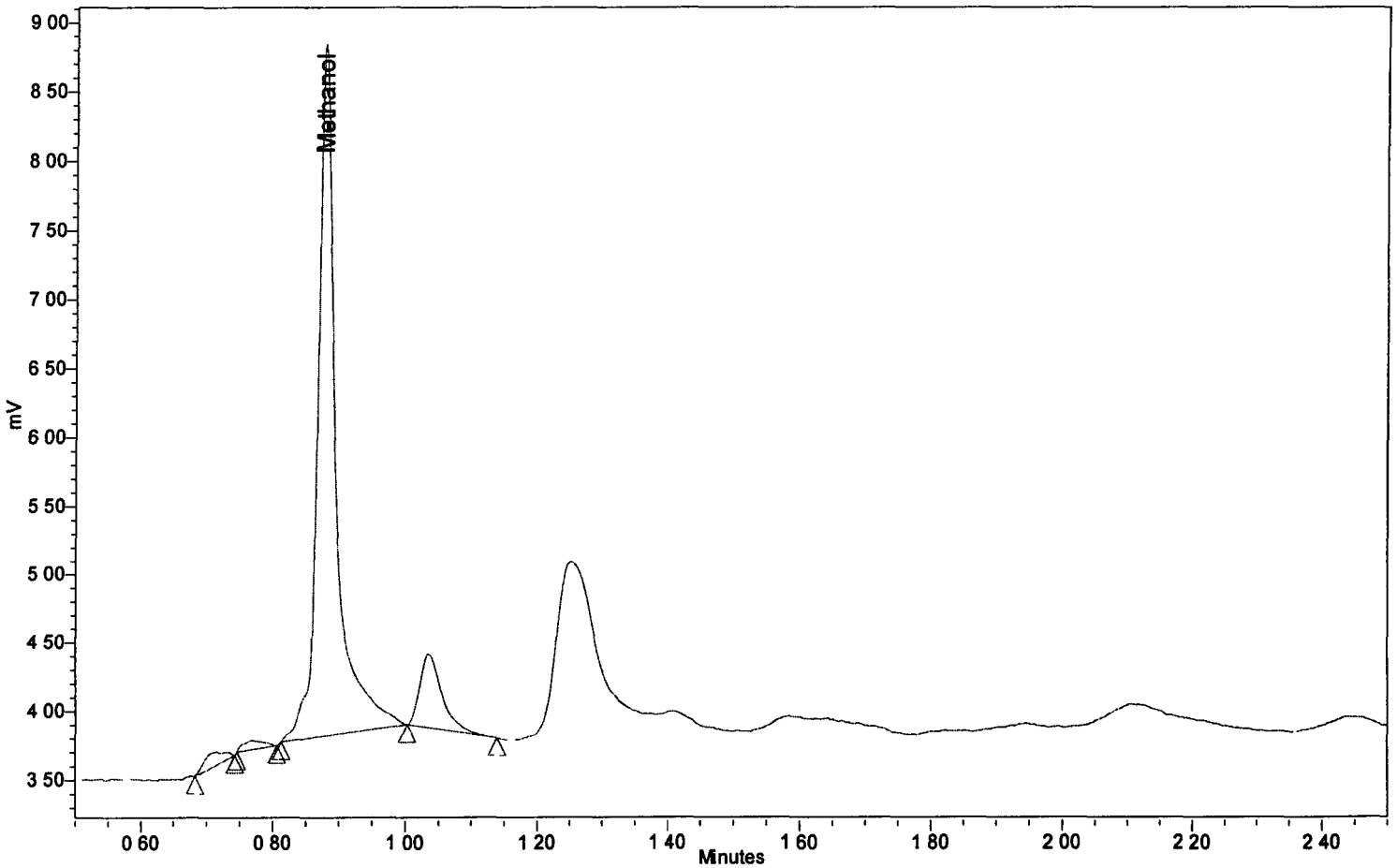
SDG 233192 010030

System Name GC15_SYS

Project Folder GC15_Project_2003

Injection Volume 2 0 ul

Dilution 1



PEAK AREA RESULTS

	Name	RT	Area	Height
1	Methanol	0 878	9715	5050
2		1 036	1247	539

86

Report Method Name KH_MEOH_SPL

Processing Method KH_ MEOH_25AUG_2003

Method 8015M ORGANIC ANALYTES DATA SHEET

Client Sample ID

GW10959ST

010031

Lab Name SwRI	Client KAISER HILL	Project 04756 02 003
Lab Code SwRI	Case # 03D2111	SDG 233192
Matrix Aqueous	Sample wt/vol 1 0 L	Lab Sample ID 233197
% Moisture 0	Decanted (Y/N) N	SwRI ID 233197
Extraction (SEPF/Cont/Sonc) NA		Date Analyzed 8/25/2003
Concentrated Extract Volume 1000 uL		Date Received 8/21/2003
Injection Volume 300 uL	pH NA	Date Extracted NA
GPC Cleanup (Y/N) N	Dilution Factor 1	

CAS NO		COMPOUND	CONCENTRATION UNITS ug/L	Q
74-84-0	--------	Ethane	3 69	U
74-85-1	--------	Ethene	3 43	U
74-82-8	--------	Methane	1 96	U

DATA REPORTING QUALIFIERS

U - Indicates compound was analyzed for but not detected at the reported concentration

87

03G0222H
version 03-10-03

010032

SampleName 233197

Column HAYESEP Q 80/100 8'X1/8"

Column Conditions 90 Deg Isothermal

Dates Acquired 08/25/03 11 29 57

Injection Volume 300 ul

Client KIASER HILL

Project 04756 02 003

Method Analysis by GC-FID

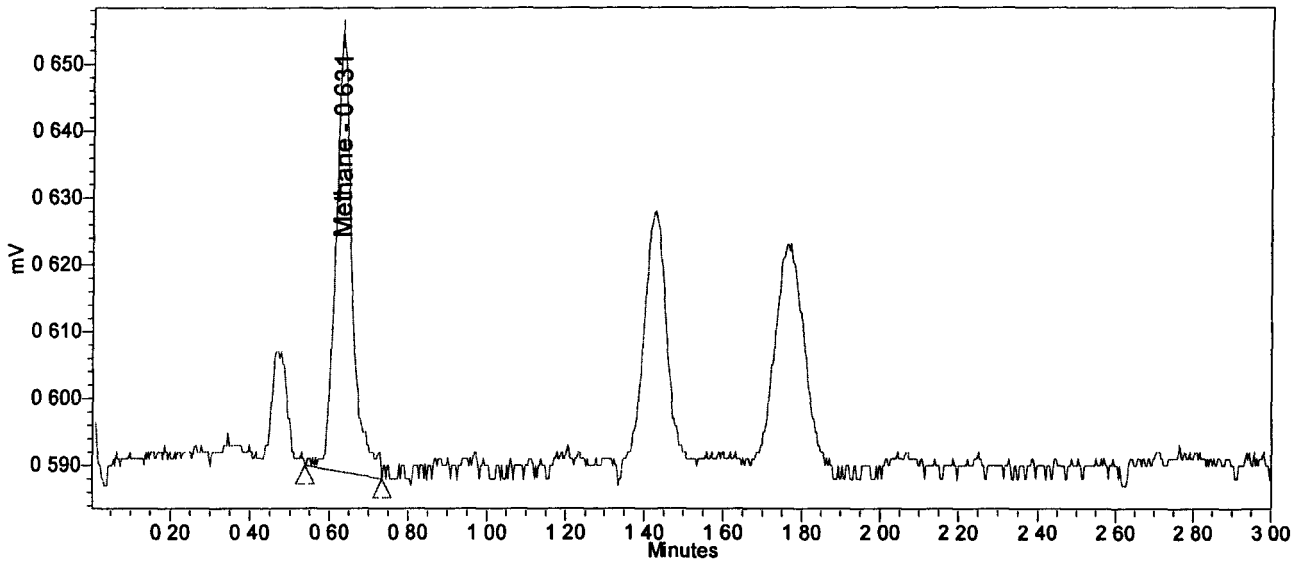
Client_ID GW10959ST

SDG 233192 Case 03D2111

System Name GC02_FID

Project Folder GC02_FID_2003

Chromatogram



Peak Results

	Name	RT	Area	Height
1	***Methane***	0 631	***194***	66
2	***Ethene***	1 397		
3	***Ethane***	1 737		

88

Method 8015M ORGANIC ANALYTES DATA SHEET

Client Sample ID

GW10959ST

Lab Name SwRI
Lab Code SwRI
Matrix Aqueous
% Moisture 0
Extraction (SEPF/Cont/Sonc) DIR
Concentrated Extract Volume 1000 uL
Injection Volume 2 0 uL
GPC Cleanup (Y/N) N

Client KAISER HILL
Case # 03D2111
Sample wt/vol 1 0 L
Decanted (Y/N) N
pH NA
Dilution Factor 1

Project. 04756 02 003
SDG 233192
Lab Sample ID 233197
SwRI ID 233197
Date Analyzed 8/25/2003
Date Received 8/21/2003
Date Extracted NA

010033

CAS NO		COMPOUND	CONCENTRATION UNITS ug/L	Q
67-56-01	--------	Methanol	5000	U

U = Undetected
D = Dilution
DIR = Direct injection of sample

89

03G1525H
version 03-10-03

SampleName 233197

Date Acquired 08/25/03 16 14 47

Column RTX-502 2 30M w/packed precolumn

Column Conditions 50D-2 5Mn-25D/Mn-230D

CYCLES 20

Client: KAISER HILL
Project: 04756.02.003
Case#: 03D2111

Client_ID GW10959ST

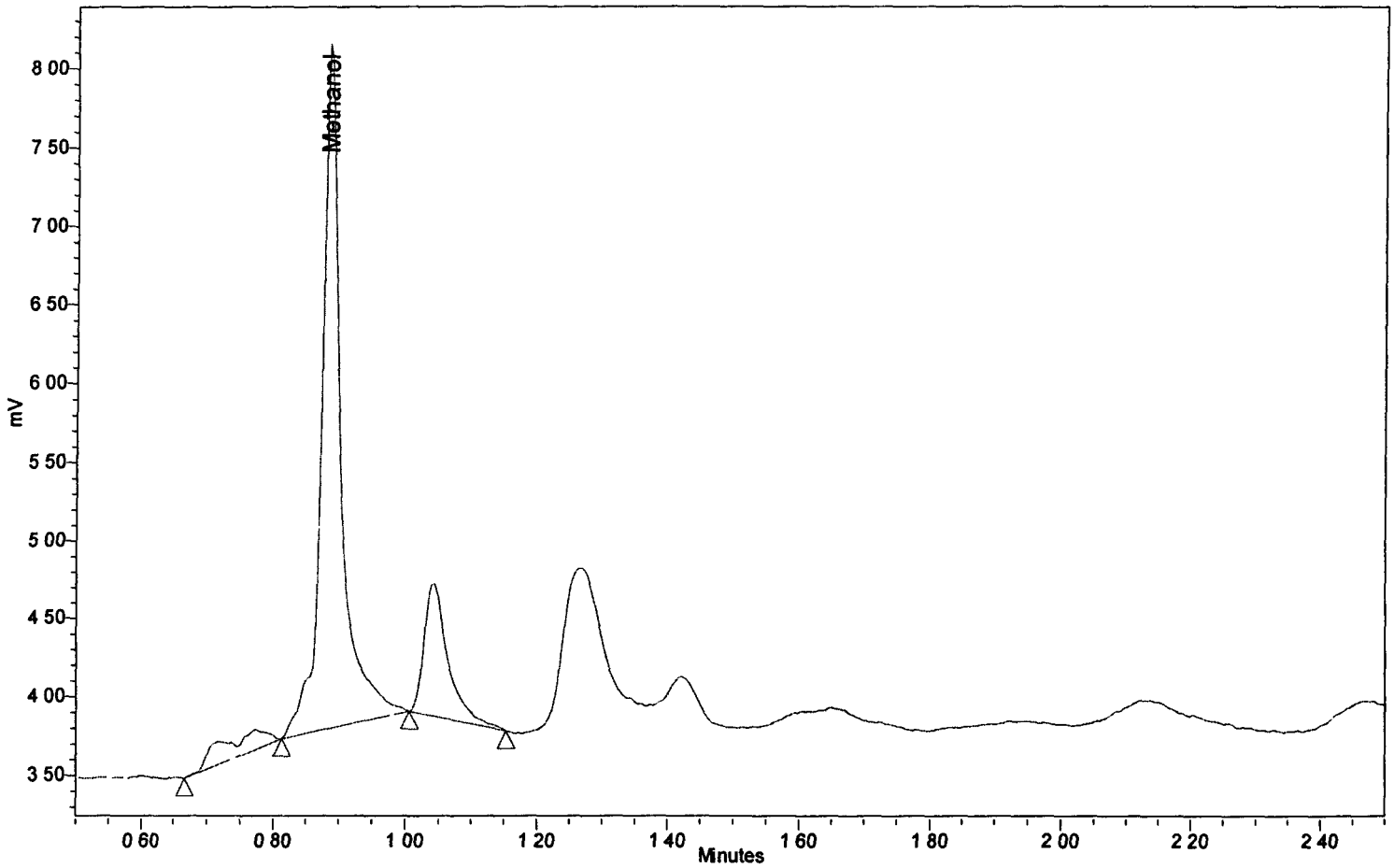
SDG 233192 010034

System Name GC15_SYS

Project Folder GC15_Project_2003

Injection Volume 2 0 ul

Dilution 1



PEAK AREA RESULTS

	Name	RT	Area	Height
1		0 719	685	145
2	Methanol	0 884	8936	4367
3		1 042	2130	851

90

Report Method Name KH_MEOH_SPL

Processing Method KH_ MEOH_25AUG_2003

Method 8015M ORGANIC ANALYTES DATA SHEET

Client Sample ID

GW10960ST

010035

Lab Name SwRI	Client KAISER HILL	Project 04756 02 003
Lab Code SwRI	Case # 03D2111	SDG 233192
Matrix Aqueous	Sample wt/vol 1 0 L	Lab Sample ID 233198
% Moisture 0	Decanted (Y/N) N	SwRI ID 233198
Extraction (SEPF/Cont/Sonc) NA		Date Analyzed 8/25/2003
Concentrated Extract Volume 1000 uL		Date Received 8/21/2003
Injection Volume 300 uL	pH NA	Date Extracted NA
GPC Cleanup (Y/N) N	Dilution Factor 1	

CAS NO		COMPOUND	CONCENTRATION UNITS ug/L	Q
74-84-0	---------	Ethane	3 69	U
74-85-1	---------	Ethene	3 43	U
74-82-8	---------	Methane	1 96	U

DATA REPORTING QUALIFIERS

U - Indicates compound was analyzed for but not detected at the reported concentration

91

03G0222H
version 03-10-03

SampleName 233198

Column HAYESEP Q 80/100 8'X1/8"

Column Conditions 90 Deg Isothermal

Dates Acquired 08/25/03 11 35 07

Injection Volume 300 ul

Client KIASER HILL
Project 04756 02 003
Method Analysis by GC-FID

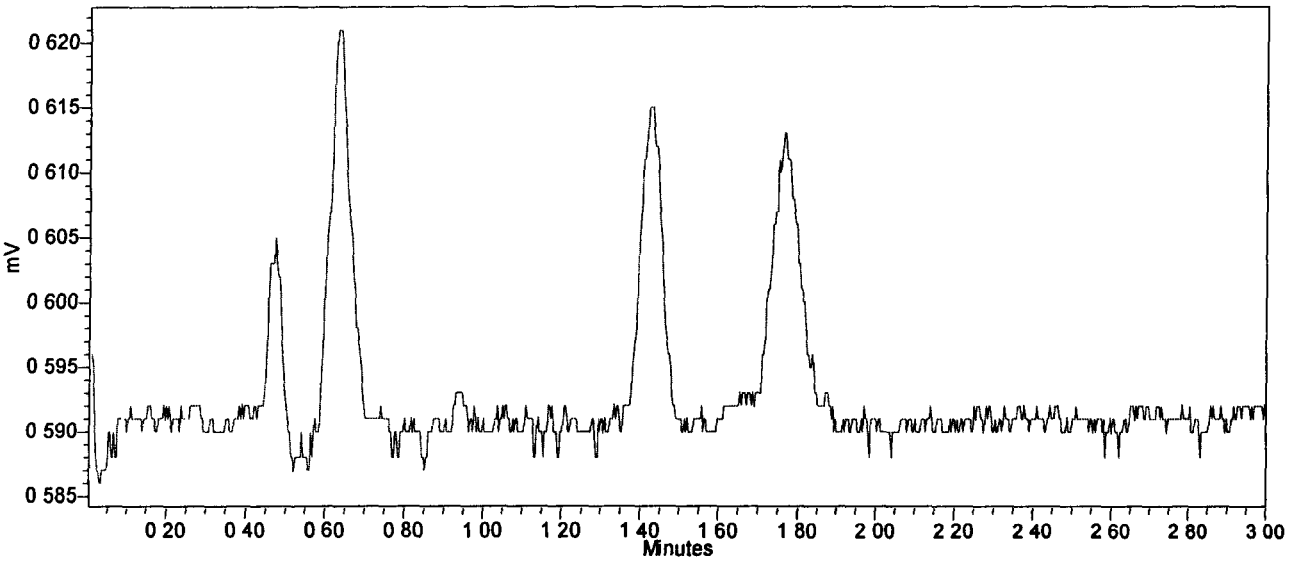
Client_ID GW10960ST

SDG 233192 Case 03D2111

System Name GC02_FID

Project Folder GC02_FID_2003

Chromatogram



Peak Results

	Name	RT	Area	Height
1	*Methane*	0 613		
2	*Ethene*	1 397		
3	*Ethane*	1 737		

92

Method 8015M ORGANIC ANALYTES DATA SHEET

Client Sample ID

GW10960ST

010037

Lab Name SwRI	Client KAISER HILL	Project 04756 02 003
Lab Code SwRI	Case # 03D2111	SDG 233192
Matrix Aqueous	Sample wt/vol 1 0 L	Lab Sample ID 233198
% Moisture 0	Decanted (Y/N) N	SwRI ID 233198
Extraction (SEPF/Cont/Sonc) DIR		Date Analyzed 8/25/2003
Concentrated Extract Volume 1000 uL		Date Received 8/21/2003
Injection Volume 2 0 uL	pH NA	Date Extracted NA
GPC Cleanup (Y/N) N	Dilution Factor 1	

CAS NO	COMPOUND	CONCENTRATION UNITS ug/L	Q
67-56-01 ———	Methanol	5000	U

U = Undetected

D = Dilution

DIR = Direct injection of sample

93

03G1525H
version 03-10-03

SampleName 233198

Date Acquired 08/25/03 16 34 26

Column RTX-502 2 30M w/packed precolumn

Column Conditions 50D-2 5Mn-25D/Mn-230D

CYCLES 21

Client: KAISER HILL
Project: 04756.02.003
Case#: 03D2111

Client_ID GW10960ST

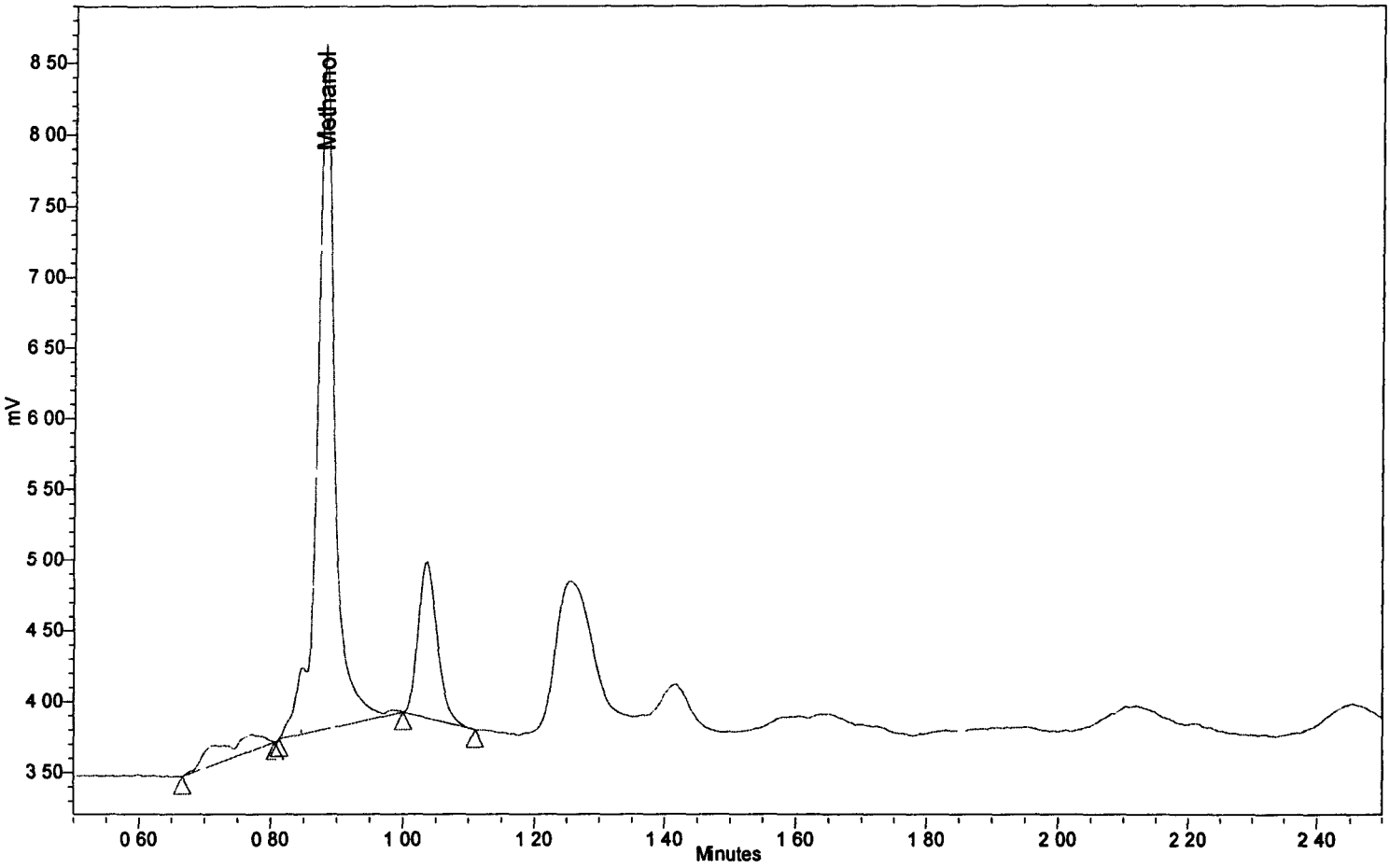
SDG 233192 010038

System Name GC15_SYS

Project Folder GC15_Project_2003

Injection Volume 2 0 ul

Dilution 1



PEAK AREA RESULTS

	Name	RT	Area	Height
1		0 715	643	136
2	Methanol	0 880	8858	4818
3		1 036	2212	1108

94

Report Method Name KH_MEOH_SPL

Processing Method KH_ MEOH_25AUG_2003

Method 8015M ORGANIC ANALYTES DATA SHEET

Client Sample ID

GW10954STMSD

010078

Lab Name SwRI	Client KAISER HILL	Project 04756 02 003
Lab Code SwRI	Case # 03D2111	SDG 233192
Matrix Aqueous	Sample wt/vol 1 0 L	Lab Sample ID 233193MSD
% Moisture 0	Decanted (Y/N) N	SwRI ID 233193MSD
Extraction (SEPF/Cont/Sonc) NA		Date Analyzed 8/25/2003
Concentrated Extract Volume 1000 uL		Date Received 8/21/2003
Injection Volume 300 uL	pH NA	Date Extracted NA
GPC Cleanup (Y/N) N	Dilution Factor 1	

CAS NO		COMPOUND	CONCENTRATION UNITS ug/L	Q
74-84-0	--------	Ethane	145	
74-85-1	--------	Ethene	160	
74-82-8	--------	Methane	77 0	

DATA REPORTING QUALIFIERS

U - Indicates compound was analyzed for but not detected at the reported concentration

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03G0222H
version 03-10-03

Method 8015M ORGANIC ANALYTES DATA SHEET

Client Sample ID

GW10954STMS

010075

Lab Name SwRI
Lab Code SwRI
Matrix Aqueous
% Moisture 0
Extraction (SEPF/Cont/Sonc) NA
Concentrated Extract Volume 1000 uL
Injection Volume 300 uL
GPC Cleanup (Y/N) N

Client KAISER HILL
Case # 03D2111
Sample wt/vol 1 0 L
Decanted (Y/N) N
pH NA
Dilution Factor 1

Project 04756 02 003
SDG 233192
Lab Sample ID 233193MS
SwRI ID 233193MS
Date Analyzed 8/25/2003
Date Received 8/21/2003
Date Extracted NA

CAS NO		COMPOUND	CONCENTRATION UNITS ug/L	Q
74-84-0	--------	Ethane	173	
74-85-1	--------	Ethene	189	
74-82-8	--------	Methane	91 8	

DATA REPORTING QUALIFIERS

U - Indicates compound was analyzed for but not detected at the reported concentration

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03G0222H
version 03-10-03

Method 8015M ORGANIC ANALYTES DATA SHEET

Client Sample ID

LCS_25AUG03

010072

Lab Name SwRI
Lab Code SwRI
Matrix Aqueous
% Moisture 0
Extraction (SEPF/Cont/Sonc) DIR
Concentrated Extract Volume 1000 uL
Injection Volume 2 0 uL
GPC Cleanup (Y/N) N

Client KAISER HILL
Case # 03D2111
Sample wt/vol 1 0 L
Decanted (Y/N) N
pH NA
Dilution Factor 1

Project 04756 02 003
SDG 233192
Lab Sample ID LCS_25AUG03
SwRI ID LCS_25AUG03
Date Analyzed 8/25/2003
Date Received NA
Date Extracted NA

CAS NO		COMPOUND	CONCENTRATION UNITS ug/L	Q
67-56-01	--------	Methanol	24200	

U = Undetected
D = Dilution
DIR = Direct injection of sample

97

03G1525H
version 03-10-03

Method 8015M ORGANIC ANALYTES DATA SHEET

Client Sample ID

LCS 25AUG03

010069

Lab Name SwRI	Client KAISER HILL	Project 04756 02 003
Lab Code SwRI	Case # 03D2111	SDG 233192
Matrix Aqueous	Sample wt/vol 1 0 L	Lab Sample ID LCS
% Moisture 0	Decanted (Y/N) N	SwRI ID LCS
Extraction (SEPF/Cont/Sonc) NA		Date Analyzed 8/25/2003
Concentrated Extract Volume 1000 uL		Date Received NA
Injection Volume 300 uL	pH NA	Date Extracted NA
GPC Cleanup (Y/N) N	Dilution Factor 1	

CAS NO		COMPOUND	CONCENTRATION UNITS ug/L	Q
74-84-0	---------	Ethane	140	
74-85-1	---------	Ethene	132	
74-82-8	---------	Methane	75 7	

DATA REPORTING QUALIFIERS

U - Indicates compound was analyzed for but not detected at the reported concentration

98/98