~~GEN PERMIT~~

**1044b UIC - EAST POPLAR OIL FIELD**
ENFORCEMENT CASE SDWA 1431
Folder ID: 13558 2002 Privileged

108-2 MURPHY MON. WELL SAMPLING DATA
RECEIVED AFTER OCTOBER 3, 2001

East Poplar Oil Field
Enforcement Case

Region 8
13558

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January 17, 2002

RECEIVED
JAN 18 2002
Office of Enforcement
Compliance & Environmental
Justice

Connally E. Mears, Director
Technical Enforcement Program
United States Environmental Protection Agency, Region 8
999 18th Street, Suite 300
Denver, CO 80202-2466

RE: Safe Drinking Water Act Emergency Administrative Order
Docket No. SDWA-8-2001-33
Document Production of Murphy Exploration & Production Company

Dear Mr. Mears:

Accompanying this letter are all documents identified by Murphy Exploration & Production Company as responsive to Paragraph 87(a) of the September 20, 2001 Order (as amended) referenced above. The deadline for submission of the accompanying information was extended through January 22, 2002, pursuant to your letter of January 4, 2002.

The information has been assembled in a manner which Murphy believes to be the most logical and useful for your agency's review. Separate files have been labeled to both identify and organize the produced information. The information has also been reviewed to insure not only that the copies of the produced information are as legible as possible, but also to eliminate any duplicative files or records. The files produced are:

December 2001 Sampling Field Forms and Analyses
November 2001 Sampling Field Forms and Analyses
October 2001 Sampling Field Forms and Analyses
September 2001 Sampling Field Forms and Analyses
July 2001 Sampling Field Forms and Analyses
July 2001 Sampling Chloride Data
November 2000 Sampling Field Forms and Analyses
December 2001 Static Water Level Data
November 2001 Static Water Level Data
October 2001 Static Water Level Data
September 2001 Static Water Level Data
July 2001 Static Water Level Data
June 2001 Static Water Level Data
July 2001 Aquifer Tests

Well Survey and Plat Maps
Well Log – MOC-1
Well Log – MOC-2
Well Log – MOC-3
Well Log – MOC-4
Well Log – MOC-5
Well Log – MOC-6
Well Log – MOC-7
Well Log – MOC-8
Well Log – MOC-9
Well Log – MOC-10
Well Log – MOC-11
Well Log – MOC-12
Well Log – MOC-13
Well Log – MOC-13D
Well Log – MOC-14
Well Log – MOC-15
Well Log – MOC-16
Well Log – MOC-17R
Well Log – MOC-18
Well Log – MOC-19R
Well Log – MOC-20-A
Well Log – MOC-20-B
Well Log – MOC-23

As to the Well Log files being produced, I should note that Murphy never drilled MOC-21 or MOC-22, although Murphy did drill MOC-23. This explains the gap which appears in the Well Log files. Also, the Well Logs for those wells drilled in December contain only a portion of the documents produced for those earlier drilled wells. The drilling documents for the December wells have not all been prepared, but when they are, we will provide such documents to you.

Murphy appreciates the accommodation of your Agency in extending the deadline for submission of the accompanying documents. If you have any questions relative to any of the documents, please feel free to contact the undersigned.

Very truly yours,

Michael E. Webster

MICHAEL E. WEBSTER

MEW:jss
enc.

# WATER SAMPLING & MONITORING RECORD

**SITE ID:** ~~MW~~ MOC-23

**HydroSolutions Inc, Billings, MT**

| | | | |
|---|---|---|---|
| Date: 12-17-01 | Arrival Time: 0833 | Purge Time: 09:13 - 10:15 = 62 min | Sampling Time: 1015 |
| Owner/ Operator: MURPHY OIL | | Address: Poplar | State: MT |
| Location Description: Spot: SENW, Sect. 10, T 28 (N) S, R 51 (E) W | | Describe: | |
| Water Source: (Well) Stream Spring Pond | | Other: | |
| Sampler's Name: Shaffer / Nitz | | Weather: Clear, sunny, mid-40°F | |
| Water Source Purpose (Use): Monitoring | | Cased TD: 42.60 ft. | Out Dia.: 2" ~~in~~ / Well Log ? (Y) N |
| Inside Casing Material: Sch 40 PVC | | | In Dia.: 2" ~~in~~ / Well Locked ? Y (N) |
| S.W.L. 25.50 ft. below ~~MP~~ TOP PVC | Casing: (Stickup) Flush | PVC MP Stickup: 2.00 ft. above Ground Level | Well Pad: Y (N) |
| Measuring Point (MP): Top 2" PVC - at 2.0' above GL. | | Elev. ____ ft | Aquifer: Wasta |

| Meter Type (Manuf.): | Model: | Calibrated: | Method: | Meter Type (Manuf.): | Model: | Calibrated: | Method: | Flow Rate: |
|---|---|---|---|---|---|---|---|---|
| pH: 9025 | Hanna | JOL 12/17 | Manuf. | SC: YSI | 85 | JOL 12/17 | check'd | |
| ORP/Eh: 9023 | Hanna | JOL 12/17 | Manuf. | DO: YSI | 85 | JOL 12/17 | 2000' Manuf | |
| Water Level Probe: | Solinst | | | Other Method: | | | | |

Bore Volume (R-in, TD & SWL-ft): 0.163 $R^2$(TD - SWL) = ____ Gallons

Purge Method: Whale pump @ 42.00' BTOPVC

| 24-Hr. Time: | Gallons | Minutes | Rate (gpm) | SC (mS/µS) | Temp. °C | DO (mg/l) | pH @ Temp.°C | Eh (mv) @ Temp.°C |
|---|---|---|---|---|---|---|---|---|
| 0913 - 0916 | 3 | 3 | 1 | Campus-tod | | | @ °C | @ °C |
| 0913 - 0918.5 min | 5 | 5.5 | 0.9 | | | | | |
| 0923 | | | | 10.08 mS | 9.5 | 8.27 | 7.34 @ 8.8 °C | 194.4 @ 9.1 °C |
| 0930 | | | | 9.83 m | 9.5 | 8.57 | 7.35 @ 8.7 °C | 230.5 @ 9.1 °C |
| 0940 | | | | 9.38 m | 9.5 | 8.17 | 7.36 @ 8.7 °C | 247.5 @ 9.1 °C |
| 0950 | | | | 9.04 m | 9.5 | 7.72 | 7.29 @ 8.7 °C | 252.5 @ 9.1 °C |
| 0952 - 0954.5 | 3 | 2.5 | 1.2 | — | — | — | — @ — °C | — |
| 1000 | | | | 9.98 m | 9.5 | 7.33 | 7.36 @ 8.7 °C | Unstable @ - °C |
| 1009 | | | | 8.98 m | 9.5 | 9.11 | 7.36 @ 8.7 °C | 231.5 @ 9.1 °C |
| 1015 | | | | 8.99 m | 9.5 | 6.95 | 7.36 @ 8.7 °C | 242.4 @ 9.1 °C |

Description of Water (color, odor, sediment, clarity, sheen, etc.): No hydrocarbon, No apparent salt taste on Solinst. Clear at initial purge, slightly salty taste during purge

| | | |
|---|---|---|
| Water Temperature: 9.5 °Celsius (DO meter) | DO 6.95 mg/l | Other Parameters & Results: |
| Alkalinity: — — | Salanity: — ppt | |
| Field SC: — — µmhos/cm @ ___ °C (Field Temperature) | | |
| Corrected SC: 8.99 mS ~~µmhos/cm~~ @ 25 °C | | |
| pH: 7.36 s.u. @ 8.7 °C | Eh: 242.4 mv @ 9.1 °C | |

Water Quality Samples: (Y) N

Sampling Method: Purge Pump and disposable bailer

Sample Type: (Grab) Composite

| Sample Containers (No.: Size & Type): | Filtering: | Preservative: | Handling: | Testing Parameters: |
|---|---|---|---|---|
| 1 : 500 ml, Poly | No | No | Cool to 4°C | |
| 2 : 250 ml, Poly | 1-YES 1-NO | $NH_3$ $H_2SO_4$ | | |
| 2 : 40 ml, Glass | No | HCl | as above | |

Decontamination: (Inorganic) (Organic)

Describe: New poly tubing. Potable water and bio soap wash and run-through. Potable water rinse run-through and DI water spray rinse

NOTES: First sampling since div development completed

Does Reverse Side Contains More Details? Yes (No)

Form Revised 10/24/01

0946.45 0949.15 3

# WATER SAMPLING & MONITORING RECORD

**SITE ID:** ~~MW~~- MOC-20B

**HydroSolutions Inc, Billings, MT**

| | | | |
|---|---|---|---|
| **Date:** 12-17-01 | **Arrival Time:** 1310 | **Purge Time:** 13:30 - 14:20 = 50 min | **Sampling Time:** 1420 |
| **Owner/ Operator:** Murphy Oil | | **Address:** Poplar | **State:** MT |
| **Location Description:** Spot; SENW, Sect. 21, T 21 (N) S, R 58 (E) W | | **Describe:** | |
| **Water Source:** (Well) Stream Spring Pond | | **Other:** | |
| **Sampler's Name:** Mark Nilz & J. Shaffer | | **Weather:** Clear, sli wind, mid 40°F | |
| **Water Source Purpose (Use):** Monitoring | | **TD:** Top PVC ____ . ____ ft. | **Out Dia.:** 2" **Well Log ?** (Y) N |
| **Inside Casing Material:** Schl 40 PVC | | | **In Dia.:** 2" **Well Locked ?** Y (N) |
| **S.W.L.** 69.97 ft. below MP. (Top PVC) | **Casing:** (Stickup) Flush (+2.1166') | **MP Stickup:** 2.11 ft. above Ground Level | **Well Pad:** Y (N) |
| **Measuring Point (MP):** Top of PVC Casing | | **Elev.** ____ ft | **Aquifer:** Wiota |

| Meter Type (Manuf.): | Model: | Calibrated: | Method: | Meter Type (Manuf.): | Model: | Calibrated: | Method: | Flow Rate: .75 gpm |
|---|---|---|---|---|---|---|---|---|
| pH: Hanna | 9025 | JOB 12/17 | Manuf | SC: YSI | 85 | JOB 12/17 | chk'd | |
| ORP/Eh: Hanna | 9023 | JOB 12/17 | Manuf | DO: YSI | 85 | JOB 12/17 | 2000' Manuf | |
| Water Level Probe: Solinst | | — | — | Other Method: | | | | |

**Bore Volume** (R-in, TD & SWL-ft): 0.163 $R^2$*(TD - SWL) = 74.3 Gallons **Purge Method:** Pump

| 24-Hr. Time: | Gallons | Minutes | Rate (gpm) | SC (mS/µS) | YSI Temp. °C | DO (mg/l) | pH @ Temp.°C | Eh (mv) @ Temp.°C |
|---|---|---|---|---|---|---|---|---|
| 1330 | 15 | 20 | .75 | 4140 | 9.6 | .56 | 6.96 @ 9.2 °C | -43.1 @ 9.3 °C |
| 1350 | 30 | 40 | .75 | 4000 | 9.6 | .38 | 7.02 @ 9.2 °C | -97.4 @ 9.3 °C |
| 1400 | 38 | 50 | .75 | 4003 | 9.6 | .34 | 7.02 @ 9.1 °C | -104.7 @ 9.2 °C |
| 1410 | 45 | 60 | .75 | 3984 | 9.6 | 0.28 | 7.02 @ 9.2 °C | -110.8 @ 9.3 °C |
| 1420 | 53 | 70 | .75 | 3974 | 9.6 | 0.26 | 7.03 @ 9.1 °C | -111.9 @ 9.3 °C |
| | | | | | | | @ °C | @ °C |

**Description of Water** (color, odor, sediment, clarity, sheen, etc.): Gray at start, no odor. some sediment. Clear @ 30 minutes

| | | |
|---|---|---|
| **Water Temperature:** 9.6 °Celsius | **DO** 0.26 mg/l | **Other Parameters & Results:** |
| **Alkalinity:** — — | **Salanity:** ____ ppt | |
| **Field SC:** — — µmhos/cm @ ____ °C (Field Temperature) | | |
| **Corrected SC:** 3974 µS ~~µmhos/cm~~ @ 25 °C | | |
| **pH:** 7.03 s.u. @ 9.1 °C | **Eh:** -111.9 mv @ 9.3 °C | |

**Water Quality Samples:** (Y) N **Sampling Method:** Purge Pump / PVC bailer for VOCs **Sample Type:** (Grab) Composite

| Sample Containers (No.: Size & Type): | Filtering: | Preservative: | Handling: | Testing Parameters: |
|---|---|---|---|---|
| 1 : 500 ml, plas | No | No | Chill | Cations |
| 2 : 250 ml, plas | NO<br>Yes | $H_2SO_4$<br>$HNO_3$ | " | N + N<br>Diss Fe |
| 2 : 40 ml, glass | NO | HCl | " | VOH |

| | | |
|---|---|---|
| **Decontamination** | (Inorganic) (Organic) | **Describe:** New poly tubing. Potable water and bio-soap wash and run-through. Potable water run-through rinse followed by DI water rinse |

**NOTES:** First sampling event since well drilled and developed by air compressor

Does Reverse Side Contains More Details? Yes (No)

*Form Revised 10/24/01*

Not Sampled at this time

# WATER SAMPLING & MONITORING RECORD

**SITE ID:** M[redacted]X - 20A

**HydroSolutions Inc, Billings, MT**

| | | | |
|---|---|---|---|
| Date: 12/18/11 | Arrival Time: 1010 | Purge Time: 10 :40 - : = : min | Sampling Time: Not Sampled |
| Owner/ Operator: Murphy Oil Corp | | Address: Poplar | State: MT |
| Location Description: Spot; NWSE, Sect. 11, T28 (N) S, R51 (E) W Describe: | | | |
| Water Source: (Well) Stream Spring Pond | | Other: | |
| Sampler's Name: M. Nitz | | Weather: Cool, Chilly, Sunny very little breeze | |
| Water Source Purpose (Use): Monitoring | | TD: ~~69~~ 70.3 ft. | Out Dia.: . ft. / Well Log ? (Y) N |
| Inside Casing Material: PVC Csg | | | In Dia.: . ft. / Well Locked ? Y (N) |
| S.W.L. 34.10 ft. below MP. | Casing: (Stickup) Flush | MP Stickup: 1.58 ft. above Ground Level | Well Pad: Y (N) |
| Measuring Point (MP): TOPC | | Elev. ft | Aquifer: Till |

| Meter Type (Manuf.): | Model: | Calibrated: | Method: | Meter Type (Manuf.): | Model: | Calibrated: | Method: | Flow Rate: 2.0 gpm |
|---|---|---|---|---|---|---|---|---|
| pH: | | | | SC: | | | | |
| ORP/Eh: | | | | DO: | | | | |
| Water Level Probe: | | | | Other Method: | | | | |

Bore Volume (R-in, TD & SWL-ft): 0.163 $R^2$*(TD - SWL)*3 = 70 Gallons | Purge Method: Pump

| 24-Hr. Time: | Gallons | Minutes | Rate (gpm) | SC (mS µS) | Temp. °C | DO (mg/l) | pH @ Temp.°C | Eh (mv) @ Temp.°C |
|---|---|---|---|---|---|---|---|---|
| [redacted] 1050 | No | readings | taken. | Pump | Stopped | !! | @ °C | @ °C |
| | | | | | | | @ °C | @ °C |
| | | | | | | | @ °C | @ °C |
| | | | | | | | @ °C | @ °C |
| | | | | | | | @ °C | @ °C |

Description of Water (color, odor, sediment, clarity, sheen, etc.): Muddy brown. Lots of sediment. No odor. Translucent @ 5mm.

| | | |
|---|---|---|
| Water Temperature: °Celsius | DO mg/l | Other Parameters & Results: |
| Alkalinity: | Salanity: ppt | |
| Field SC: µmhos/cm @ °C (Field Temperature) | | |
| Corrected SC: µmhos/cm @ 25 °C | | |
| pH: s. u. @ °C | Eh: mv @ °C | |

| | | |
|---|---|---|
| Water Quality Samples: Y (N) | Sampling Method: | Sample Type: Grab Composite |
| Sample Containers (No.: Size & Type): | Filtering: Preservative: Handling: Testing Parameters: | |
| : ml, | | |
| : ml, | | |
| : ml, | | |

| | | |
|---|---|---|
| Decontamination | Inorganic (Organic) | Describe: $H_2O$ & soap wash w/ potable water rinse for pump. Quick rinse w/ distilled water |

NOTES: Did not sample this well at this time or date. [illegible] well [illegible].

Does Reverse Side Contains More Details? Yes (No)

*Form Revised 10/24/01*

# WATER SAMPLING & MONITORING RECORD

**SITE ID:** MW- 20A

**HydroSolutions Inc, Billings, MT**

| | | | |
|---|---|---|---|
| **Date:** 12/19/01 | **Arrival Time:** | **Purge Time:** ___:___ - ___:___ = ___:___ min | **Sampling Time:** 1325 |
| **Owner/ Operator:** Murphy Oil Corp | | **Address:** Poplar | **State:** MT |
| **Location Description:** Spot; NWSE, Sect. 20, T 28 (N) S, R 51 (E) W | | **Describe:** | |
| **Water Source:** (Well) Stream Spring Pond | | **Other:** | |
| **Sampler's Name:** M. Nitz | | **Weather:** Chilly, windy Partly cloudy | |
| **Water Source Purpose (Use):** Monit. | | **TD:** 70.35 ft. **Out Dia.:** 2" ft. | **Well Log ?** (Y) N |
| **Inside Casing Material:** PVC | | **In Dia.:** 2" ft. | **Well Locked ?** Y (N) |
| **S.W.L.** 34.85 ft. below MP. | **Casing:** Stickup Flush | **MP Stickup:** 1.58 ft. above Ground Level | **Well Pad:** Y (N) |
| **Measuring Point (MP):** TOPC | | **Elev.** ___ ft | **Aquifer:** Till |

| Meter Type (Manuf.): | Model: | Calibrated: | Method: | Meter Type (Manuf.): | Model: | Calibrated: | Method: | Flow Rate: |
|---|---|---|---|---|---|---|---|---|
| pH: HI | 9025 | 12/18/01 | 2 point | SC: YSI | 85 | | | |
| ORP/Eh: Hanna | 9023 | — | — | DO: YSI | 85 | 2000' | | |
| Water Level Probe: Solinst | | | | Other Method: | | | | |

**Bore Volume** (R-in, TD & SWL-ft): 0.163 $R^2$*(TD - SWL) = ___ Gallons **Purge Method:** Bailer

| 24-Hr. Time: | Gallons | Minutes | Rate (gpm) | SC (mS µS) | Temp. °C | DO (mg/l) | pH @ Temp.°C | Eh (mv) @ Temp.°C |
|---|---|---|---|---|---|---|---|---|
| 1325 | | | | 5.75 | 9.5° | 10.03 | 7.90 @ 8.5 °C | 253.7 @ 8.5 °C |
| | | | | | | | @ °C | @ °C |
| | | | | | | | @ °C | @ °C |
| | | | | | | | @ °C | @ °C |
| | | | | | | | @ °C | @ °C |

**Description of Water** (color, odor, sediment, clarity, sheen, etc.): Brown, some sediment No odor

| | | |
|---|---|---|
| **Water Temperature:** 9.5 °Celsius | **DO** 10.03 mg/l | **Other Parameters & Results:** |
| **Alkalinity:** — — | **Salanity:** — ppt | |
| **Field SC:** — — µmhos/cm @ ___ °C (Field Temperature) | | |
| **Corrected SC:** 5.75 mS µmhos/cm @ 25 °C | | |
| **pH:** 7.90 s. u. @ 8.5 °C | **Eh:** 253.7 mv @ 8.5 °C | |

**Water Quality Samples:** (Y) N **Sampling Method:** Bailer **Sample Type:** (Grab) Composite

| Sample Containers (No.: Size & Type): | Filtering: | Preservative: | Handling: | Testing Parameters: |
|---|---|---|---|---|
| 1 : 500 ml, plas | No | None | Cool | Common |
| 1 : 500 ml, plas | ~~No~~ no No | HNO3 H2SO4 | " | Total diss Metals - 12/26 Instructed lab U.C. to analyze Bicarbs N+N |
| 1 : 40 ml, glass | No | HCl | " | VOH Samples NOT filtered AOS 12/26 |

| Decontamination | Inorganic / Organic | Describe: |
|---|---|---|
| | | Rinsed & washed WL meter. Rinsed meters w/ distilled. Threw away bailer & cord. |

**NOTES:** 2 min 10 sec to recover 6.10 ft. Bailed well dry 3 times; waited for recovery then sampled. Had no way to filter Diss Fe Sample

Does Reverse Side Contains More Details? Yes (No)

Form Revised 10/24/01

# WATER SAMPLING & MONITORING RECORD

**SITE ID:** MW- MOC-13

**HydroSolutions Inc, Billings, MT**

| | | | |
|---|---|---|---|
| Date: 12/19/01 | Arrival Time: 1415 | Purge Time: 12:25-13:30 = :65 min | Sampling Time: 1330 |
| Owner/ Operator: Murphy Oil | | Address: Poplar | State: MT |
| Location Description: Spot; CN/2NE, Sect. 10, T 28 N S, R 51 E W | | Describe: | |
| Water Source: (Well) Stream Spring Pond | | Other: | |
| Sampler's Name: M. Nitz | | Weather: Chilly. no wind. Clear | |
| Water Source Purpose (Use): Monit. | | TD: 50. ft. | Out Dia.: 2" ft. / Well Log ? (Y) N |
| Inside Casing Material: PVC | | | In Dia.: 2" ft. / Well Locked ? (Y) N |
| S.W.L. 36.98 ft. below MP. | Casing: (Stickup) Flush | MP Stickup: 2.83 ft. above Ground Level | Well Pad: (Y) N |
| Measuring Point (MP): TOPC | | Elev. ____ ft | Aquifer: Qw |

| Meter Type (Manuf.): | Model: | Calibrated: | Method: | Meter Type (Manuf.): | Model: | Calibrated: | Method: | Flow Rate: 0.75 |
|---|---|---|---|---|---|---|---|---|
| pH: Hanna | 9025 | 12/18/01 | 2 point | SC: YSI | 85 | | | |
| ORP/Eh: Hanna | 9023 | | | DO: YSI | 85 | 2000' | | |
| Water Level Probe: Solinst | | | | Other Method: | | | | |

Bore Volume (R-in, TD & SWL-ft): 0.163 $R^2$*(TD - SWL) x3 = 25.4 Gallons | Purge Method: Pump

| 24-Hr. Time: | Gallons | Minutes | Rate (gpm) | SC (mS) µS) | Temp. °C | DO (mg/l) | pH @ Temp.°C | Eh (mv) @ Temp.°C |
|---|---|---|---|---|---|---|---|---|
| 1515 | 37.5 | 50 | .75 | 37.55 mS | 14.9 | 0.10 | 7.63 @ 14.4°C | -213.9 @ 14.5°C |
| 1520 | 41.25 | 55 | .75 | 37.59 | 14.9 | 0.08 | 7.68 @ 14.5°C | -221.4 @ 14.5°C |
| 1525 | 45 | 60 | .75 | [illegible] | [illegible] | [illegible] | 7.70 @ 14.4°C | -228 @ 14.5°C |
| 1530 | 48.75 | 65 | .75 | 37.40 | 14.9 | 0.07 | 7.70 @ 14.3°C | -235.2 @ 14.5°C |
| | | | | | | | @ °C | @ °C |

Description of Water (color, odor, sediment, clarity, sheen, etc.): Dark grey color. Strong sour gas odor and some suspended sediments (organic bottom ooze).

| | | |
|---|---|---|
| Water Temperature: 14.9 °Celsius | DO 0.07 mg/l | Other Parameters & Results: |
| Alkalinity: — — | Salanity: — ppt | |
| Field SC: — — µmhos/cm @ — °C (Field Temperature) | | |
| Corrected SC: 37.40 µS ~~µmhos/cm~~ @ 25 °C | | |
| pH: 7.70 s. u. @ 14.3 °C | Eh: -235.2 mv @ 14.5 °C | |

| | | |
|---|---|---|
| Water Quality Samples: (Y) N | Sampling Method: Pump / PVC bailer for VOA. | Sample Type: (Grab) Composite |

| Sample Containers (No.: Size & Type): | Filtering: | Preservative: | Handling: | Testing Parameters: |
|---|---|---|---|---|
| 1 : 500 ml, plas | No | none | chill | cations |
| 2 : 250 ml, plas | Yes / No | $HNO_3$ / $H_2SO_4$ | " / " | Diss Fe / N+N |
| 4 : 40 ml, glass | No | none | " | VPH |

| | | |
|---|---|---|
| Decontamination | (Inorganic) Organic | Describe: Soap & water then rinse. Distilled water rinse on meters. Solinst soap & water & rinse. |

NOTES: Product sample contained 0.01 ft of product on top of water column.

Does Reverse Side Contains More Details? Yes (No)

*Form Revised 10/24/01*

# WATER SAMPLING & MONITORING RECORD

**SITE ID:** M[redacted]OC - 19R

**HydroSolutions Inc, Billings, MT**

| | | | |
|---|---|---|---|
| Date: 12/18/01 | Arrival Time: | Purge Time: 14:00 - 16:15 = 135 min | Sampling Time: 1615 |
| Owner/ Operator: Murphy Oil Corp | | Address: Poplar | State: MT |
| Location Description: Spot; C, Sect. 9, T 28 (N) S, R 51 (E) W | | Describe: | |
| Water Source: (Well) Stream Spring Pond | | Other: | |
| Sampler's Name: M. Nitz | | Weather: Cold ~ 35° F breezy, clear sky | |
| Water Source Purpose (Use): Monitoring well | | TD: 118. ft. | Out Dia.: 2" ft. / Well Log ? (Y) N |
| Inside Casing Material: PVC | | | In Dia.: 2" / Well Locked ? Y (N) |
| S.W.L. 76.03 ft. below MP. | Casing: (Stickup) Flush | MP Stickup: 1.85 ft. above Ground Level | Well Pad: Y (N) |
| Measuring Point (MP): TOSC | | Elev. ft | Aquifer: Qal |

| Meter Type (Manuf.): | Model: | Calibrated: | Method: | Meter Type (Manuf.): | Model: | Calibrated: | Method: | Flow Rate: 0.75 gpm |
|---|---|---|---|---|---|---|---|---|
| pH: Hanna | 9025C | 12/18/01 | 2 point | SC: YSI | 85 | Manuf. | | |
| ORP/Eh: Hanna | 9023 | | | DO: YSI | 85 | to 2000' | | |
| Water Level Probe: Solinst | — | — | — | Other Method: | | | | |

Bore Volume (R-in, TD & SWL-ft): 0.163 $R^2$(TD - SWL) = 82 Gallons — Purge Method: Pump

| 24-Hr. Time: | Gallons | Minutes | Rate (gpm) | SC (mS) µS) | YSI Temp. °C | DO (mg/l) | pH @ Temp.°C | Eh (mv) @ Temp.°C |
|---|---|---|---|---|---|---|---|---|
| 1410 | 7.5 | 10 | .75 | 13.09 mS | 9.3 | 4.77 | 7.33 @ 8.6 °C | 124.2 @ 8.8 °C |
| 1445 | 33.75 | 45 | .75 | 12.93 | 9.3 | 3.13 | 7.25 @ 8.6 °C | -0.9 @ 8.9 °C |
| 1515 | 56.25 | 75 | .75 | 13.14 | 9.3 | 2.40 | 7.22 @ 8.6 °C | -20.3 @ 8.9 °C |
| 1545 | 78.75 | 105 | .75 | 13.00 | 9.3 | 1.52 | 7.30 @ 8.4 °C | -32.2 @ 8.8 °C |
| 1615 | 101.25 | 135 | .75 | 12.98 | 9.3 | 1.50 | 7.31 @ 8.4 °C | -30.3 @ 8.8 °C |

Description of Water (color, odor, sediment, clarity, sheen, etc.): gray-brown, translucent. No odor. ~~Planing~~ Clearing slightly at 5 minutes. Clearing more @ 15 minutes. Silty sand sediment

| | | |
|---|---|---|
| Water Temperature: 9.3 °Celsius | DO 1.50 mg/l | Other Parameters & Results: |
| Alkalinity: — — | Salanity: — ppt | |
| Field SC: — — µmhos/cm @ ___ °C (Field Temperature) | | |
| Corrected SC: 1298 ___ µmhos/cm @ 25 °C | | |
| pH: 7.31 s. u. @ 8.4 °C | Eh: -30.3 mv @ 8.8 °C | |

| | | |
|---|---|---|
| Water Quality Samples: (Y) N | Sampling Method: pump / PVC bailer for VPH | Sample Type: (Grab) Composite |

| Sample Containers (No.: Size & Type): | Filtering: | Preservative: | Handling: | Testing Parameters: |
|---|---|---|---|---|
| 1 : 500 ml, plastic | No | none | chill | Commons |
| 2 : 250 ml, plastic | Yes | $HNO_3$ | " | diss Fe |
| | No | $H_2SO_4$ | " | N+N |
| 2 : 40 ml, glass | No | HCl | " | VPH |

| | | |
|---|---|---|
| Decontamination | (Inorganic) (Organic) | Describe: Soap & water wash pump. Distilled water rinse. Rinsed meters w/ distilled. |

NOTES:

Does Reverse Side Contains More Details? Yes (No)

*Form Revised 10/24/01*

# WATER SAMPLING & MONITORING RECORD

**SITE ID:** MW- MOC -13D

**HydroSolutions Inc, Billings, MT**

| | | | |
|---|---|---|---|
| **Date:** 12/20/01 | **Arrival Time:** 0900 | **Purge Time:** 09:05-10:35 = : 90 min | **Sampling Time:** 1035 |
| **Owner/ Operator:** Murphy Oil Corp | | **Address:** | **State:** MT |
| **Location Description:** Spot; CN/2NE, Sect. 10, T 28 N S, R 51 E W | | Describe: | |
| **Water Source:** (Well) Stream Spring Pond | | **Other:** ~20' N ~20' W of MOC-13 | |
| **Sampler's Name:** M. Nitz / | | **Weather:** Chilly ~25° | |
| **Water Source Purpose (Use):** Monitoring | | **TD:** 55.00 ft. | **Out Dia.:** 2" ft. / **Well Log ?** (Y) N |
| **Inside Casing Material:** PVC | | | **In Dia.:** 2" ft. / **Well Locked ?** Y (N) new |
| **S.W.L.** 35.35 ft. below MP. | **Casing:** (Stickup) Flush | **MP Stickup:** 1.28 ft. above Ground Level | **Well Pad:** Y (N) |
| **Measuring Point (MP):** TOPC | | | **Elev.** ____ ft / **Aquifer:** Qw |

| Meter Type (Manuf.): | Model: | Calibrated: | Method: | Meter Type (Manuf.): | Model: | Calibrated: | Method: | Flow Rate: 1.0 |
|---|---|---|---|---|---|---|---|---|
| pH: Hanna | 9025 | 12/18/01 | 2 point | SC: YSI | 85 | " | | |
| ORP/Eh: Hanna | 9023 | " | | DO: YSI | 85 | to 2000' | | |
| Water Level Probe: Solinst | | | | Other Method: | | | | |

**Bore Volume** (R-in, TD & SWL-ft): 0.163 $R^2$(TD - SWL) = 12.8 Gallons x 3 = 38.4 **Purge Method:** Pump

| 24-Hr. Time: | Gallons | Minutes | Rate (gpm) | SC (mS µS) | Temp. °C (YSI) | DO (mg/l) | pH @ Temp.°C | Eh (mv) @ Temp.°C |
|---|---|---|---|---|---|---|---|---|
| 1020 | 75 | 75 | 1.0 | 34.13 mS | 15.0 | 0.14 | 7.61 @14.5°C | -278.1 @14.7°C |
| 1023 | 78 | 78 | 1.0 | 35.96 mS | 15.0 | 0.11 | 7.61 @14.5°C | -279.5 @14.6°C |
| 1030 | 85 | 85 | 1.0 | 35.30 mS | 15.1 | 0.07 | 7.62 @14.5°C | -298.5 @14.6°C |
| 1035 | 90 | 90 | 1.0 | 35.69 mS | 15.1 | 0.07 | 7.62 @14.5°C | -305.4 @14.6°C |
| | | | | | | | @ °C | @ °C |

**Description of Water** (color, odor, sediment, clarity, sheen, etc.): Medium gray, almost opaque. $H_2S$ odor.

| | | |
|---|---|---|
| **Water Temperature:** 15° °Celsius | **DO** 0.07 mg/l | **Other Parameters & Results:** |
| **Alkalinity:** — — | **Salanity:** — ppt | |
| **Field SC:** — — µmhos/cm @ — °C (Field Temperature) | | |
| **Corrected SC:** 35.69 mS ~~µmhos/cm~~ @ 25 °C | | |
| **pH:** 7.62 s. u. @ 14.5 °C | **Eh:** 305.4 mv @ 14.6 °C | |

| | | |
|---|---|---|
| **Water Quality Samples:** (Y) N | **Sampling Method:** Sampled from pump except for VOA's which were bailed. | **Sample Type:** (Grab) Composite |

| Sample Containers (No.: Size & Type): | Filtering: | Preservative: | Handling: | Testing Parameters: |
|---|---|---|---|---|
| 1 : 500 ml, glass | No | [illegible] | [illegible] | [illegible] |
| 2 : 250 ml, glass | Yes / No | [illegible] | [illegible] | [illegible] / N+N |
| 2 : 40 ml, glass | No | HCl | [illegible] | VOA |

| | | |
|---|---|---|
| **Decontamination** | (Inorganic) (Organic) | **Describe:** Soap & water / Rinse |

**NOTES:**

Does Reverse Side Contains More Details? Yes (No)

*Form Revised 10/24/01*

# WATER SAMPLING & MONITORING RECORD

**SITE ID:** MW- MOC-17R

**HydroSolutions Inc, Billings, MT**

| | | | |
|---|---|---|---|
| Date: 12/20/01 | Arrival Time: 1110 | Purge Time: 11:26-12:34 = 68 min | Sampling Time: 1235 |
| Owner/ Operator: MURPHY OIL | | Address: Poplar | State: MT |
| Location Description: Spot; CE/2 NE, Sect. 10, T21 (N) S, R 58 (E) W | | Describe: | |
| Water Source: (Well) Stream Spring Pond | | Other: | |
| Sampler's Name: J. Shaffer ~~H Nile~~ | | Weather: Cold, no wind, | |
| Water Source Purpose (Use): Monitoring | | Cased TD: 54.45 ft. | Out Dia.: 0.50 ft. / Well Log ? (Y) N |
| Inside Casing Material: Sch/ 40 PVC | | | In Dia.: 2 in / Well Locked ? Y (N) New |
| S.W.L. 32.66 ft. below MP. | Casing: (Stickup) Flush | MP Stickup: 2.40 ft. above Ground Level | Well Pad: (Y) N |
| Measuring Point (MP): Top of Steel Prot Casing | | | Elev. ____ ft / Aquifer: Water |

| Meter Type (Manuf.): | Model: | Calibrated: | Method: | Meter Type (Manuf.): | Model: | Calibrated: | Method: | Flow Rate: 1.0 gpm |
|---|---|---|---|---|---|---|---|---|
| pH: Hanna | | 12/19 | | SC: YSI | 85 | 12/19 | | |
| ORP/Eh: Hanna | | 12/19 | | DO: YSI | 85 | 12/19 | | |
| Water Level Probe: Solinst | — | — | | Other Method: | | | | |

Bore Volume ~~(R in, TD & SWL ft): 0.163 R² (TD - SWL)~~ (54.45 - 32.66) × 0.1719 = 3.7 Gallons × 3 = 11.1 g | Purge Method: Whale Pump @ Cased TD

| 24-Hr. Time: | Gallons | Minutes | Rate (gpm) | SC (mS) µS) | Temp. °C | DO (mg/l) | pH @ Temp.°C | Eh (mv) @ Temp.°C |
|---|---|---|---|---|---|---|---|---|
| 11:26 - 12:00 | 44.2 | 34 | 1.3 | — | — | — | — @ — | — @ — |
| 12:00 - 12:03 | 4 | 3 | 1.33 | — | — | — | — @ — °C | — @ — °C |
| 1207 | — | — | — | 27.04 m | 9.5 | 2.99 | 7.23 @ 8.9 | 63.9 @ 9.1 |
| 1212 | — | — | — | 27.16 m | 9.5 | 2.91 | 7.25 @ 9.0 °C | 73.0 @ 9.0 °C |
| 1214:30 - 1217:00 | 3 | 2.5 | 1.2 | — | — | — | — @ — | — @ — |
| 1220 | — | — | — | 27.23 m | 9.5 | 2.82 | 7.26 @ 9.0 °C | 70.1 @ 9.0 °C |
| 1226 | — | — | — | 27.30 m | 9.5 | 2.79 | 7.19 @ 9.0 | 74.1 @ 9.0 |
| 1231 | — | — | — | 27.30 m | 9.5 | 2.76 | 7.25 @ 9.0 °C | 75.9 @ 9.0 °C |
| 1232:00 - 1234 | 2 | 2 | 1.0 | — | — | — | — @ — °C | — @ — °C |

Description of Water (color, odor, sediment, clarity, sheen, etc.): Clear, Salty Taste, No odor

| | | |
|---|---|---|
| Water Temperature: 9.5 °Celsius | DO 2.76 mg/l | Other Parameters & Results: |
| Alkalinity: — — | Salanity: — ppt | |
| Field SC: — — µmhos/cm @ — °C (Field Temperature) | | |
| Corrected SC: 27.30 mS ~~µmhos/cm~~ @ 25 °C | | |
| pH: 7.25 s. u. @ 9.0 °C | Eh: 75.9 mv @ 9.0 °C | |

Water Quality Samples: (Y) N | Sampling Method: VOAs collected disposable poly bailer; others collected pump bleed line | Sample Type: (Grab) Composite

| Sample Containers (No.: Size & Type): | Filtering: | Preservative: | Handling: | Testing Parameters: |
|---|---|---|---|---|
| 1 : 500 ml, Poly | RAW | NONE | Cool to 4°C | |
| 2 : 250 ml, Poly | 1-F<br>1-UF | Nitric<br>sulfuric | ,, | filter 45 micron |
| 2 : 40 ml, Glass | 2-UF | HCl | ,, | |

Decontamination: (Inorganic) (Organic) | Describe: Potable water + biodeg soap (Non phos) then rinsed Potable water and rinse with distilled water. New bailer and cord

NOTES:

Does Reverse Side Contains More Details? Yes (No)

*Form Revised 10/24/01*

Resampled for VOAs

# WATER SAMPLING & MONITORING RECORD

**SITE ID:** ~~MW~~- MOC - 19R

**HydroSolutions Inc, Billings, MT**

| | | | |
|---|---|---|---|
| Date: 12-20-01 | Arrival Time: ~1345 | Purge Time: 13:50 - 14:45 = 55 min | Sampling Time: 1445 |
| Owner/ Operator: MURPHY OIL | | Address: Poplar | State: MT |
| Location Description: Spot; C, Sect. 9, T21 (N) S, R58 (E) W | | Describe: | |
| Water Source: (Well) Stream Spring Pond | | Other: | |
| Sampler's Name: Jim Shaffer | | Weather: Clear, Sunny, No Wind, T ~ mid-upper 30's | |
| Water Source Purpose (Use): Monitoring | | Cased TD: 114.- ft. | Out Dia.: 5 ft. / Well Log ? (Y) N |
| Inside Casing Material: Sch. 40 PVC (PVC to Steel = 0.81') | | In Dia.: 2" | Well Locked ? Y (N) |
| S.W.L. 76.04 ft. below MP. | Casing: (Stickup) Flush | TOSC MP Stickup: 2.73 ft. above Ground Level | Well Pad: (Y) N |
| Measuring Point (MP): Top of Steel Protective Cg. | | Elev. ____ ft | Aquifer: Wiston |

| Meter Type (Manuf.): | Model: | Calibrated: | Method: | Meter Type (Manuf.): | Model: | Calibrated: | Method: | Flow Rate: |
|---|---|---|---|---|---|---|---|---|
| pH: — | — | — | — | SC: YSI | 85 | 12/19/01 | by M.Nitz | |
| ORP/Eh: — | — | — | — | DO: YSI | 85 | 12/19/01 | by M.Nitz | to 2000' |
| Water Level Probe: | Solinst | N/A | — | Other Method: | | | | |

Bore Volume ~~(R in, TD & SWL ft)×0.163 R² (TD - SWL)~~ 114 - 76 = 38' × 0.179/ft = = 6.5 Gallons × 3 = 20 g

Purge Method: Staged Whole pumps - dbl @ 100 & dbl @ 80'

| 24-Hr. Time: | Gallons | Minutes | Rate (gpm) | SC (mS/µS) | Temp. °C | DO (mg/l) | pH @ Temp.°C | Eh (mv) @ Temp.°C |
|---|---|---|---|---|---|---|---|---|
| 1350 | START PURGE | | | — | — | — | — @ — °C | — @ — °C |
| 1428 1429.15 | 1 | 1.25 | 0.8 | — | — | — | — @ — °C | — @ — °C |
| 1428 - 1433.40 | 5 | 5.66 | 0.88 | — | — | — | — @ — °C | — @ — °C |
| 1436 | / | / | / | 13.05 | 9.3 | 0.20 | — @ — °C | — @ — °C |
| 1440 | | | | 12.97 | 9.2 | 0.16 | — @ — °C | — @ — °C |
| 1445 | | | | 12.97 | 9.2 | 0.15 | — @ — °C | — @ — °C |
| | | | | | | | @ °C | @ °C |

Description of Water (color, odor, sediment, clarity, sheen, etc.): Slightly milky, cloudy at start. Turn to lt. brown then clear after 10 min purge

| | | |
|---|---|---|
| Water Temperature: 9.2 °Celsius | DO 0.15 mg/l | Other Parameters & Results: |
| Alkalinity: — — | Salanity: 7.4 ppt | |
| Field SC: — — µmhos/cm @ ___°C (Field Temperature) | | |
| Corrected SC: 12.97 mS ~~µmhos/cm~~ @ 25 °C | | |
| pH: — s. u. @ — °C | Eh: — mv @ — °C | |

| | | |
|---|---|---|
| Water Quality Samples: Y N | Sampling Method: 250 ml - from pump discharge tubing; 40 ml - clean disposable bailer (poly) | Sample Type: (Grab) Composite |

| Sample Containers (No.: Size & Type): | Filtering: | Preservative: | Handling: | Testing Parameters: |
|---|---|---|---|---|
| 2 : 250 ml, Poly | NF | RAW | UF - Cool to 4°C | commons? |
| 2 : 40 ml, Glass | NF | HCl | UF - Cool to 4°C | VPH |
| — : — ml, — | | | | |

| Decontamination | Inorganic | Describe: |
|---|---|---|
| | (Organic) | New poly tubing except for 30' what had been previously used at MOC-17 on 12/20. Whole purge pumps w/ Potable Water, Bio-soap, Potable Wtr. Rinse & DI Water Rinse |

* NOTES: This sample of 40 ml collected to replace samples from 12/18/01 that froze and broke night of 12/19/01

Does Reverse Side Contains More Details? Yes (No)

Form Revised 10/24/01

ENERGY LABORATORIES

# Chain of Custody and Analytical Request Record

Page ____ of ____

**PLEASE PRINT**, provide as much information as possible.
Refer to corresponding notes on reverse side.

| | |
|---|---|
| Company Name: HydroSolutions Inc | Project Name, PWS #, Permit #, Etc.: Crowley Law Firm |
| Report Address: P.O. Box 80866 Billings, MT 59108 | Contact Name, Phone, Fax, E-mail: Jim Shaffer 406-655-9555 — Sampler Name if other than Contact: ✓ |
| Invoice Address: As Above | Invoice Contact & Phone #: HydroSolutions PO B 80866 Billings MT 59108 — Purchase Order #: — ELI Quote #: |

Report Required For: POTW/WWTP ☐ DW ☐ Other _____

Special Report Formats – ELI must be notified prior to sample submittal for the following:
NELAC ☐ A2LA ☐ Level IV ☐
Other _____
EDD/EDT ☐ Format _____

Notify ELI prior to RUSH sample submittal for additional charges and scheduling

Comments:

Receipt Temp _____ °C
Cooler ID(s) _____
Custody Seal Y N
Intact Y N
Signature Match Y N

| SAMPLE IDENTIFICATION (Name, Location, Interval, etc.) | Collection Date | Collection Time | Number of Containers / Sample Type: A W S V U O / Air Water Soils/Solids Vegetation Urine Other / MATRIX | Cummins | Dissolved Metals | ANALYSIS REQUESTED | | | | | | | SEE ATTACHED | Normal Turnaround (TAT) | RUSH Turnaround (TAT) | Lab ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 MOC-18R-PP | 12/4/01 | 1045 | W | ✓ | | | | | | | | | | | | |
| 2 MOC-18R | 12/4/01 | 1500 | W | ✓ | | | | | | | | | | | | |
| 3 MOC-13(1) | 12/5/01 | | W | | | | | | | | | | | | | |
| 4 MOC-13(2) | 12/5/01 | | W | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | |

DID NOT ANALYZE AT CLIENTS REQUEST — SEE SAMPLES COLLECTED 12/17-20/01

12/26/01

| Custody Record MUST be Signed | | | | |
|---|---|---|---|---|
| | Relinquished by: | Date/Time: | Shipped by: | Received by: Date/Time: |
| | Relinquished by: | Date/Time: | Shipped by: | Received by: Date/Time: |
| | Sample Disposal: Return to client: _____ Lab Disposal: _____ | | | LABORATORY USE ONLY — Sample Type: _____ # of fractions _____ |

Visit our web site at ***www.energylab.com*** for additional information, downloadable fee schedule, forms, & links.

# WATER SAMPLING & MONITORING RECORD

**SITE ID:** [redacted] MOC-13 (1)

**HydroSolutions Inc, Billings, MT**

| | | | |
|---|---|---|---|
| **Date:** 12-5-01 | **Arrival Time:** 12:02 | **Purge Time:** 12:46 - : = : min | **Sampling Time:** |
| **Owner/ Operator:** Murphy Oil | | **Address:** E. Popolr Oilfield, S-central Battery | **State:** MT |
| **Location Description:** Spot: CN/2 NE, Sect. 10, T 28 (N) S, R 51 (E) W | | **Describe:** | |
| **Water Source:** (Well) Stream Spring Pond | | **Other:** | |
| **Sampler's Name:** Jim Shaffer | | **Weather:** Clear, 1" Snow overnight, ~15°F, 10-15 gpm | |
| **Water Source Purpose (Use):** Monitoring | | **TD:** 55 ft. **Out Dia.:** 0.5 ft. | **Well Log ?** (Y) N |
| **Inside Casing Material:** Schl 40 PVC | | **In Dia.:** 2" | **Well Locked ?** (Y) N |
| **S.W.L.** 36.95 ft. below MP. (12/4/01) | **Casing:** (Stickup) Flush | **MP Stickup:** ft. above Ground Level | **Well Pad:** (Y) N |
| **Measuring Point (MP):** Top of Steel Casing @ Lock Clasp | | **Elev.** ft | **Aquifer:** Wasta Gvl. |

| Meter Type (Manuf.): | Model: | Calibrated: | Method: | Meter Type (Manuf.): | Model: | Calibrated: | Method: | Flow Rate: |
|---|---|---|---|---|---|---|---|---|
| pH: Hanna | | 12/4 | | SC: YSI | 85 | — | — | |
| ORP/Eh: Hanna | | 12/4 | | DO: YSI | 85 | 12/5/01 @ 2000 | manuf | |
| Water Level Probe: | — | Solinst | | Other Method: | — | — | — | |

**Bore Volume** (R-in, TD & SWL-ft): 0.163 $R^2$ (TD - SWL) = (0.17 × 18') = 3.06 gal × 3 = 9.18 gals **Gallons**

**Purge Method:** Dedicated Whale 2" purge pump - New poly tbg

| 24-Hr. Time: Start @ 1246 | Gallons | Minutes | Rate (gpm) | SC (mS/µS) | Temp. °C | DO (mg/l) | pH | @ Temp.°C | Eh (mv) | @ Temp.°C |
|---|---|---|---|---|---|---|---|---|---|---|
| 1249 (pump @ 50') | - | - | - | 39.46 | 14.6 | 0.10 | 7.47 | 14.1 | -170.1 | 14.2 |
| 1255 (1259 - 1302) | 2 | 3 | 0.66 | 39.84 | 14.8 | 0.09 | 7.61 | @ 14.2 °C | -135.1 | @ 14.3 °C |
| 1305 | | | | 38.71 | 14.8 | 0.07 | 7.64 | 14.3 | -116.3 | 14.4 |
| 1312 (clear wtr) | | | | 38.04 | 14.9 | 0.06 | 7.69 | @ 14.3 °C | -108.9 | @ 14.4 °C |
| 1330 (1315 - 1318) | 2 | 3 | 0.66 | 37.96 | 14.9 | 0.05 | 7.64 | 14.3 | -97.0 | 14.4 |
| 1335 (raised pump 45') | | | | | | | | @ °C | | @ °C |
| Pump stuck in well - wouldn't go up or down - work pump - hose and elec cable separated from pump. Pump fell back to 54 btoc (TD @ 55' btoc) | | | | | | | | @ °C | | @ °C |
| 1435 (pump @ 45') SEE REVERSE SIDE | | | | 36.48 | 13.9 | 0.24 | 7.72 | 13.3 @ °C | -75.1 | 13.6 @ °C |

**Description of Water** (color, odor, sediment, clarity, sheen, etc.): Dark grayish black, diesel odor strong when turned on @ 1249. Becoming gray — clear after 28 min pumping

| | | |
|---|---|---|
| **Water Temperature:** °Celsius | **DO** mg/l | **Other Parameters & Results:** |
| **Alkalinity:** — — | **Salanity:** — ppt | |
| **Field SC:** — — µmhos/cm @ — °C (Field Temperature) | | |
| **Corrected SC:** µmhos/cm @ 25 °C | | |
| **pH:** s. u. @ °C | **Eh:** mv @ °C | |

**Water Quality Samples:** (Y) N **Sampling Method:** New poly bailer (disposable) **Sample Type:** (Grab) Composite

| Sample Containers (No.: Size & Type): | Filtering: | Preservative: | Handling: | Testing Parameters: |
|---|---|---|---|---|
| 1 : 500 ml, poly | NONE | NONE | Cool on ice | DID NOT ANAL. |
| 2 : 250 ml, poly | 1) 40 micron 2) NONE | Nitric Sulfuric | Cool on ice | 12/26/01 |
| 2 : 40 ml, glass | NONE | HCl | Cool on ice | |

| Decontamination | Inorganic | Describe: Dedicated pump and new poly tbg. All samples collected w/ New disposable bailer |
|---|---|---|
| | Organic | |

**NOTES:**

Does Reverse Side Contains More Details? (Yes) No

*Form Revised 10/24/01*

Pre-Purge Sample

# WATER SAMPLING & MONITORING RECORD

**SITE ID:** ~~MW~~- MOC-18R-PP

**HydroSolutions Inc, Billings, MT**

| | | | |
|---|---|---|---|
| Date: 12-4-01 | Arrival Time: 0920 | Purge Time: NONE : : = NONE : min | Sampling Time: 1045 |
| Owner/ Operator: MURPHY OIL | | Address: Southcentral Battery, Poplar | State: MT |
| Location Description: Spot; ____, Sect. 10, T ~~28~~ (N) S, R 51 (E) W | | Describe: | |
| Water Source: (Well) Stream Spring Pond | | Other: | |
| Sampler's Name: Jim Shaffer | | Weather: Clear, 19°F, sl. wind NW @ 6 mph | |
| Water Source Purpose (Use): Monitoring Well | | TD: ____.____ ft. | Out Dia.: ____.____ ft. / Well Log ? (Y) N |
| Inside Casing Material: Sch 40 PVC | | | In Dia.: 2" / Well Locked ? (Y) N |
| S.W.L. 33.21 ft. below MP. | Casing: (Stickup) Flush | MP Stickup: ____.____ ft. above Ground Level | Well Pad: (Y) N |
| Measuring Point (MP): Top steel csg at padlock clasp | | Elev. ____ ft | Aquifer: Wiota Gul. |

| Meter Type (Manuf.): | Model: | Calibrated: | Method: | Meter Type (Manuf.): | Model: | Calibrated: | Method: | Flow Rate: |
|---|---|---|---|---|---|---|---|---|
| pH: Hanna | | | | SC: YSI | 85 | | | |
| ORP/Eh: Hanna | | | | DO: YSI | 85 | 12-4-01 2100 µ | manuf. | |
| Water Level Probe: | Solinst | No | — | Other Method: | | | | |

Bore Volume (R-in, TD & SWL-ft): 0.163 $R^2$*(TD - SWL)= ____ Gallons — Purge Method: NO PURGE

| 24-Hr. Time: | Gallons | Minutes | Rate (gpm) | SC (mS µS) | Temp. °C | DO (mg/l) | pH @ Temp.°C | Eh (mv) @ Temp.°C |
|---|---|---|---|---|---|---|---|---|
| NO PURGE | | | | | | | @ °C | @ °C |
| | | | | | | | @ °C | @ °C |
| | | | | | | | @ °C | @ °C |
| | | | | | | | @ °C | @ °C |
| | | | | | | | @ °C | @ °C |

Description of Water (color, odor, sediment, clarity, sheen, etc.): Pre-purge bailer sample mod brown, No odor, m-f sand salty taste

| | | |
|---|---|---|
| Water Temperature: ____ °Celsius | DO ____ mg/l | Other Parameters & Results: |
| Alkaliuity: ____ ____ | Salanity: ____ ppt | |
| Field SC: ____ ____ µmhos/cm @ ____°C (Field Temperature) | | |
| Corrected SC: ____ ____ µmhos/cm @ 25 °C | | |
| pH: ____ s. u. @ ____ °C | Eh: ____ mv @ ____ °C | |

| | | | | |
|---|---|---|---|---|
| Water Quality Samples: (Y) N | Sampling Method: | | | Sample Type: Grab Composite |
| Sample Containers (No.: Size & Type): | Filtering: | Preservative: | Handling: | Testing Parameters: |
| 1 : 500 ml, poly | No | No | | Common |
| 1 : 250 ml, poly | YES | NITRIC | | Dissolved Metals |
| | NO | SULFURIC | | N+N |
| 2 : 40 ml, poly | No | HCl | | VPH |

DID NOT ANAL. JJS 12/6/01

| | | |
|---|---|---|
| Decontamination | Inorganic | Describe: |
| | Organic | |

NOTES: Sample collected after two bails retrieved from bottom of well to sample for sediment/debris in well. Only med-fg SLP sand

Does Reverse Side Contains More Details? Yes No

Form Revised 10/24/01

No large/coarse sand or other debris

# WATER SAMPLING & MONITORING RECORD

**SITE ID:** [redacted] MOC-18R Purged Sample

**HydroSolutions Inc, Billings, MT**

| | | | |
|---|---|---|---|
| Date: 12-4-01 | Arrival Time: 0920 | Purge Time: 11 : 25.14:58 = 213 min | Sampling Time: 15:00 |
| Owner/ Operator: MURPHY OIL | | Address: Southcentral Battery Poplar, | State: MT |
| Location Description: Spot; ____, Sect. 10, T 28 (N) S, R 51 (E) W | | Describe: | |
| Water Source: (Well) Stream Spring Pond | | Other: | |
| Sampler's Name: Jim Shaffer | | Weather: Clear, 15°F, Mod. wind @ > 6 mph | |
| Water Source Purpose (Use): Monitoring Well | | TD: ___.___ ft. | Out Dia.: ___.___ ft. / Well Log ? (Y) N |
| Inside Casing Material: Sch 40 PVC | | | In Dia.: 2" / Well Locked ? (Y) N |
| S.W.L. 33.21 ft. below MP. | Casing: (Stickup) Flush | MP Stickup: ___.___ ft. above Ground Level | Well Pad: (Y) N |
| Measuring Point (MP): Top steel csg @ padlock clasp | | Elev. ____ ft | Aquifer: Wista Gvl. |

| Meter Type (Manuf.): | Model: | Calibrated: | Method: | Meter Type (Manuf.): | Model: | Calibrated: | Method: | Flow Rate: ____ |
|---|---|---|---|---|---|---|---|---|
| pH: Hanna | 9025 | | | SC: YSI | 85 | | | |
| ORP/Eh: Hanna | 9023 | | | DO: YSI | 85 | | | |
| Water Level Probe: | Solinst | | | Other Method: | | | | |

Bore Volume (R-in, TD & SWL-ft): 0.163 $R^2$*(TD - SWL) = ____ Gallons  Purge Method:

| 24-Hr. Time: | Gallons | Minutes | Rate (gpm) | SC (mS/µS) | Temp. °C | DO (mg/l) | pH @ Temp.°C | Eh (mv) @ Temp.°C |
|---|---|---|---|---|---|---|---|---|
| 1129 | — | — | — | 35.61 | 9.5 | 0.26 | 7.12 @ 8.4 °C | -109.6 @ 9.0 °C |
| 1134:15-1135:45 | 2 | 1.5 | | — | — | — | — | — |
| 1143 | — | — | — | 36.05 | 9.6 | 0.21 | 7.10 @ 8.6 °C | -115.1 @ 9.0 °C |
| 1154 | | | | 36.76 | 9.6 | 0.21 | 7.17 | -115.9 |
| 1157:30-1159:30 | 3 | 2 | 1.5 | — | — | — | — @ — °C | — @ 8.9 °C |
| 12:20 | — | — | — | 34.65 | 9.6 | 0.21 | 7.12 8.5 | -122.8 8.9 |
| 13:21 | 3 | 2 | 1.5 | 32.54 | 9.6 | 0.16 | 7.11 @ 8.5 °C | -125.5 @ 8.9 °C |
| 14:42 | - | - | - | 31.42 | 9.6 | 0.16 | 7.11 8.5 | -127.9 8.8 |
| 14:55 | - | - | - | 31.19 | 9.6 | 0.18 | 7.12 @ 8.5 °C | -128.9 @ 8.8 °C |

Description of Water (color, odor, sediment, clarity, sheen, etc.): Mod brown - clear after 3 minutes

| | | |
|---|---|---|
| Water Temperature: 9.6 °Celsius (YSI) | DO 0.18 mg/l | Other Parameters & Results: |
| Alkalinity: — | Salanity: — ppt | |
| Field SC: — — µmhos/cm @ — °C (Field Temperature) | | |
| Corrected SC: 31.19 mS ~~µmhos/cm~~ @ 25 °C | | |
| pH: 7.12 s. u. @ 8.5 °C | Eh: -128.9 mv @ 8.8 °C | |

Water Quality Samples: (Y) N  Sampling Method: VPH via disposable bailer Other via purge pump tubing  Sample Type: (Grab) Composite

| Sample Containers (No.: Size & Type): | Filtering: | Preservative: | Handling: | Testing Parameters: |
|---|---|---|---|---|
| 1 : 500 ml, poly | No | NO | | Cations |
| 2 : 250 ml, poly | YES | Nitric | | Dissolved Ions |
| | No | Sulfuric | | N+N |
| 2 : 40 ml, poly | NO | HCl | | VPH |

DID NOT ANAL. 8S. 12/26

| Decontamination | Inorganic | Describe: |
|---|---|---|
| | Organic | |

NOTES: Flow test 1134:15-1135.45 = 2 gals / 1.5 min, 1157.30-1159:30 = 3 gals / 2 min
1324:00-1326:00 = 3 gals / 2 min

Does Reverse Side Contains More Details? Yes (No)

Form Revised 10/24/01

ENERGY LABORATORIES

# CHAIN OF CUSTODY RECORD

**PLEASE PRINT OR TYPE ALL INFORMATION EXCEPT SIGNATURES**

Received Date: 12/21/01
Login Date:
Shipped by: Hand del
Shipping Bill #:
Sample Temp: 4 °C

Cust. No.: H1181
Custody Seal: Yes/No
Intact: Yes/No
Signature Match?: Yes/No
If no - Reason:

For Lab Use Only


**BILLINGS, MT**
P.O. Box 30916 (59107) — 1120 South 27th (59101)
toll free 800-735-4489 · voice 406-252-6325 · Fax 406-252-6069

**CASPER, WY**
P.O. Box 3258 (82602) — 2393 Salt Creek Highway (82601)
toll free 888-235-0515 · voice 307-235-0515 · Fax 307-234-1639

**GILLETTE, WY**
1105 West First Street (82716)
voice 307-686-7175 · Fax 307-682-4625

**HELENA, MT**
P.O. Box 5688 (59604) — 2704 Billings Ave. (59601)
Toll Free 877-472-0711 · Voice/Fax 406-442-0711

**RAPID CITY, SD**
P.O. Box 2470 (57709) — 610 Farnwood (57701)
toll free 888-672-1225 · voice 605-342-1225 · Fax 605-342-1397


P.O. #

Project Name / Address: Murphy 003

Contact Name & Phone: Tom Osborne 406-655-9555

Sampler's Signature:

Invoice to: HydroSolutions Inc. P.O. Box 80866 Billings, MT 59108

Report to: Mike Webster Crowley Law Firm P.O. Box 2529 Billings, MT 59103

| Lab No. (For Lab Use Only) | DATE (2001) | TIME | SAMPLE I.D. | number of containers / Sample Type: A W S V U O / Air Water Soils/Solids Vegetation Urine Other | 40ml VPH | 250ml NO3 + NO3 | 250ml Diss. Fe, Sr, Mn | 500ml Ca, Mg, Na, K, HCO3, CO3, SO4, Cl, F, Alk, TDS, Hard, SAR | Rush R4 | Rush Chlorides | Rush Benzene | Hydrocarbon Scan | Comments, Special Instructions, etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01-01 61336 | 12/17/01 | 1015 | MOC-23 | 5W | X | X | X | X | | | | | |
| 002 | 12/17/01 | 1420 | MOC-20B | 5W | X | X | X | X | | | | | |
| 003 | 12/19/01 | 1325 | MOC-20A | 5W | X | X | X | X | | | No | | VOAs froze 500ml & N+N sample partially frozen 12/20 |
| 004 | 12/20/01 | 1235 | MOC-17R | 5W | X | X | X | X | | | | | |
| 005 | 12/20/01 | 1035 | MOC-13D | 5W | X | X | X | X | | | | | |
| 006 | 12/19/01 | 1530 | MOC-13 | 1 | X | X | X | X | | | | | N+N sample partly froze 12/20 |
| 007 | 12/18/01 | 1615 | MOC-19R | 3W | | X | X | X | | | | | Do Not Analyze / All samples Partly froze 12 |
| 008 | 12/20/01 | 1445 | MOC-19R | 3W | X | | | X | | | | | 2-250 ml |
| 009 | 12/19/01 | 1207 | MOC-13 | 1W | | | | | | | X | | |

| 1. Relinquished (signature) | Date | Time | Received by: (signature) | 2. Relinquished (signature) | Date | Time | Received for Laboratory by: (signature) |
|---|---|---|---|---|---|---|---|
| James D. Shaffer | 12/21 | 1502 | | Mark W. Osborne | 12-21-01 | 15:40 | |

Date 12/28/01

# ENERGY LABORATORIES, INC.

Complete Analytical Services

1120 South 27th Street
Billings, Montana 59101

TO: Tom Osborne

COMPANY: Hydrosolutions

FROM: Darcy

Number of Pages (including cover sheet): 8

## FACSIMILE COVER SHEET

Office Hours: 8:00 AM - 5:00 PM, Mountain Time

Telephone: (406) 252-6325

Facsimile: (406) 252-6069

COMMENTS: MOC-23 Chloride 2260, MOC-20B Cl 115, MOC-20A Cl 388, MOC-17R Cl 9120, MOC-13D Cl 13100 MOC-13 Cl 14200, MOC-19R Cl 4240,

This facsimile is CONFIDENTIAL. If you have received this in error, please contact Energy Laboratories, Inc. immediately. (406)-252-6325 or toll free (800)-735-4489.

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800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

**Client:** HydroSolutions, Inc.

**Login No.:** 006-01-61336
**Date:** 29-Dec-01

## VOLATILE PETROLEUM HYDROCARBONS (VPH) LABORATORY ANALYSIS REPORT

Project ID: MURPHY 003
Client ID: MOC-13
Sampled:19-Dec-01 15:30
Received:21-Dec-01

### Aromatic VPH Constituents

| CONSTITUENT | Result | Units | Qualifier | Reporting Limit | QC/Regulatory Limit | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methyl t-butylether | < 1.0 | µg/L(ppb) | | 1.0 | 30 | 28-Dec-01 14:56 | bjm |
| Benzene | 3.7 | µg/L(ppb) | | 0.50 | 5 | 28-Dec-01 14:56 | bjm |
| Toluene | < 0.50 | µg/L(ppb) | | 0.50 | 1000 | 28-Dec-01 14:56 | bjm |
| Ethylbenzene | 1.3 | µg/L(ppb) | | 0.50 | 700 | 28-Dec-01 14:56 | bjm |
| m+p-Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | | 28-Dec-01 14:56 | bjm |
| o-Xylene | 1.1 | µg/L(ppb) | | 0.50 | | 28-Dec-01 14:56 | bjm |
| Total Xylenes | 1.1 | µg/L(ppb) | | 0.50 | 10000 | 28-Dec-01 14:56 | bjm |
| Naphthalene | 1.4 | µg/L(ppb) | | 1.0 | 28 | 28-Dec-01 14:56 | bjm |
| $C_9$ to $C_{10}$ Aromatics | 25 | µg/L(ppb) | | 20 | 100 | 28-Dec-01 14:56 | bjm |
| VPH Aromatics Surrogate | 103 | % Rec. | | | 70-130 | 28-Dec-01 14:56 | bjm |

### Aliphatic VPH Constituents

| CONSTITUENT | | | | | | | |
|---|---|---|---|---|---|---|---|
| $C_5$ to $C_8$ Aliphatics[a] | < 20 | µg/L(ppb) | | 20 | 350 | 28-Dec-01 14:56 | bjm |
| $C_9$ to $C_{12}$ Aliphatics[b] | 24 | µg/L(ppb) | | 20 | 1000 | 28-Dec-01 14:56 | bjm |
| VPH Aliphatics Surrogate | 81 | % Rec. | | | 70-130 | 28-Dec-01 14:56 | bjm |
| Total Purgeable Hydrocarbons[c] | 90 | µg/L(ppb) | | 20 | | 28-Dec-01 14:56 | bjm |
| pH | <2 | s.u. | | | <2 | | |

**Notes and Qualifiers**

[a]Aromatic constituents Benzene, Toluene, Ethylbenzene and m+p-Xylenes were subtracted from this value.

[b]Aromatic constituents o-Xylene and $C_9$ to $C_{10}$ aromatics were subtracted from this value.

[c]This value is equivalent to the GRO Method Total Purgeable Hydrocarbon value.

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800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

**Client:** HydroSolutions, Inc.

**Login No.:** 001-01-61336
**Date:** 29-Dec-01

## VOLATILE PETROLEUM HYDROCARBONS (VPH) LABORATORY ANALYSIS REPORT

Project ID: MURPHY 003

Client ID: MOC-23

Sampled:17-Dec-01 10:15

Received:21-Dec-01

### Aromatic VPH Constituents

| CONSTITUENT | Result | Units | Qualifier | Reporting Limit | QC/Regulatory Limit | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methyl t-butylether | < 1.0 | µg/L(ppb) | | 1.0 | 30 | 26-Dec-01 15:05 | bjm |
| Benzene | < 0.50 | µg/L(ppb) | | 0.50 | 5 | 26-Dec-01 15:05 | bjm |
| Toluene | < 0.50 | µg/L(ppb) | | 0.50 | 1000 | 26-Dec-01 15:05 | bjm |
| Ethylbenzene | < 0.50 | µg/L(ppb) | | 0.50 | 700 | 26-Dec-01 15:05 | bjm |
| m+p-Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | | 26-Dec-01 15:05 | bjm |
| o-Xylene | 0.79 | µg/L(ppb) | | 0.50 | | 26-Dec-01 15:05 | bjm |
| Total Xylenes | 0.79 | µg/L(ppb) | | 0.50 | 10000 | 26-Dec-01 15:05 | bjm |
| Naphthalene | < 1.0 | µg/L(ppb) | | 1.0 | 28 | 26-Dec-01 15:05 | bjm |
| $C_9$ to $C_{10}$ Aromatics | < 20 | µg/L(ppb) | | 20 | 100 | 26-Dec-01 15:05 | bjm |
| VPH Aromatics Surrogate | 87 | % Rec. | | | 70-130 | 26-Dec-01 15:05 | bjm |

### Aliphatic VPH Constituents

| CONSTITUENT | | | | | | | |
|---|---|---|---|---|---|---|---|
| $C_5$ to $C_8$ Aliphatics[a] | < 20 | µg/L(ppb) | | 20 | 350 | 26-Dec-01 15:05 | bjm |
| $C_9$ to $C_{12}$ Aliphatics[b] | < 20 | µg/L(ppb) | | 20 | 1000 | 26-Dec-01 15:05 | bjm |
| VPH Aliphatics Surrogate | 91 | % Rec. | | | 70-130 | 26-Dec-01 15:05 | bjm |
| Total Purgeable Hydrocarbons[c] | < 20 | µg/L(ppb) | | 20 | | 26-Dec-01 15:05 | bjm |
| pH | <2 | s.u. | | | <2 | | |

**Notes and Qualifiers**

[a]Aromatic constituents Benzene, Toluene, Ethylbenzene and m+p-Xylenes were subtracted from this value.

[b]Aromatic constituents o-Xylene and $C_9$ to $C_{10}$ aromatics were subtracted from this value.

[c]This value is equivalent to the GRO Method Total Purgeable Hydrocarbon value.

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**Client:** HydroSolutions, Inc.

**Login No.:** 002-01-61336
**Date:** 29-Dec-01

## VOLATILE PETROLEUM HYDROCARBONS (VPH) LABORATORY ANALYSIS REPORT

Project ID: MURPHY 003
Client ID: MOC-20B
Sampled:17-Dec-01 14:20
Received:21-Dec-01

### Aromatic VPH Constituents

| CONSTITUENT | Result | Units | Qualifier | Reporting Limit | QC/Regulatory Limit | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methyl t-butylether | < 1.0 | µg/L(ppb) | | 1.0 | 30 | 26-Dec-01 16:20 | bjm |
| Benzene | < 0.50 | µg/L(ppb) | | 0.50 | 5 | 26-Dec-01 16:20 | bjm |
| Toluene | < 0.50 | µg/L(ppb) | | 0.50 | 1000 | 26-Dec-01 16:20 | bjm |
| Ethylbenzene | < 0.50 | µg/L(ppb) | | 0.50 | 700 | 26-Dec-01 16:20 | bjm |
| m + p-Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | | 26-Dec-01 16:20 | bjm |
| o-Xylene | < 0.50 | µg/L(ppb) | | 0.50 | | 26-Dec-01 16:20 | bjm |
| Total Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | 10000 | 26-Dec-01 16:20 | bjm |
| Naphthalene | < 1.0 | µg/L(ppb) | | 1.0 | 28 | 26-Dec-01 16:20 | bjm |
| $C_9$ to $C_{10}$ Aromatics | < 20 | µg/L(ppb) | | 20 | 100 | 26-Dec-01 16:20 | bjm |
| VPH Aromatics Surrogate | 91 | % Rec. | | | 70-130 | 26-Dec-01 16:20 | bjm |

### Aliphatic VPH Constituents

| CONSTITUENT | | | | | | | |
|---|---|---|---|---|---|---|---|
| $C_5$ to $C_8$ Aliphatics[a] | < 20 | µg/L(ppb) | | 20 | 350 | 26-Dec-01 16:20 | bjm |
| $C_9$ to $C_{12}$ Aliphatics[b] | < 20 | µg/L(ppb) | | 20 | 1000 | 26-Dec-01 16:20 | bjm |
| VPH Aliphatics Surrogate | 87 | % Rec. | | | 70-130 | 26-Dec-01 16:20 | bjm |
| Total Purgeable Hydrocarbons[c] | < 20 | µg/L(ppb) | | 20 | | 26-Dec-01 16:20 | bjm |
| pH | <2 | s.u. | | | <2 | | |

**Notes and Qualifiers**

[a]Aromatic constituents Benzene, Toluene, Ethylbenzene and m + p-Xylenes were subtracted from this value.

[b]Aromatic constituents o-Xylene and $C_9$ to $C_{10}$ aromatics were subtracted from this value.

[c]This value is equivalent to the GRO Method Total Purgeable Hydrocarbon value.

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**Client:** HydroSolutions, Inc.

**Login No.:** 003-01-61336
**Date:** 29-Dec-01

## VOLATILE PETROLEUM HYDROCARBONS (VPH) LABORATORY ANALYSIS REPORT

Project ID: MURPHY 003
Client ID: MOC-20A
Sampled:19-Dec-01 13:25
Received:21-Dec-01

### Aromatic VPH Constituents

| CONSTITUENT | Result | Units | Qualifier | Reporting Limit | QC/Regulatory Limit | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methyl t-butylether | < 1.0 | µg/L(ppb) | | 1.0 | 30 | 26-Dec-01 17:40 | bjm |
| Benzene | < 0.50 | µg/L(ppb) | | 0.50 | 5 | 26-Dec-01 17:40 | bjm |
| Toluene | < 0.50 | µg/L(ppb) | | 0.50 | 1000 | 26-Dec-01 17:40 | bjm |
| Ethylbenzene | < 0.50 | µg/L(ppb) | | 0.50 | 700 | 26-Dec-01 17:40 | bjm |
| m + p-Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | | 26-Dec-01 17:40 | bjm |
| o-Xylene | < 0.50 | µg/L(ppb) | | 0.50 | | 26-Dec-01 17:40 | bjm |
| Total Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | 10000 | 26-Dec-01 17:40 | bjm |
| Naphthalene | < 1.0 | µg/L(ppb) | | 1.0 | 28 | 26-Dec-01 17:40 | bjm |
| $C_9$ to $C_{10}$ Aromatics | < 20 | µg/L(ppb) | | 20 | 100 | 26-Dec-01 17:40 | bjm |
| VPH Aromatics Surrogate | 88 | % Rec. | | | 70-130 | 26-Dec-01 17:40 | bjm |

### Aliphatic VPH Constituents

| CONSTITUENT | | | | | | | |
|---|---|---|---|---|---|---|---|
| $C_5$ to $C_8$ Aliphatics[a] | < 20 | µg/L(ppb) | | 20 | 350 | 26-Dec-01 17:40 | bjm |
| $C_9$ to $C_{12}$ Aliphatics[b] | < 20 | µg/L(ppb) | | 20 | 1000 | 26-Dec-01 17:40 | bjm |
| VPH Aliphatics Surrogate | 79 | % Rec. | | | 70-130 | 26-Dec-01 17:40 | bjm |
| Total Purgeable Hydrocarbons[c] | < 20 | µg/L(ppb) | | 20 | | 26-Dec-01 17:40 | bjm |
| pH | 7 | s.u. | | | <2 | | |

**Notes and Qualifiers**

[a]Aromatic constituents Benzene, Toluene, Ethylbenzene and m + p-Xylenes were subtracted from this value.

[b]Aromatic constituents o-Xylene and $C_9$ to $C_{10}$ aromatics were subtracted from this value.

[c]This value is equivalent to the GRO Method Total Purgeable Hydrocarbon value.

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**Client:** HydroSolutions, Inc.

**Login No.:** 004-01-61336
**Date:** 29-Dec-01

## VOLATILE PETROLEUM HYDROCARBONS (VPH) LABORATORY ANALYSIS REPORT

Project ID: MURPHY 003
Client ID: MOC-17R
Sampled:20-Dec-01 12:35
Received:21-Dec-01

### Aromatic VPH Constituents

| CONSTITUENT | Result | Units | Qualifier | Reporting Limit | QC/Regulatory Limit | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methyl t-butylether | < 1.0 | µg/L(ppb) | | 1.0 | 30 | 26-Dec-01 18:57 | bjm |
| Benzene | 1.4 | µg/L(ppb) | | 0.50 | 5 | 26-Dec-01 18:57 | bjm |
| Toluene | < 0.50 | µg/L(ppb) | | 0.50 | 1000 | 26-Dec-01 18:57 | bjm |
| Ethylbenzene | < 0.50 | µg/L(ppb) | | 0.50 | 700 | 26-Dec-01 18:57 | bjm |
| m+p-Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | | 26-Dec-01 18:57 | bjm |
| o-Xylene | < 0.50 | µg/L(ppb) | | 0.50 | | 26-Dec-01 18:57 | bjm |
| Total Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | 10000 | 26-Dec-01 18:57 | bjm |
| Naphthalene | < 1.0 | µg/L(ppb) | | 1.0 | 28 | 26-Dec-01 18:57 | bjm |
| $C_9$ to $C_{10}$ Aromatics | < 20 | µg/L(ppb) | | 20 | 100 | 26-Dec-01 18:57 | bjm |
| VPH Aromatics Surrogate | 96 | % Rec. | | | 70-130 | 26-Dec-01 18:57 | bjm |

### Aliphatic VPH Constituents

| CONSTITUENT | | | | | | | |
|---|---|---|---|---|---|---|---|
| $C_5$ to $C_8$ Aliphatics[a] | < 20 | µg/L(ppb) | | 20 | 350 | 26-Dec-01 18:57 | bjm |
| $C_9$ to $C_{12}$ Aliphatics[b] | < 20 | µg/L(ppb) | | 20 | 1000 | 26-Dec-01 18:57 | bjm |
| VPH Aliphatics Surrogate | 86 | % Rec. | | | 70-130 | 26-Dec-01 18:57 | bjm |
| Total Purgeable Hydrocarbons[c] | < 20 | µg/L(ppb) | | 20 | | 26-Dec-01 18:57 | bjm |
| pH | <2 | s.u. | | | <2 | | |

**Notes and Qualifiers**

[a]Aromatic constituents Benzene, Toluene, Ethylbenzene and m+p-Xylenes were subtracted from this value.

[b]Aromatic constituents o-Xylene and $C_9$ to $C_{10}$ aromatics were subtracted from this value.

[c]This value is equivalent to the GRO Method Total Purgeable Hydrocarbon value.

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**Client:** HydroSolutions, Inc.

**Login No.:** 005-01-61336
**Date:** 29-Dec-01

## VOLATILE PETROLEUM HYDROCARBONS (VPH) LABORATORY ANALYSIS REPORT

Project ID: MURPHY 003
Client ID: MOC-13D
Sampled:20-Dec-01 10:35
Received:21-Dec-01

### Aromatic VPH Constituents

| CONSTITUENT | Result | Units | Qualifier | Reporting Limit | QC/Regulatory Limit | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methyl t-butylether | < 1.0 | µg/L(ppb) | | 1.0 | 30 | 27-Dec-01 17:40 | bjm |
| Benzene | 3.1 | µg/L(ppb) | | 0.50 | 5 | 27-Dec-01 17:40 | bjm |
| Toluene | < 0.50 | µg/L(ppb) | | 0.50 | 1000 | 27-Dec-01 17:40 | bjm |
| Ethylbenzene | 2.2 | µg/L(ppb) | | 0.50 | 700 | 27-Dec-01 17:40 | bjm |
| m+p-Xylenes | 1.6 | µg/L(ppb) | | 0.50 | | 27-Dec-01 17:40 | bjm |
| o-Xylene | 0.88 | µg/L(ppb) | | 0.50 | | 27-Dec-01 17:40 | bjm |
| Total Xylenes | 2.5 | µg/L(ppb) | | 0.50 | 10000 | 27-Dec-01 17:40 | bjm |
| Naphthalene | 2.0 | µg/L(ppb) | | 1.0 | 28 | 27-Dec-01 17:40 | bjm |
| $C_9$ to $C_{10}$ Aromatics | 60 | µg/L(ppb) | | 20 | 100 | 27-Dec-01 17:40 | bjm |
| VPH Aromatics Surrogate | 105 | % Rec. | | | 70-130 | 27-Dec-01 17:40 | bjm |

### Aliphatic VPH Constituents

| CONSTITUENT | | | | | | | |
|---|---|---|---|---|---|---|---|
| $C_5$ to $C_8$ Aliphatics[a] | 32 | µg/L(ppb) | | 20 | 350 | 27-Dec-01 17:40 | bjm |
| $C_9$ to $C_{12}$ Aliphatics[b] | 76 | µg/L(ppb) | | 20 | 1000 | 27-Dec-01 17:40 | bjm |
| VPH Aliphatics Surrogate | 91 | % Rec. | | | 70-130 | 27-Dec-01 17:40 | bjm |
| Total Purgeable Hydrocarbons[c] | 213 | µg/L(ppb) | | 20 | | 27-Dec-01 17:40 | bjm |
| pH | <2 | s.u. | | | <2 | | |

**Notes and Qualifiers**

[a]Aromatic constituents Benzene, Toluene, Ethylbenzene and m+p-Xylenes were subtracted from this value.

[b]Aromatic constituents o-Xylene and $C_9$ to $C_{10}$ aromatics were subtracted from this value.

[c]This value is equivalent to the GRO Method Total Purgeable Hydrocarbon value.

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**Client:** HydroSolutions, Inc.

**Login No.:** 008-01-61336
**Date:** 29-Dec-01

## VOLATILE PETROLEUM HYDROCARBONS (VPH) LABORATORY ANALYSIS REPORT

Project ID: MURPHY 003
Client ID: MOC-19R
Sampled:20-Dec-01 14:45
Received:21-Dec-01

### Aromatic VPH Constituents

| CONSTITUENT | Result | Units | Qualifier | Reporting Limit | QC/Regulatory Limit | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methyl t-butylether | < 1.0 | µg/L(ppb) | | 1.0 | 30 | 26-Dec-01 22:46 | bjm |
| Benzene | < 0.50 | µg/L(ppb) | | 0.50 | 5 | 26-Dec-01 22:46 | bjm |
| Toluene | < 0.50 | µg/L(ppb) | | 0.50 | 1000 | 26-Dec-01 22:46 | bjm |
| Ethylbenzene | < 0.50 | µg/L(ppb) | | 0.50 | 700 | 26-Dec-01 22:46 | bjm |
| m + p-Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | | 26-Dec-01 22:46 | bjm |
| o-Xylene | < 0.50 | µg/L(ppb) | | 0.50 | | 26-Dec-01 22:46 | bjm |
| Total Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | 10000 | 26-Dec-01 22:46 | bjm |
| Naphthalene | < 1.0 | µg/L(ppb) | | 1.0 | 28 | 26-Dec-01 22:46 | bjm |
| $C_9$ to $C_{10}$ Aromatics | < 20 | µg/L(ppb) | | 20 | 100 | 26-Dec-01 22:46 | bjm |
| VPH Aromatics Surrogate | 94 | % Rec. | | | 70-130 | 26-Dec-01 22:46 | bjm |

### Aliphatic VPH Constituents

| CONSTITUENT | | | | | | | |
|---|---|---|---|---|---|---|---|
| $C_5$ to $C_8$ Aliphatics[a] | < 20 | µg/L(ppb) | | 20 | 350 | 26-Dec-01 22:46 | bjm |
| $C_9$ to $C_{12}$ Aliphatics[b] | < 20 | µg/L(ppb) | | 20 | 1000 | 26-Dec-01 22:46 | bjm |
| VPH Aliphatics Surrogate | 79 | % Rec. | | | 70-130 | 26-Dec-01 22:46 | bjm |
| Total Purgeable Hydrocarbons[c] | < 20 | µg/L(ppb) | | 20 | | 26-Dec-01 22:46 | bjm |
| pH | <2 | s.u. | | | <2 | | |

**Notes and Qualifiers**

[a]Aromatic constituents Benzene, Toluene, Ethylbenzene and m + p-Xylenes were subtracted from this value.

[b]Aromatic constituents o-Xylene and $C_9$ to $C_{10}$ aromatics were subtracted from this value.

[c]This value is equivalent to the GRO Method Total Purgeable Hydrocarbon value.

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## AROMATIC VPH CONTINUING CALIBRATION REPORT

This continuing calibration report applies to the following analysis runs:
001-01-61336,002-01-61336,003-01-61336,004-01-61336,008-01-61336

---

Sample Name: cc1 GRO Continuing Cal :G12261Q1
Area File: G:\ORG\PE2\1226QE2.05A
Date & Time Collected: Dec 26, 2001 13:11:49
Method File: G:\ORG\PE2\1226Q2.MET
Calibration File: G:\ORG\PE2\38MAQ01.CAL

| COMPOUND | ACTUAL | MEASURED | %RECOVERY | %RECOVERY LIMITS |
|---|---|---|---|---|
| MTBE | 300 | 249 | 83 | 75-125 |
| Benzene | 100 | 88 | 88 | 75-125 |
| Toluene | 300 | 276 | 92 | 75-125 |
| Ethylbenzene | 100 | 90 | 90 | 75-125 |
| m+p Xylenes | 400 | 373 | 93 | 75-125 |
| o-Xylene | 200 | 190 | 95 | 75-125 |
| 124-Trimethylbenzene | 200 | 165 | 83 | 75-125 |
| Naphthalene | 200 | 177 | 89 | 75-125 |
| **Trifluorotoluene | 250 | 237 | 95 | 75-125 |

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## AROMATIC VPH CONTINUING CALIBRATION REPORT

This continuing calibration report applies to the following analysis runs:
005-01-61336

---

Sample Name: cc1 GRO Continuing Cal :G12271Q1
Area File: G:\ORG\PE2\1227QE2.05A
Date & Time Collected: Dec 27, 2001 12:37:18
Method File: G:\ORG\PE2\1227Q2.MET
Calibration File: G:\ORG\PE2\38MAQ01.CAL

| COMPOUND | ACTUAL | MEASURED | %RECOVERY | %RECOVERY LIMITS |
|---|---|---|---|---|
| MTBE | 300 | 300 | 100 | 75-125 |
| Benzene | 100 | 106 | 106 | 75-125 |
| Toluene | 300 | 323 | 108 | 75-125 |
| Ethylbenzene | 100 | 112 | 112 | 75-125 |
| m+p Xylenes | 400 | 424 | 106 | 75-125 |
| o-Xylene | 200 | 195 | 98 | 75-125 |
| 124-Trimethylbenzene | 200 | 199 | 99 | 75-125 |
| Naphthalene | 200 | 189 | 94 | 75-125 |
| **Trifluorotoluene | 250 | 281 | 112 | 75-125 |

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# AROMATIC VPH CONTINUING CALIBRATION REPORT

This continuing calibration report applies to the following analysis runs:
006-01-61336

---

Sample Name: cc1 GRO Continuing Cal :G12281Q1
Area File: G:\ORG\PE2\1228QE2.04A
Date & Time Collected: Dec 28, 2001 12:15:58
Method File: G:\ORG\PE2\38MAQ01.MET
Calibration File: G:\ORG\PE2\38MAQ01.CAL

| COMPOUND | ACTUAL | MEASURED | %RECOVERY | %RECOVERY LIMITS |
|---|---|---|---|---|
| MTBE | 300 | 274 | 91 | 75-125 |
| Benzene | 100 | 106 | 106 | 75-125 |
| Toluene | 300 | 320 | 107 | 75-125 |
| Ethylbenzene | 100 | 110 | 110 | 75-125 |
| m+p Xylenes | 400 | 439 | 110 | 75-125 |
| o-Xylene | 200 | 245 | 123 | 75-125 |
| 124-Trimethylbenzene | 200 | 203 | 102 | 75-125 |
| Naphthalene | 200 | 182 | 91 | 75-125 |
| **Trifluorotoluene | 250 | 290 | 116 | 75-125 |

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## ALIPHATIC VPH CONTINUING CALIBRATION REPORT

This continuing calibration report applies to the following analysis runs:
001-01-61336,002-01-61336,003-01-61336,004-01-61336,008-01-61336

---

Sample Name: cc1 GRO Continuing Cal :G12261Q1
Area File: G:\ORG\PE2\1226QE2B.05A
Date & Time Collected: Dec 26, 2001 13:11:49
Method File: G:\ORG\PE2\38MAQ01B.MET
Calibration File: G:\ORG\PE2\38MAQ01B.CAL

| COMPOUND | ACTUAL | MEASURED | %RECOVERY | %RECOVERY LIMITS |
|---|---|---|---|---|
| n-Pentane | 200 | 194 | 97 | 75-125 |
| 2-Methylpentane | 300 | 277 | 92 | 75-125 |
| 224-Trimethylpentane | 300 | 275 | 92 | 75-125 |
| n-Nonane | 200 | 179 | 90 | 75-125 |
| TOTAL RESPONSE | 1000 | 926 | 93 | 75-125 |
| **Trifluorotoluene | 250 | 224 | 89 | 75-125 |

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## ALIPHATIC VPH CONTINUING CALIBRATION REPORT

This continuing calibration report applies to the following analysis runs:
005-01-61336

---

Sample Name: cc1 GRO Continuing Cal :G12271Q1
Area File: G:\ORG\PE2\1227QE2B.05A
Date & Time Collected: Dec 27, 2001 12:37:18
Method File: G:\ORG\PE2\38MAQ01B.MET
Calibration File: G:\ORG\PE2\38MAQ01B.CAL

| COMPOUND | ACTUAL | MEASURED | %RECOVERY | %RECOVERY LIMITS |
|---|---|---|---|---|
| n-Pentane | 200 | 176 | 88 | 75-125 |
| 2-Methylpentane | 300 | 255 | 85 | 75-125 |
| 224-Trimethylpentane | 300 | 255 | 85 | 75-125 |
| n-Nonane | 200 | 171 | 86 | 75-125 |
| TOTAL RESPONSE | 1000 | 857 | 86 | 75-125 |
| **Trifluorotoluene | 250 | 226 | 90 | 75-125 |

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# ALIPHATIC VPH CONTINUING CALIBRATION REPORT

This continuing calibration report applies to the following analysis runs:
006-01-61336

---

Sample Name: cc1 GRO Continuing Cal :G12281Q1
Area File: G:\ORG\PE2\1228QE2B.04A
Date & Time Collected: Dec 28, 2001 12:15:58
Method File: G:\ORG\PE2\38MAQ01B.MET
Calibration File: G:\ORG\PE2\38MAQ01B.CAL

| COMPOUND | ACTUAL | MEASURED | %RECOVERY | %RECOVERY LIMITS |
|---|---|---|---|---|
| n-Pentane | 200 | 249 | 125 | 75-125 |
| 2-Methylpentane | 300 | 322 | 107 | 75-125 |
| 224-Trimethylpentane | 300 | 302 | 101 | 75-125 |
| n-Nonane | 200 | 218 | 109 | 75-125 |
| TOTAL RESPONSE | 1000 | 1092 | 109 | 75-125 |
| **Trifluorotoluene | 250 | 231 | 93 | 75-125 |

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**Date:** 29-Dec-01

## QUALITY ASSURANCE REPORT FOR VOLATILE PETROLEUM HYDROCARBONS (VPH)

**Method Blank Results:**

| MTBE | Benzene | Toluene | Ethylbenzene | m+p-Xylenes | o-Xylene | Naphthalene | C9 to C10 Aromatics | C5 to C8 Aliphatics | C9 to C12 Aliphatics |
|---|---|---|---|---|---|---|---|---|---|
| < 1.0 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 1.0 | < 20 | < 20 | < 20 |

Concentration Units = µg/L(ppb)

Aromatic Surrogate % Recovery = 84 — Date Analyzed: 26-Dec-01 14:28

Aliphatic Surrogate % Recovery = 81 — Sequence I.D.: B12261Q1

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| < 1.0 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 1.0 | < 20 | < 20 | < 20 |

Concentration Units = µg/L(ppb)

Aromatic Surrogate % Recovery = 106 — Date Analyzed: 28-Dec-01 13:33

Aliphatic Surrogate % Recovery = 86 — Sequence I.D.: B12281Q1

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| < 1.0 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 1.0 | < 20 | < 20 | < 20 |

Concentration Units = µg/L(ppb)

Aromatic Surrogate % Recovery = 109 — Date Analyzed: 27-Dec-01 15:09

Aliphatic Surrogate % Recovery = 88 — Sequence I.D.:

### LABORATORY FORTIFIED BLANK RESULTS

Date Analyzed: 26-Dec-01 12:33

Sequence I.D.: B12261Q1

| Constituent | SPIKE ADDED µg/L(ppb) | MS CONC. µg/L(ppb) | MS %Rec. | QC Limit %Rec. | Surrogate %Rec. |
|---|---|---|---|---|---|
| MTBE | 20 | 16 | 80 | 70-130 | 92 |
| Benzene | 20 | 18 | 90 | 70-130 | |
| Toluene | 20 | 18 | 90 | 70-130 | |
| Ethylbenzene | 20 | 19 | 95 | 70-130 | |
| m+p-Xylenes | 40 | 41 | 103 | 70-130 | |
| o-Xylene | 20 | 20 | 100 | 70-130 | |
| Naphthalene | 20 | 17 | 85 | 70-130 | |

### LABORATORY FORTIFIED BLANK RESULTS

Date Analyzed: 28-Dec-01 11:35

Sequence I.D.: B12281Q1

| Constituent | SPIKE ADDED µg/L(ppb) | MS CONC. µg/L(ppb) | MS %Rec. | QC Limit %Rec. | Surrogate %Rec. |
|---|---|---|---|---|---|
| MTBE | 20 | 16 | 80 | 70-130 | 111 |
| Benzene | 20 | 22 | 110 | 70-130 | |
| Toluene | 20 | 20 | 100 | 70-130 | |
| Ethylbenzene | 20 | 23 | 115 | 70-130 | |
| m+p-Xylenes | 40 | 50 | 125 | 70-130 | |
| o-Xylene | 20 | 24 | 120 | 70-130 | |
| Naphthalene | 20 | 17 | 85 | 70-130 | |

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## QUALITY ASSURANCE REPORT FOR VOLATILE PETROLEUM HYDROCARBONS (VPH)

### LABORATORY FORTIFIED BLANK RESULTS

Date Analyzed: 27-Dec-01 11:59

Sequence I.D.:

| Constituent | SPIKE ADDED µg/L(ppb) | MS CONC. µg/L(ppb) | MS %Rec. | QC Limit %Rec. | Surrogate %Rec. |
|---|---|---|---|---|---|
| MTBE | 20 | 19 | 95 | 70-130 | 115 |
| Benzene | 20 | 22 | 110 | 70-130 | |
| Toluene | 20 | 22 | 110 | 70-130 | |
| Ethylbenzene | 20 | 23 | 115 | 70-130 | |
| m + p-Xylenes | 40 | 49 | 123 | 70-130 | |
| o-Xylene | 20 | 23 | 115 | 70-130 | |
| Naphthalene | 20 | 24 | 120 | 70-130 | |

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**Date:** 29-Dec-01

## VOLATILE ORGANIC CHEMICALS MATRIX SPIKE REPORTS

### VOC MATRIX SPIKE REPORT

Laboratory Number: 001-01-61201

Date Analyzed: 27-Dec-01 21:26

| Constituent | Spike Added µg/L(ppb) | Sample Conc. µg/L(ppb) | MS CONC. µg/L(ppb) | MS %Rec. | QC Limit %Rec. | Surrogate %Rec. |
|---|---|---|---|---|---|---|
| MTBE | 12500 | < 50 | 10300 | 82 | 70-130 | 112 |
| Benzene | 12500 | 17600 | 30700 | 105 | 70-130 | |
| Toluene | 12500 | 4010 | 16300 | 98 | 70-130 | |
| Ethylbenzene | 12500 | 1450 | 15400 | 112 | 70-130 | |
| m+p-Xylenes | 25000 | 10800 | 39400 | 114 | 70-130 | |
| o-Xylene | 12500 | 1200 | 14400 | 106 | 70-130 | |
| Naphthalene | 12500 | 273 | 12700 | 99 | 70-130 | |

### VOC MATRIX SPIKE DUPLICATE REPORT

Laboratory Number: 001-01-61201

Date Analyzed: 27-Dec-01 22:41:00

| Constituent | Spike Added µg/L(ppb) | MSD Conc. µg/L(ppb) | MS %REC. | RPD | QC Limit RPD | QC Limit %Rec. | Surrogate %Rec. |
|---|---|---|---|---|---|---|---|
| MTBE | 12500 | 10100 | 81 | 2 | 20 | 70-130 | 108 |
| Benzene | 12500 | 31000 | 107 | 2 | 20 | 70-130 | |
| Toluene | 12500 | 17200 | 106 | 7 | 20 | 70-130 | |
| Ethylbenzene | 12500 | 15300 | 111 | 1 | 20 | 70-130 | |
| mp-Xylenes | 25000 | 38900 | 112 | 2 | 20 | 70-130 | |
| o-Xylene | 12500 | 14700 | 108 | 2 | 20 | 70-130 | |
| Naphthalene | 12500 | 12000 | 94 | 6 | 20 | 70-130 | |

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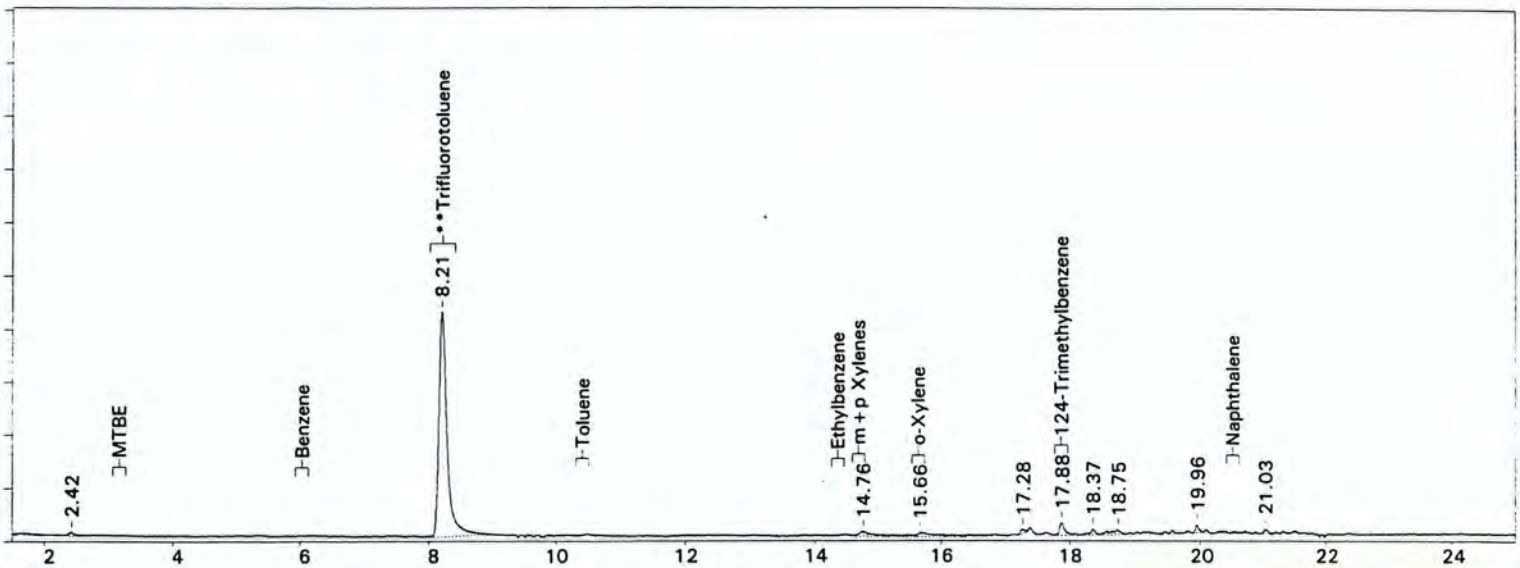
File=G:\ORG\PE2\1226QE2.08R Date printed=12-26-2001 Time= 15:05:46
Sample Name=001-01-61336 ;01-61336 VPH Water :G12261Q1
1.5 to 25.0 min. Low Y=1.287 High Y=4.287 mv Span=3.0




ENERGY LABORATORIES, INC.----AROMATICS VPH CHROMATOGRAM
Sample Name: 001-01-61336 ;01-61336 VPH Water :G12261Q1
Area File: G:\ORG\PE2\1226QE2.08A
Date & Time Collected: Dec 26, 2001 15:05:41
Method File: G:\ORG\PE2\38MAQ01.MET
Calibration File: G:\ORG\PE2\38MAQ01.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

MOC-23

Mean RF for C9 to C10 Aromatic Hydrocarbons: 146.8005
Rt range for C9 to C10 Aromatic Hydrocarbons: 15.7469 to 20.40367

Aromatic Hydrocarbon Areas and Quantitations:
C9-C10 Area 1,242 Quant: 1.7

Target Analytes:

| COMPOUND | RT | Cal RRT | RRT | Area | ug/L Amount | Flag |
|---|---|---|---|---|---|---|
| MTBE | 0.00 | 0.00 | 0.00 | 0 | < 1.00 | U |
| Benzene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| Toluene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| Ethylbenzene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| m+p Xylenes | 14.76 | -6.47 | -6.55 | 411 | 0.51 | |
| o-Xylene | 15.66 | -7.43 | -7.45 | 586 | 0.79 | |
| 124-Trimethylbenzene | 17.88 | 17.88 | 17.88 | 436 | < 2.00 | U |
| Naphthalene | 0.00 | 0.00 | 0.00 | 0 | < 1.00 | U |

| SURROGATE CMPND | RT | ACTUAL | MEASURED | %RECOVERY | QC LIMITS |
|---|---|---|---|---|---|
| **Trifluorotoluene | 8.21 | 50.0 | 43.6 | 87 | 70-130 |

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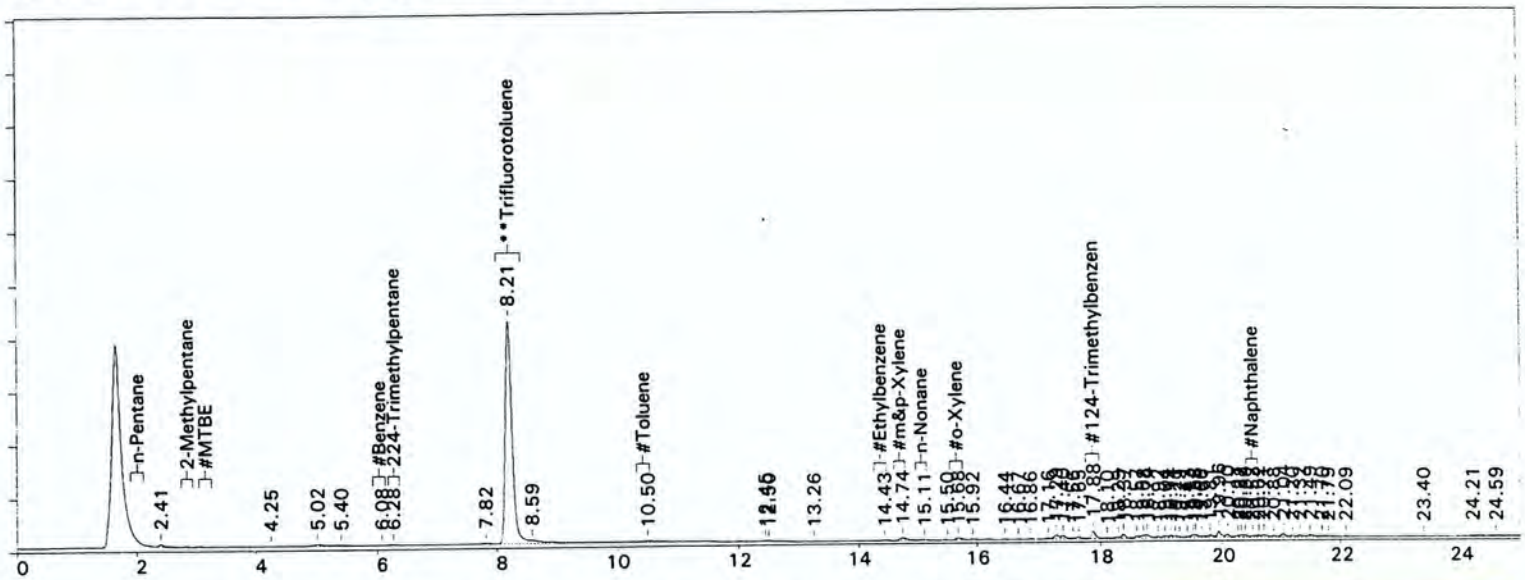
File=G:\ORG\PE2\1226QE2B.08R Date printed=12-26-2001 Time= 15:06:12
Sample Name=001-01-61336 ;01-61336 VPH Water :G12261Q1
0.0 to 25.0 min. Low Y=3.751 High Y=153.751 mv Span=150.0




ENERGY LABORATORIES, INC.----ALIPHATICS VPH CHROMATOGRAM
Sample Name: 001-01-61336 ;01-61336 VPH Water :G12261Q1
Area File: G:\ORG\PE2\1226QE2B.08A
Date & Time Collected: Dec 26, 2001 15:05:41
Method File: G:\ORG\PE2\38MAQ01B.MET
Calibration File: G:\ORG\PE2\38MAQ01B.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1
Mean RF for C5 to C8 Aliphatic Hydrocarbons: 1881.717
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 1814.195
Mean RF for all calibrated compounds: 2382.639
Rt range for Gasoline Range Organics: 2.753181 to 17.9712
Rt range for C5 to C8 Aliphatic Hydrocarbons: 1.911517 to 14.95815
Rt range for C9 to C12 Aliphatic Hydrocarbons: 15.00815 to 20.40485

MOC-23

Peaks subtracted from Total:

| Compound Name | RT | Area | Amount | %Recovery |
|---|---|---|---|---|
| **Trifluorotoluene | 8.2 | 508,316 | 45 | 91 |

| | | | |
|---|---|---|---|
| GRO Area: | 72,454 | Quant: | 6.1 |
| TPH Area: | 165,901 | Quant: | 13.9 |

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:

| | | | |
|---|---|---|---|
| C5-C8 Area: | 36,267 | Quant: | 3.9 |
| C9-C12 Area | 101,182 | Quant: | 11.2 |

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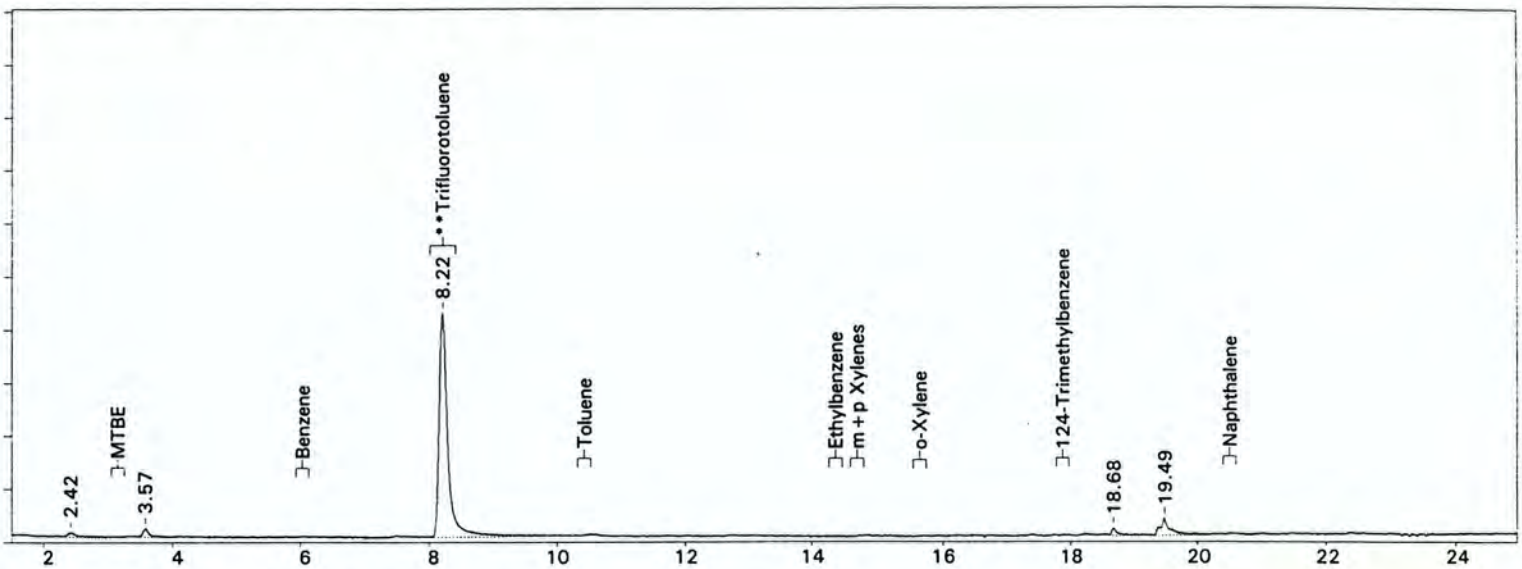
Fi 26QE2.10R Date printed=12-26-2001 Time= 16:20:51

Sample Name=002-01-61336 ;01-61336 VPH Water :G12261Q1

1.5 to 25.0 min. Low Y=1.285 High Y=4.285 mv Span=3.0




ENERGY LABORATORIES, INC.----AROMATICS VPH CHROMATOGRAM
Sample Name: 002-01-61336 ;01-61336 VPH Water :G12261Q1
Area File: G:\ORG\PE2\1226QE2.10A
Date & Time Collected: Dec 26, 2001 16:20:45
Method File: G:\ORG\PE2\38MAQ01.MET
Calibration File: G:\ORG\PE2\38MAQ01.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

MOC-20B

Mean RF for C9 to C10 Aromatic Hydrocarbons: 146.8005
Rt range for C9 to C10 Aromatic Hydrocarbons: 15.7469 to 20.40367

Aromatic Hydrocarbon Areas and Quantitations:
C9-C10 Area 1,651 Quant: 2.2

Target Analytes:

| COMPOUND | RT | Cal RRT | RRT | Area | ug/L Amount | Flag |
|---|---|---|---|---|---|---|
| MTBE | 0.00 | 0.00 | 0.00 | 0 | < 1.00 | U |
| Benzene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| Toluene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| Ethylbenzene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| m+p Xylenes | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| o-Xylene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| 124-Trimethylbenzene | 0.00 | 0.00 | 0.00 | 0 | < 2.00 | U |
| Naphthalene | 0.00 | 0.00 | 0.00 | 0 | < 1.00 | U |

| SURROGATE CMPND | RT | ACTUAL | MEASURED | %RECOVERY | QC LIMITS |
|---|---|---|---|---|---|
| **Trifluorotoluene | 8.22 | 50.0 | 45.4 | 91 | 70-130 |

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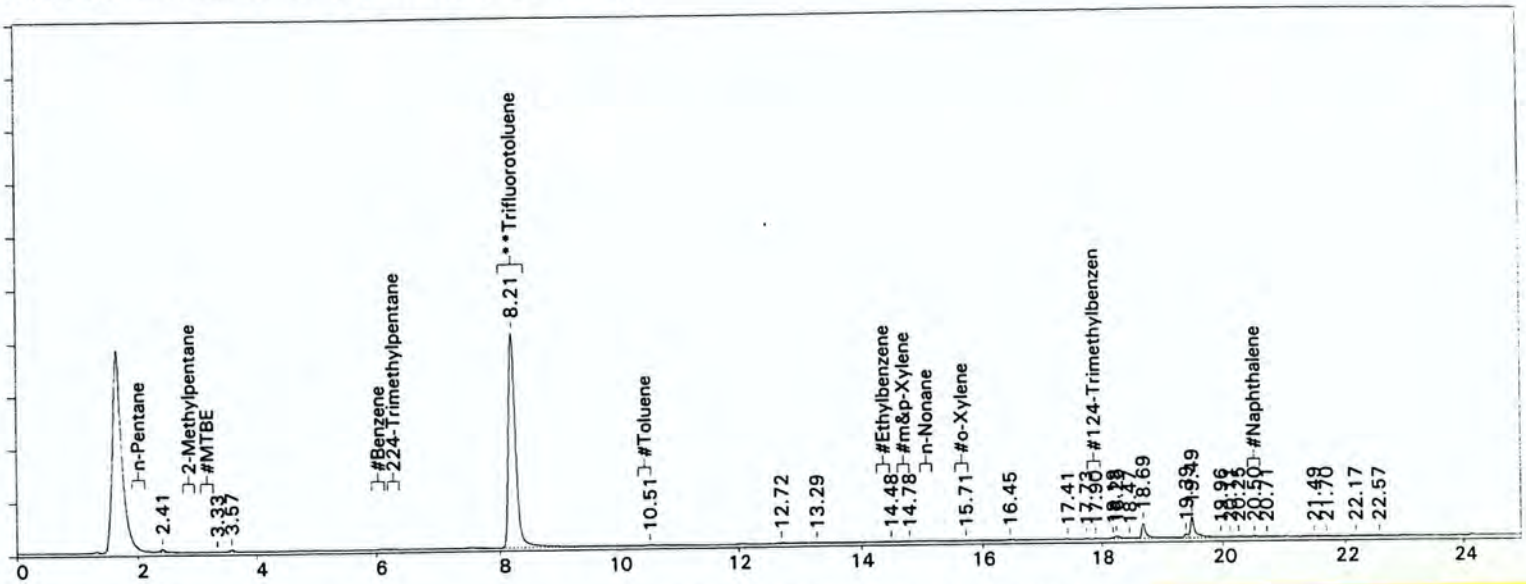
File=G:\ORG\PE2\1226QE2B.10R Date printed=12-26-2001 Time= 16:21:16
Sample Name=002-01-61336 ;01-61336 VPH Water :G12261Q1
0.0 to 25.0 min. Low Y=3.603 High Y=153.603 mv Span=150.0




ENERGY LABORATORIES, INC.----ALIPHATICS VPH CHROMATOGRAM
Sample Name: 002-01-61336 ;01-61336 VPH Water :G12261Q1
Area File: G:\ORG\PE2\1226QE2B.10A
Date & Time Collected: Dec 26, 2001 16:20:45
Method File: G:\ORG\PE2\38MAQ01B.MET
Calibration File: G:\ORG\PE2\38MAQ01B.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1
Mean RF for C5 to C8 Aliphatic Hydrocarbons: 1881.717
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 1814.195
Mean RF for all calibrated compounds: 2382.639
Rt range for Gasoline Range Organics: 2.753181 to 17.9712
Rt range for C5 to C8 Aliphatic Hydrocarbons: 1.911517 to 14.95815
Rt range for C9 to C12 Aliphatic Hydrocarbons: 15.00815 to 20.40485

MOC-20B

Peaks subtracted from Total:

| Compound Name | RT | Area | Amount | %Recovery |
|---|---|---|---|---|
| ========== | ===== | ======== | ======== | ========= |
| **Trifluorotoluene | 8.2 | 484,357 | 43 | 87 |

| | | | |
|---|---|---|---|
| GRO Area: | 25,823 | Quant: | 2.2 |
| TPH Area: | 107,919 | Quant: | 9.1 |

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:

| | | | |
|---|---|---|---|
| C5-C8 Area: | 20,165 | Quant: | 2.1 |
| C9-C12 Area | 80,321 | Quant: | 8.9 |

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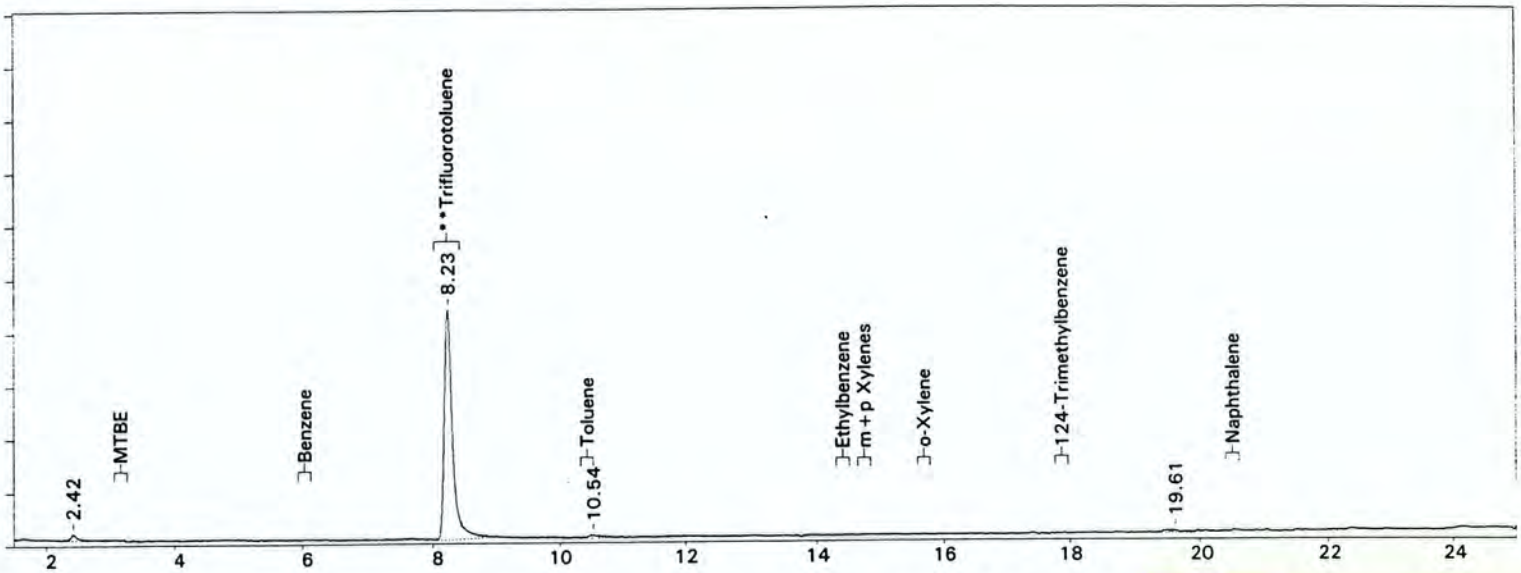
File=G:\ORG\PE2\1226QE2.12R Date printed=12-26-2001 Time= 17:40:41
Sample Name=003-01-61336 ;01-61336 VPH Water :G12261Q1
1.5 to 25.0 min. Low Y=1.287 High Y=4.287 mv Span=3.0




ENERGY LABORATORIES, INC.----AROMATICS VPH CHROMATOGRAM
Sample Name: 003-01-61336 ;01-61336 VPH Water :G12261Q1
Area File: G:\ORG\PE2\1226QE2.12A
Date & Time Collected: Dec 26, 2001 17:40:35
Method File: G:\ORG\PE2\38MAQ01.MET
Calibration File: G:\ORG\PE2\38MAQ01.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

MOC-20-A

Mean RF for C9 to C10 Aromatic Hydrocarbons: 146.8005
Rt range for C9 to C10 Aromatic Hydrocarbons: 15.7469 to 20.40367

Aromatic Hydrocarbon Areas and Quantitations:
C9-C10 Area 380 Quant: 0.5

Target Analytes:

| COMPOUND | RT | Cal RRT | RRT | Area | ug/L Amount | Flag |
|---|---|---|---|---|---|---|
| MTBE | 0.00 | 0.00 | 0.00 | 0 | < 1.00 | U |
| Benzene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| Toluene | 10.54 | -2.21 | -2.30 | 368 | 0.42 | J |
| Ethylbenzene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| m+p Xylenes | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| o-Xylene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| 124-Trimethylbenzene | 0.00 | 0.00 | 0.00 | 0 | < 2.00 | U |
| Naphthalene | 0.00 | 0.00 | 0.00 | 0 | < 1.00 | U |

| SURROGATE CMPND | RT | ACTUAL | MEASURED | %RECOVERY | QC LIMITS |
|---|---|---|---|---|---|
| **Trifluorotoluene | 8.23 | 50.0 | 44.0 | 88 | 70-130 |

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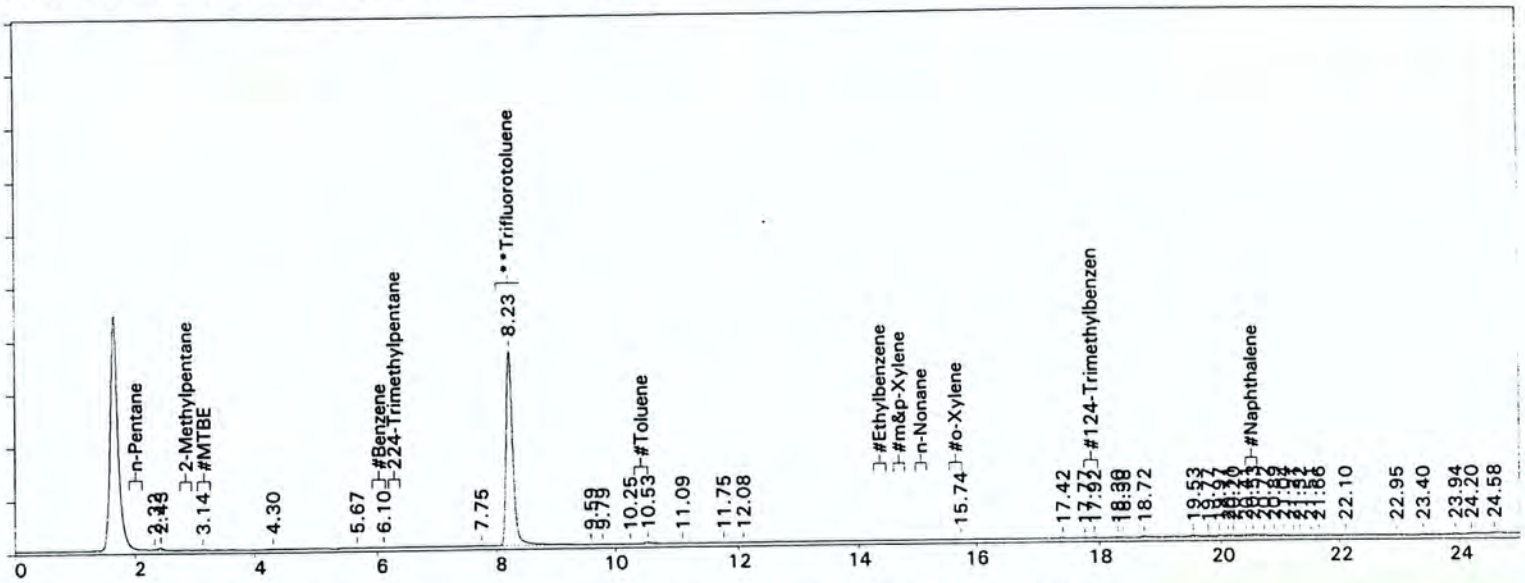
File=G:\ORG\PE2\1226QE2B.12R Date printed=12-26-2001 Time= 17:41:06
Sample Name=003-01-61336 ;01-61336 VPH Water :G12261Q1
0.0 to 25.0 min. Low Y=3.325 High Y=153.325 mv Span=150.0




ENERGY LABORATORIES, INC.----ALIPHATICS VPH CHROMATOGRAM
Sample Name: 003-01-61336 ;01-61336 VPH Water :G12261Q1
Area File: G:\ORG\PE2\1226QE2B.12A
Date & Time Collected: Dec 26, 2001 17:40:35
Method File: G:\ORG\PE2\38MAQ01B.MET
Calibration File: G:\ORG\PE2\38MAQ01B.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1
Mean RF for C5 to C8 Aliphatic Hydrocarbons: 1881.717
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 1814.195
Mean RF for all calibrated compounds: 2382.639
Rt range for Gasoline Range Organics: 2.753181 to 17.9712
Rt range for C5 to C8 Aliphatic Hydrocarbons: 1.911517 to 14.95815
Rt range for C9 to C12 Aliphatic Hydrocarbons: 15.00815 to 20.40485

MOC-20-A

Peaks subtracted from Total:

| Compound Name | RT | Area | Amount | %Recovery |
|---|---|---|---|---|
| ========== | ===== | ======== | ======== | ========= |
| **Trifluorotoluene | 8.2 | 441,303 | 39 | 79 |

| | | | |
|---|---|---|---|
| GRO Area: | 24,348 | Quant: | 2.0 |
| TPH Area: | 68,556 | Quant: | 5.8 |

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:

| | | | |
|---|---|---|---|
| C5-C8 Area: | 24,691 | Quant: | 2.6 |
| C9-C12 Area | 20,445 | Quant: | 2.3 |

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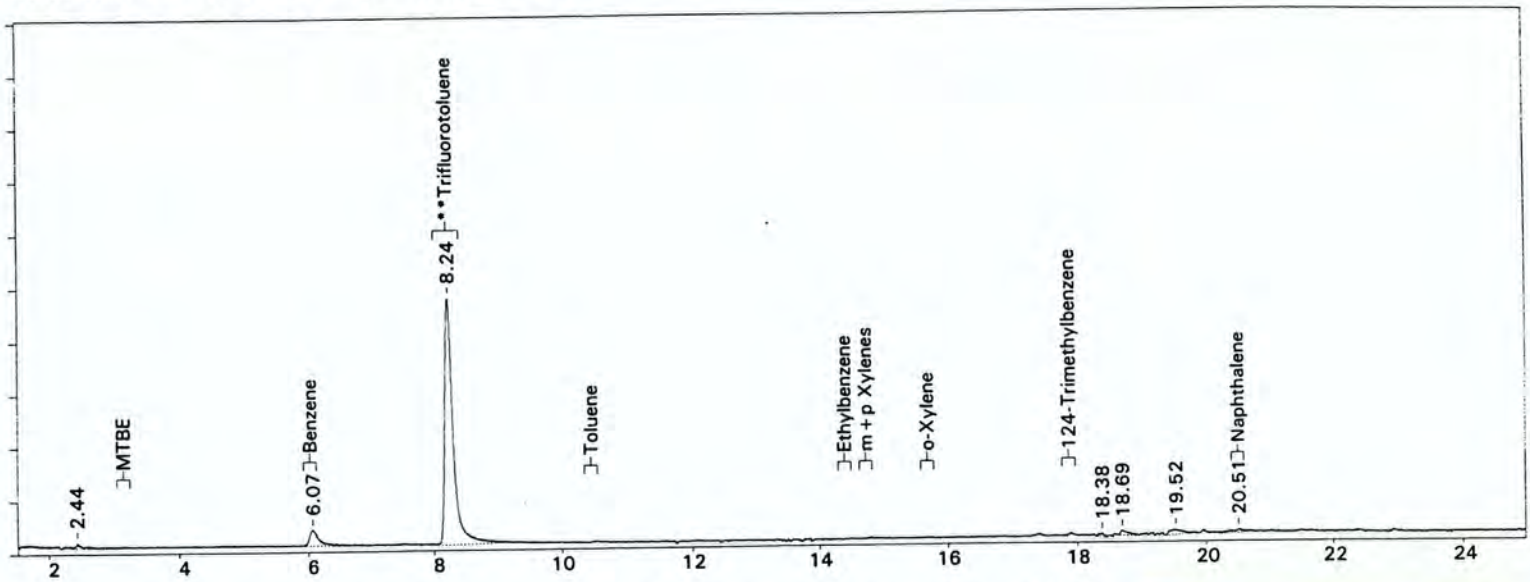
File=G:\ORG\PE2\1226QE2.14R Date printed=12-26-2001 Time= 18:57:11
Sample Name=004-01-61336 ;01-61336 VPH Water :G12261Q1
1.5 to 25.0 min. Low Y=1.278 High Y=4.278 mv Span=3.0




ENERGY LABORATORIES, INC.----AROMATICS VPH CHROMATOGRAM
Sample Name: 004-01-61336 ;01-61336 VPH Water :G12261Q1
Area File: G:\ORG\PE2\1226QE2.14A
Date & Time Collected: Dec 26, 2001 18:57:05
Method File: G:\ORG\PE2\38MAQ01.MET
Calibration File: G:\ORG\PE2\38MAQ01.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

MOC-17-R

Mean RF for C9 to C10 Aromatic Hydrocarbons: 146.8005
Rt range for C9 to C10 Aromatic Hydrocarbons: 15.7469 to 20.40367

Aromatic Hydrocarbon Areas and Quantitations:
C9-C10 Area 854 Quant: 1.2

Target Analytes:

| COMPOUND | RT | Cal RRT | RRT | Area | ug/L Amount | Flag |
|---|---|---|---|---|---|---|
| MTBE | 0.00 | 0.00 | 0.00 | 0 | < 1.00 | U |
| Benzene | 6.07 | 2.18 | 2.17 | 1231 | 1.39 | |
| Toluene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| Ethylbenzene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| m+p Xylenes | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| o-Xylene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| 124-Trimethylbenzene | 0.00 | 0.00 | 0.00 | 0 | < 2.00 | U |
| Naphthalene | 20.51 | 20.51 | 20.51 | 247 | < 1.00 | U |

| SURROGATE CMPND | RT | ACTUAL | MEASURED | %RECOVERY | QC LIMITS |
|---|---|---|---|---|---|
| **Trifluorotoluene | 8.24 | 50.0 | 47.9 | 96 | 70-130 |

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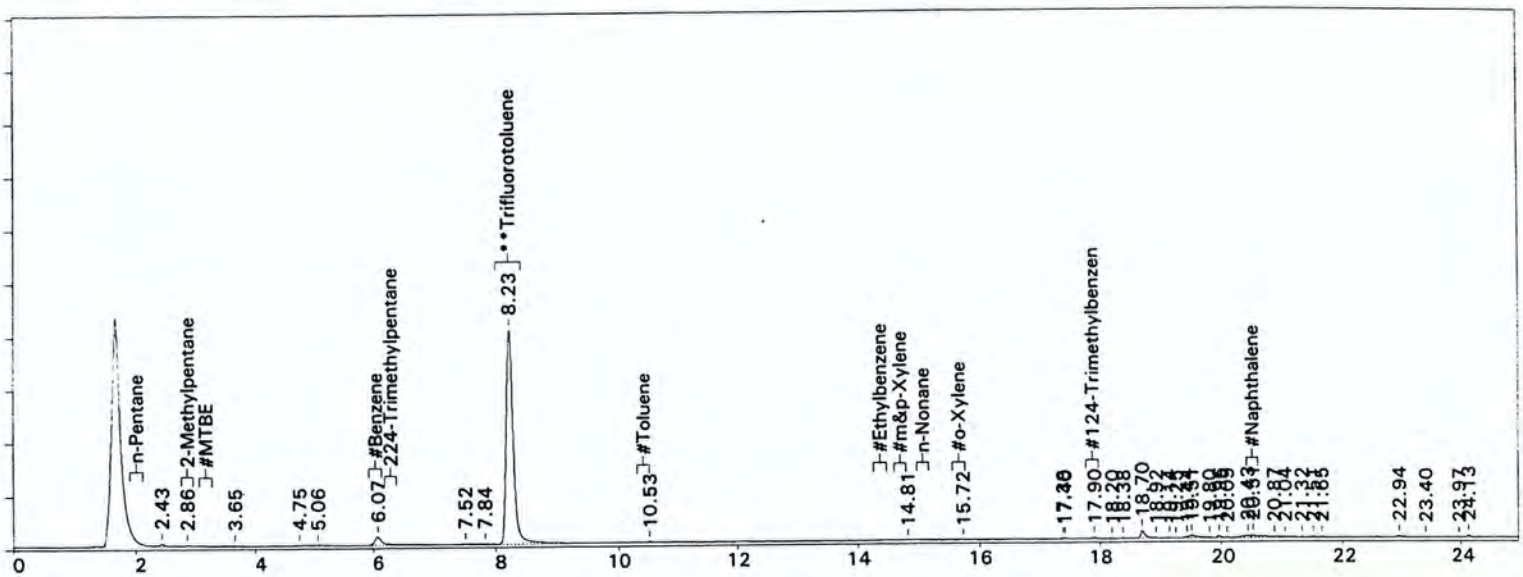
File=G:\ORG\PE2\1226QE2B.14R Date printed=12-26-2001 Time= 18:57:36
Sample Name=004-01-61336 ;01-61336 VPH Water :G12261Q1
0.0 to 25.0 min. Low Y=3.512 High Y=153.512 mv Span=150.0




ENERGY LABORATORIES, INC.----ALIPHATICS VPH CHROMATOGRAM
Sample Name: 004-01-61336 ;01-61336 VPH Water :G12261Q1
Area File: G:\ORG\PE2\1226QE2B.14A
Date & Time Collected: Dec 26, 2001 18:57:05
Method File: G:\ORG\PE2\38MAQ01B.MET
Calibration File: G:\ORG\PE2\38MAQ01B.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1
Mean RF for C5 to C8 Aliphatic Hydrocarbons: 1881.717
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 1814.195
Mean RF for all calibrated compounds: 2382.639
Rt range for Gasoline Range Organics: 2.753181 to 17.9712
Rt range for C5 to C8 Aliphatic Hydrocarbons: 1.911517 to 14.95815
Rt range for C9 to C12 Aliphatic Hydrocarbons: 15.00815 to 20.40485

MOC-17-R

Peaks subtracted from Total:

| Compound Name | RT | Area | Amount | %Recovery |
|---|---|---|---|---|
| **Trifluorotoluene | 8.2 | 479,652 | 43 | 86 |

| | | | |
|---|---|---|---|
| GRO Area: | 39,094 | Quant: | 3.3 |
| TPH Area: | 102,241 | Quant: | 8.6 |

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:

| | | | |
|---|---|---|---|
| C5-C8 Area: | 36,387 | Quant: | 3.9 |
| C9-C12 Area | 36,571 | Quant: | 4.0 |

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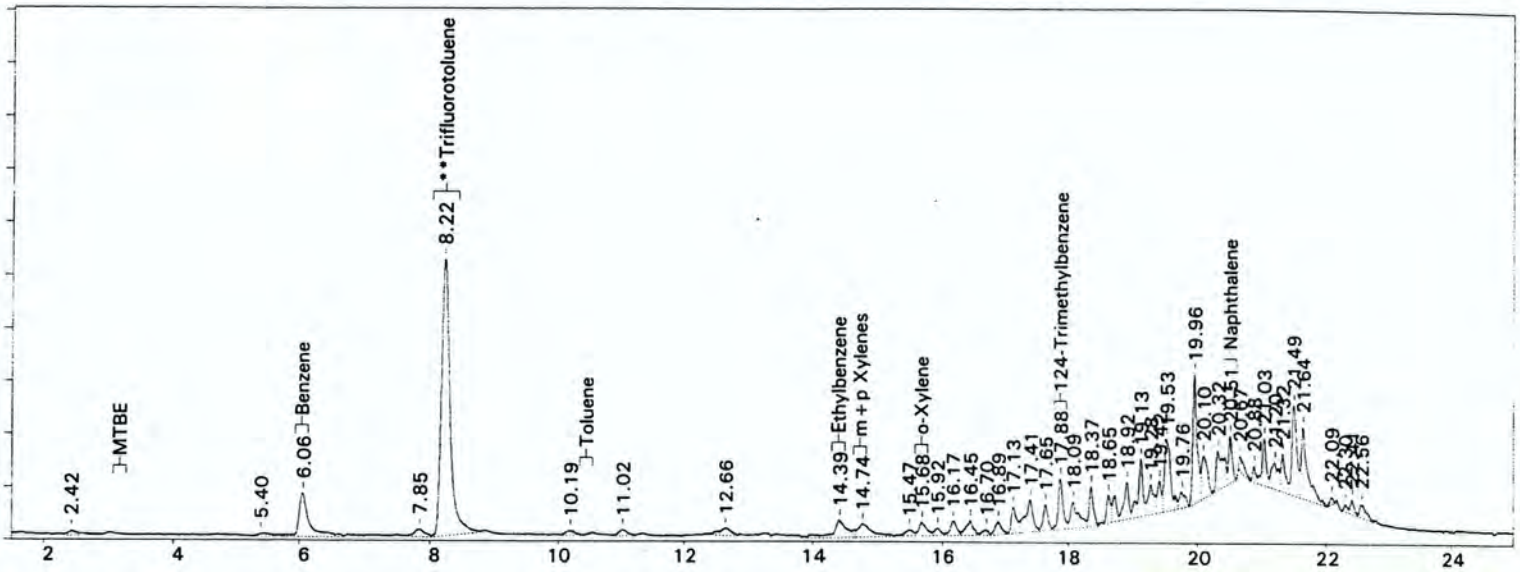
File=G:\ORG\PE2\1227QE2.13R Date printed=12-29-2001 Time= 03:52:06
Sample Name=005-01-61336 ;01-61336 VPH Water :G12271Q1
1.5 to 25.0 min. Low Y=1.294 High Y=4.294 mv Span=3.0




ENERGY LABORATORIES, INC.----AROMATICS VPH CHROMATOGRAM
Sample Name: 005-01-61336 ;01-61336 VPH Water :G12271Q1
Area File: G:\ORG\PE2\1227QE2.13A
Date & Time Collected: Dec 27, 2001 17:40:33
Method File: G:\ORG\PE2\1228Q2.MET
Calibration File: G:\ORG\PE2\38MAQ01.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

MOC-13D

Mean RF for C9 to C10 Aromatic Hydrocarbons: 146.8005
Rt range for C9 to C10 Aromatic Hydrocarbons: 15.7469 to 20.40367

Aromatic Hydrocarbon Areas and Quantitations:
C9-C10 Area 24,784 Quant: 33.8

Target Analytes:

| COMPOUND | RT | Cal RRT | RRT | Area | ug/L Amount | Flag |
|---|---|---|---|---|---|---|
| MTBE | 0.00 | 0.00 | 0.00 | 0 | < 1.00 | U |
| Benzene | 6.06 | 2.18 | 2.16 | 2733 | 3.09 | |
| Toluene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| Ethylbenzene | 14.39 | -6.14 | -6.17 | 1406 | 2.22 | |
| m+p Xylenes | 14.74 | -6.47 | -6.52 | 1249 | 1.55 | |
| o-Xylene | 15.68 | -7.43 | -7.45 | 656 | 0.88 | |
| 124-Trimethylbenzene | 17.88 | -9.65 | -9.66 | 1519 | 2.08 | |
| Naphthalene | 20.51 | -12.28 | -12.29 | 1027 | 2.00 | |

| SURROGATE CMPND | RT | ACTUAL | MEASURED | %RECOVERY | QC LIMITS |
|---|---|---|---|---|---|
| **Trifluorotoluene | 8.22 | 50.0 | 52.4 | 105 | 70-130 |

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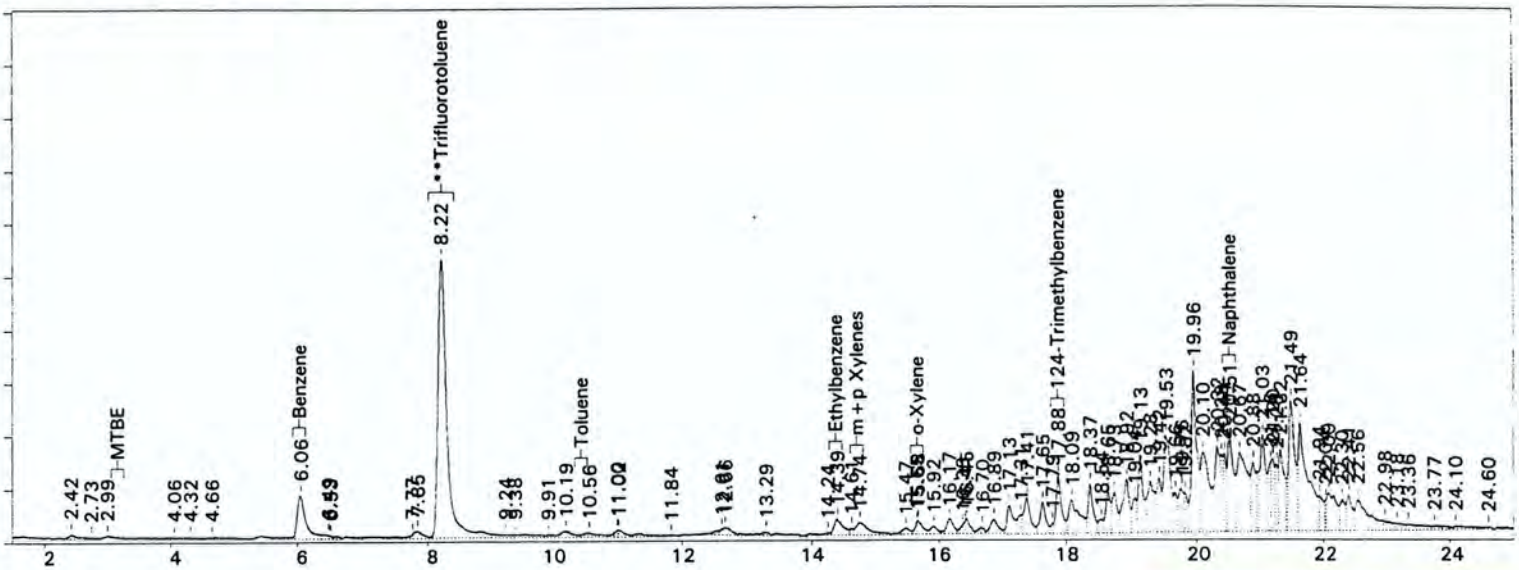
File=G:\ORG\PE2\1227QE2.13R Date printed=12-29-2001 Time= 03:54:00
Sample Name=005-01-61336 ;01-61336 VPH Water :G12271Q1
1.5 to 25.0 min. Low Y=1.294 High Y=4.294 mv Span=3.0




ENERGY LABORATORIES, INC.----AROMATICS VPH CHROMATOGRAM
Sample Name: 005-01-61336 ;01-61336 VPH Water :G12271Q1
Area File: G:\ORG\PE2\1227QE2.13A
Date & Time Collected: Dec 27, 2001 17:40:33
Method File: G:\ORG\PE2\1228Q3.MET
Calibration File: G:\ORG\PE2\38MAQ01.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

MOC-13 D

Mean RF for C9 to C10 Aromatic Hydrocarbons: 146.8005
Rt range for C9 to C10 Aromatic Hydrocarbons: 15.7469 to 20.40367

Aromatic Hydrocarbon Areas and Quantitations:
C9-C10 Area 44,230 Quant: 60.3

Target Analytes:

| COMPOUND | RT | Cal RRT | RRT | Area | ug/L Amount | Flag |
|---|---|---|---|---|---|---|
| MTBE | 0.00 | 0.00 | 0.00 | 0 | < 1.00 | U |
| Benzene | 6.06 | 2.18 | 2.16 | 2304 | 2.61 | |
| Toluene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| Ethylbenzene | 14.39 | -6.14 | -6.17 | 886 | 1.40 | |
| m+p Xylenes | 14.74 | -6.47 | -6.52 | 964 | 1.20 | |
| o-Xylene | 15.65 | 15.65 | 15.65 | 158 | < 0.50 | U |
| 124-Trimethylbenzene | 17.88 | -9.65 | -9.66 | 1924 | 2.63 | |
| Naphthalene | 20.51 | -12.28 | -12.29 | 3446 | 6.70 | |

| SURROGATE CMPND | RT | ACTUAL | MEASURED | %RECOVERY | QC LIMITS |
|---|---|---|---|---|---|
| **Trifluorotoluene | 8.22 | 50.0 | 55.7 | 111 | 70-130 |

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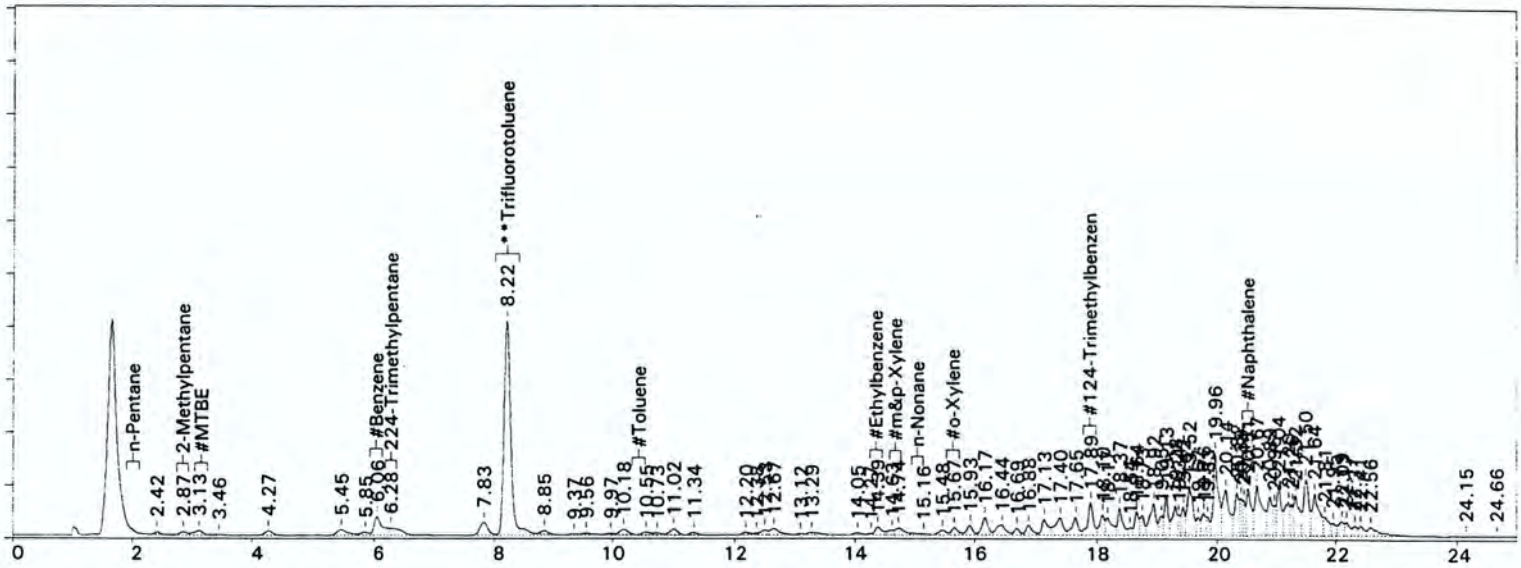
File=G:\ORG\PE2\1227QE2B.13R Date printed=12-29-2001 Time= 03:49:46
Sample Name=005-01-61336 ;01-61336 VPH Water :G12271Q1
0.0 to 25.0 min. Low Y=3.258 High Y=153.258 mv Span=150.0




ENERGY LABORATORIES, INC.----ALIPHATICS VPH CHROMATOGRAM
Sample Name: 005-01-61336 ;01-61336 VPH Water :G12271Q1
Area File: G:\ORG\PE2\1227QE2B.13A
Date & Time Collected: Dec 27, 2001 17:40:33
Method File: G:\ORG\PE2\38MAQ01B.MET
Calibration File: G:\ORG\PE2\38MAQ01B.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1
Mean RF for C5 to C8 Aliphatic Hydrocarbons: 1881.717
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 1814.195
Mean RF for all calibrated compounds: 2382.639
Rt range for Gasoline Range Organics: 2.753181 to 17.9712
Rt range for C5 to C8 Aliphatic Hydrocarbons: 1.911517 to 14.95815
Rt range for C9 to C12 Aliphatic Hydrocarbons: 15.00815 to 20.40485

MOC-13D

Peaks subtracted from Total:

| Compound Name | RT | Area | Amount | %Recovery |
|---|---|---|---|---|
| **Trifluorotoluene | 8.2 | 506,903 | 45 | 91 |

| | | | |
|---|---|---|---|
| GRO Area: | 689,281 | Quant: | 57.9 |
| TPH Area: | 2,534,999 | Quant: | 212.8 |

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:

| | | | |
|---|---|---|---|
| C5-C8 Area: | 367,073 | Quant: | 39.0 |
| C9-C12 Area | 1,241,335 | Quant: | 136.8 |

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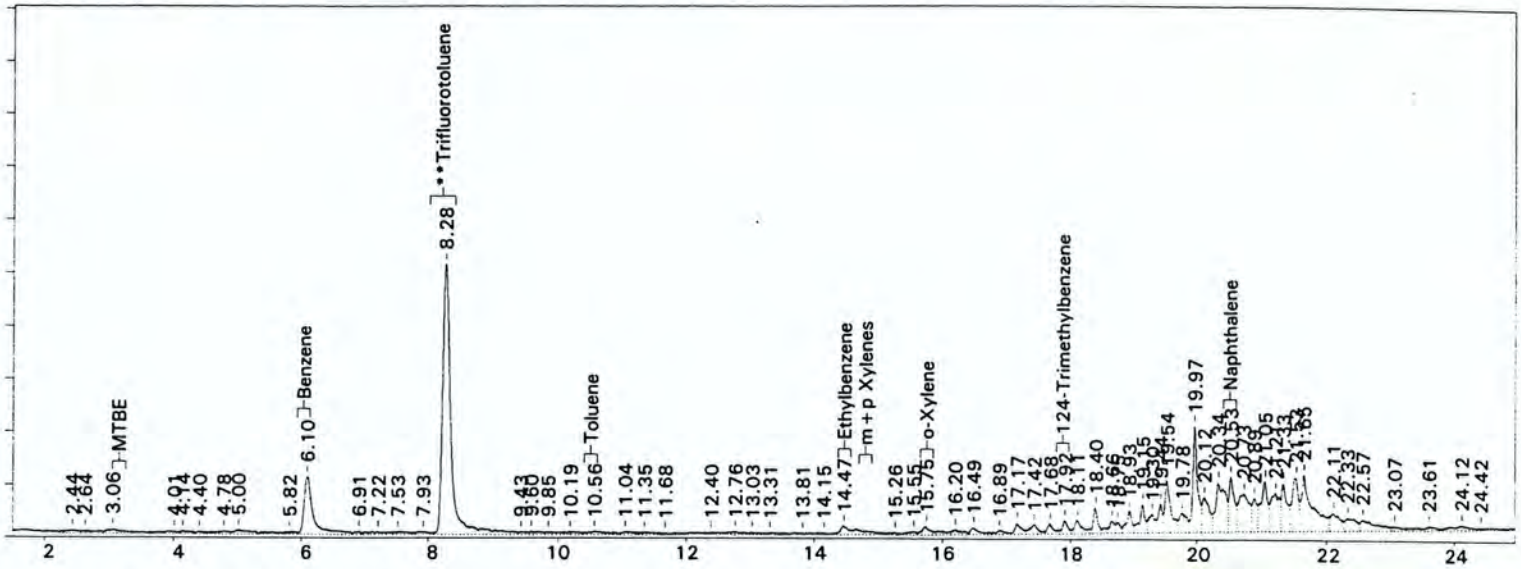
File=G:\ORG\PE2\1228QE2.08R Date printed=12-29-2001 Time= 03:32:05
Sample Name=006-01-61336 ;01-61336 VPH Water :G12281Q1
1.5 to 25.0 min. Low Y=1.278 High Y=4.278 mv Span=3.0




ENERGY LABORATORIES, INC.----AROMATICS VPH CHROMATOGRAM
Sample Name: 006-01-61336 ;01-61336 VPH Water :G12281Q1
Area File: G:\ORG\PE2\1228QE2.08A
Date & Time Collected: Dec 28, 2001 14:56:17
Method File: G:\ORG\PE2\1228Q1.MET
Calibration File: G:\ORG\PE2\38MAQ01.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

MOC -13

Mean RF for C9 to C10 Aromatic Hydrocarbons: 146.8005
Rt range for C9 to C10 Aromatic Hydrocarbons: 15.7469 to 20.40367

Aromatic Hydrocarbon Areas and Quantitations:
C9-C10 Area 18,575 Quant: 25.3

Target Analytes:

| COMPOUND | RT | Cal RRT | RRT | Area | ug/L Amount | Flag |
|---|---|---|---|---|---|---|
| MTBE | 3.06 | 5.06 | 5.21 | 410 | 1.05 | |
| Benzene | 6.10 | 2.18 | 2.18 | 3356 | 3.80 | |
| Toluene | 10.56 | 10.56 | 10.56 | 309 | < 0.50 | U |
| Ethylbenzene | 14.47 | -6.14 | -6.19 | 824 | 1.30 | |
| m+p Xylenes | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| o-Xylene | 15.75 | -7.43 | -7.47 | 585 | 0.78 | |
| 124-Trimethylbenzene | 17.92 | 17.92 | 17.92 | 476 | < 2.00 | U |
| Naphthalene | 20.53 | -12.28 | -12.25 | 1837 | 3.57 | |

| SURROGATE CMPND | RT | ACTUAL | MEASURED | %RECOVERY | QC LIMITS |
|---|---|---|---|---|---|
| **Trifluorotoluene | 8.28 | 50.0 | 52.8 | 106 | 70-130 |

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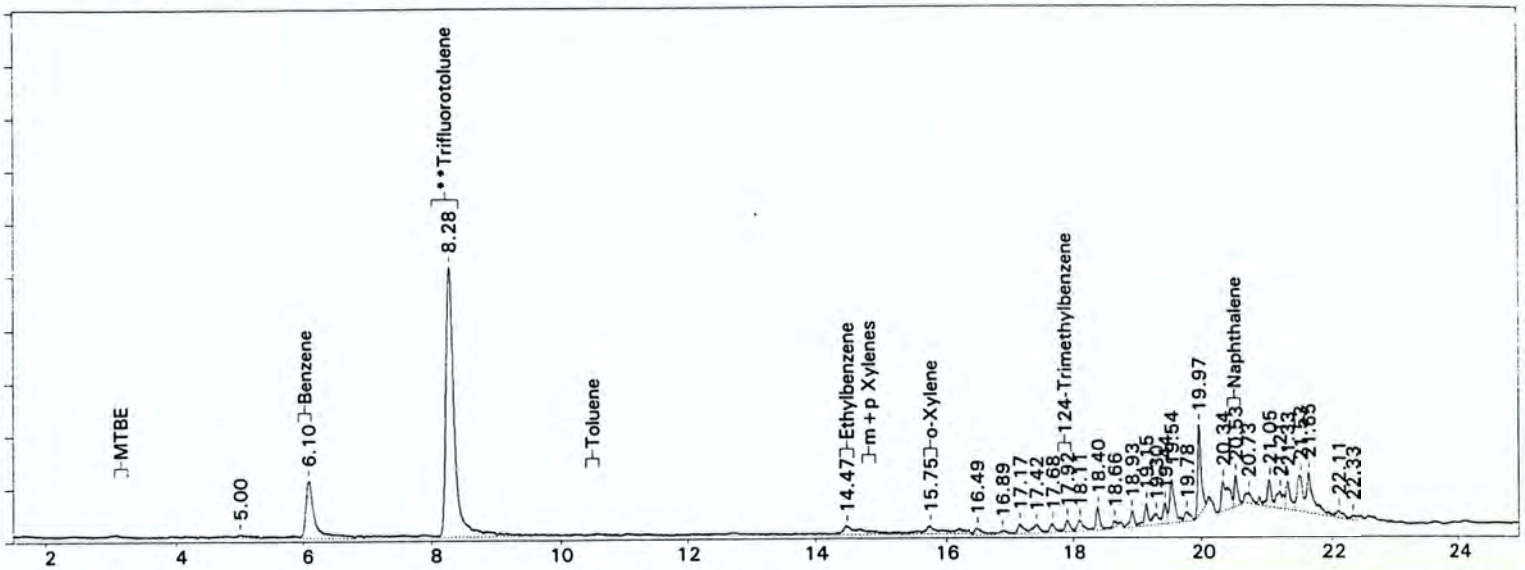
File=G:\ORG\PE2\1228QE2.08R Date printed=12-29-2001 Time= 03:32:11
Sample Name=006-01-61336 ;01-61336 VPH Water :G12281Q1
1.5 to 25.0 min. Low Y=1.278 High Y=4.278 mv Span=3.0




ENERGY LABORATORIES, INC.----AROMATICS VPH CHROMATOGRAM
Sample Name: 006-01-61336 ;01-61336 VPH Water :G12281Q1
Area File: G:\ORG\PE2\1228QE2.08A
Date & Time Collected: Dec 28, 2001 14:56:17
Method File: G:\ORG\PE2\1228Q2.MET
Calibration File: G:\ORG\PE2\38MAQ01.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

MOC-13

Mean RF for C9 to C10 Aromatic Hydrocarbons: 146.8005
Rt range for C9 to C10 Aromatic Hydrocarbons: 15.7469 to 20.40367

Aromatic Hydrocarbon Areas and Quantitations:
C9-C10 Area 9,408 Quant: 12.8

Target Analytes:

| COMPOUND | RT | Cal RRT | RRT | Area | ug/L Amount | Flag |
|---|---|---|---|---|---|---|
| MTBE | 0.00 | 0.00 | 0.00 | 0 | < 1.00 | U |
| Benzene | 6.10 | 2.18 | 2.18 | 3288 | 3.72 | |
| Toluene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| Ethylbenzene | 14.47 | -6.14 | -6.19 | 823 | 1.30 | |
| m+p Xylenes | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| o-Xylene | 15.75 | -7.43 | -7.47 | 810 | 1.09 | |
| 124-Trimethylbenzene | 17.92 | 17.92 | 17.92 | 324 | < 2.00 | U |
| Naphthalene | 20.53 | -12.28 | -12.25 | 714 | 1.39 | |

| SURROGATE CMPND | RT | ACTUAL | MEASURED | %RECOVERY | QC LIMITS |
|---|---|---|---|---|---|
| **Trifluorotoluene | 8.28 | 50.0 | 51.5 | 103 | 70-130 |

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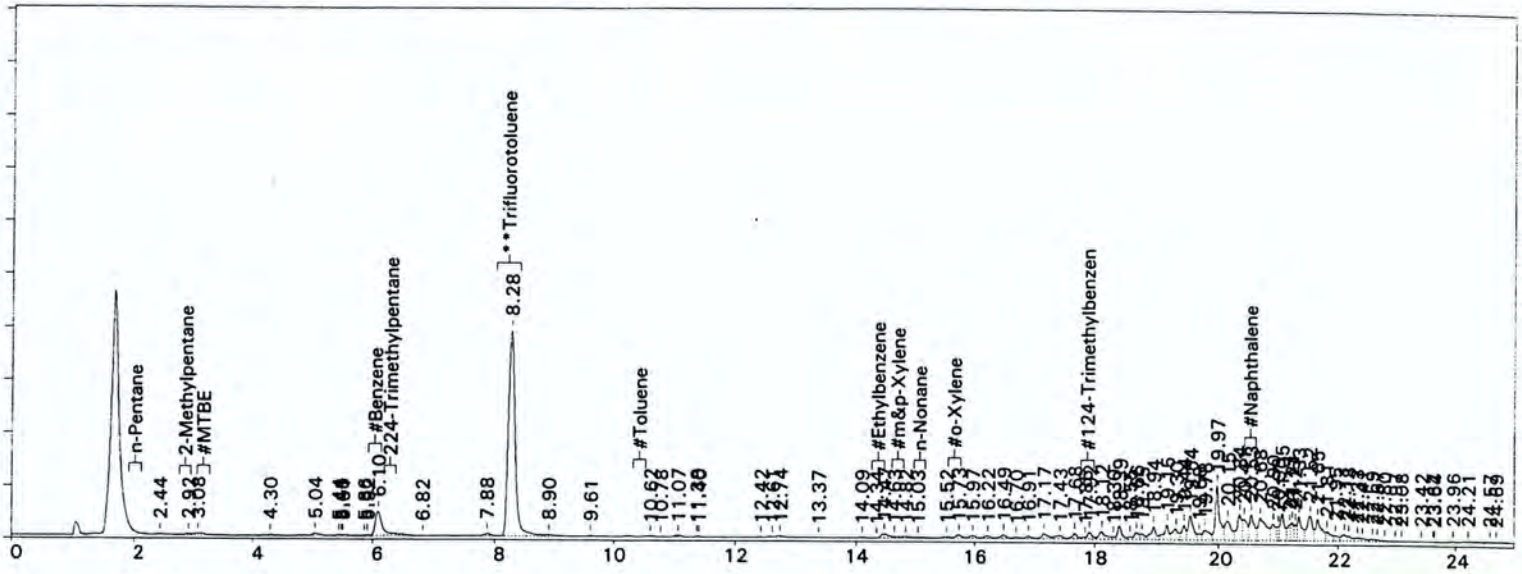
File=G:\ORG\PE2\1228QE2B.08R Date printed=12-29-2001 Time= 03:17:25
Sample Name=006-01-61336 ;01-61336 VPH Water :G12281Q1
0.0 to 25.0 min. Low Y=2.843 High Y=152.843 mv Span=150.0




ENERGY LABORATORIES, INC.----ALIPHATICS VPH CHROMATOGRAM
Sample Name: 006-01-61336 ;01-61336 VPH Water :G12281Q1
Area File: G:\ORG\PE2\1228QE2B.08A
Date & Time Collected: Dec 28, 2001 14:56:17
Method File: G:\ORG\PE2\38MAQ01B.MET
Calibration File: G:\ORG\PE2\38MAQ01B.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1
Mean RF for C5 to C8 Aliphatic Hydrocarbons: 1881.717
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 1814.195
Mean RF for all calibrated compounds: 2382.639
Rt range for Gasoline Range Organics: 2.753181 to 17.9712
Rt range for C5 to C8 Aliphatic Hydrocarbons: 1.911517 to 14.95815
Rt range for C9 to C12 Aliphatic Hydrocarbons: 15.00815 to 20.40485

MOC-13

Peaks subtracted from Total:

| Compound Name | RT | Area | Amount | %Recovery |
|---|---|---|---|---|
| **Trifluorotoluene | 8.3 | 451,365 | 40 | 81 |

| | | | |
|---|---|---|---|
| GRO Area: | 230,824 | Quant: | 19.4 |
| TPH Area: | 1,068,093 | Quant: | 89.7 |

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:

| | | | |
|---|---|---|---|
| C5-C8 Area: | 145,820 | Quant: | 15.5 |
| C9-C12 Area | 453,606 | Quant: | 50.0 |

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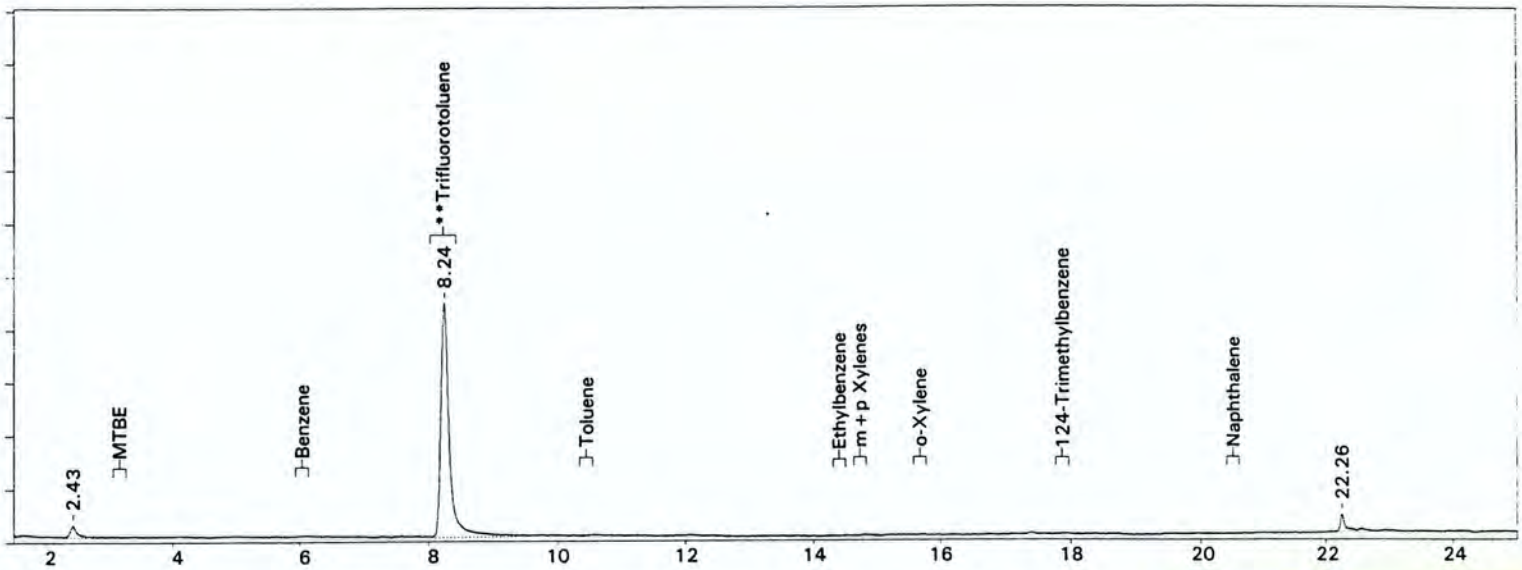
File=G:\ORG\PE2\1226QE2.20R Date printed=12-26-2001 Time= 22:46:16
Sample Name=008-01-61336 ;01-61336 VPH Water :G12261Q1
1.5 to 25.0 min. Low Y=1.287 High Y=4.287 mv Span=3.0




ENERGY LABORATORIES, INC.----AROMATICS VPH CHROMATOGRAM
Sample Name: 008-01-61336 ;01-61336 VPH Water :G12261Q1
Area File: G:\ORG\PE2\1226QE2.20A
Date & Time Collected: Dec 26, 2001 22:46:11
Method File: G:\ORG\PE2\38MAQ01.MET
Calibration File: G:\ORG\PE2\38MAQ01.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

MOC-19R

Mean RF for C9 to C10 Aromatic Hydrocarbons: 146.8005
Rt range for C9 to C10 Aromatic Hydrocarbons: 15.7469 to 20.40367

Aromatic Hydrocarbon Areas and Quantitations:
C9-C10 Area 0 Quant: 0.0

Target Analytes:

| COMPOUND | RT | Cal RRT | RRT | Area | ug/L Amount | Flag |
|---|---|---|---|---|---|---|
| MTBE | 0.00 | 0.00 | 0.00 | 0 | < 1.00 | U |
| Benzene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| Toluene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| Ethylbenzene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| m+p Xylenes | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| o-Xylene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| 124-Trimethylbenzene | 0.00 | 0.00 | 0.00 | 0 | < 2.00 | U |
| Naphthalene | 0.00 | 0.00 | 0.00 | 0 | < 1.00 | U |

| SURROGATE CMPND | RT | ACTUAL | MEASURED | %RECOVERY | QC LIMITS |
|---|---|---|---|---|---|
| **Trifluorotoluene | 8.24 | 50.0 | 46.8 | 94 | 70-130 |

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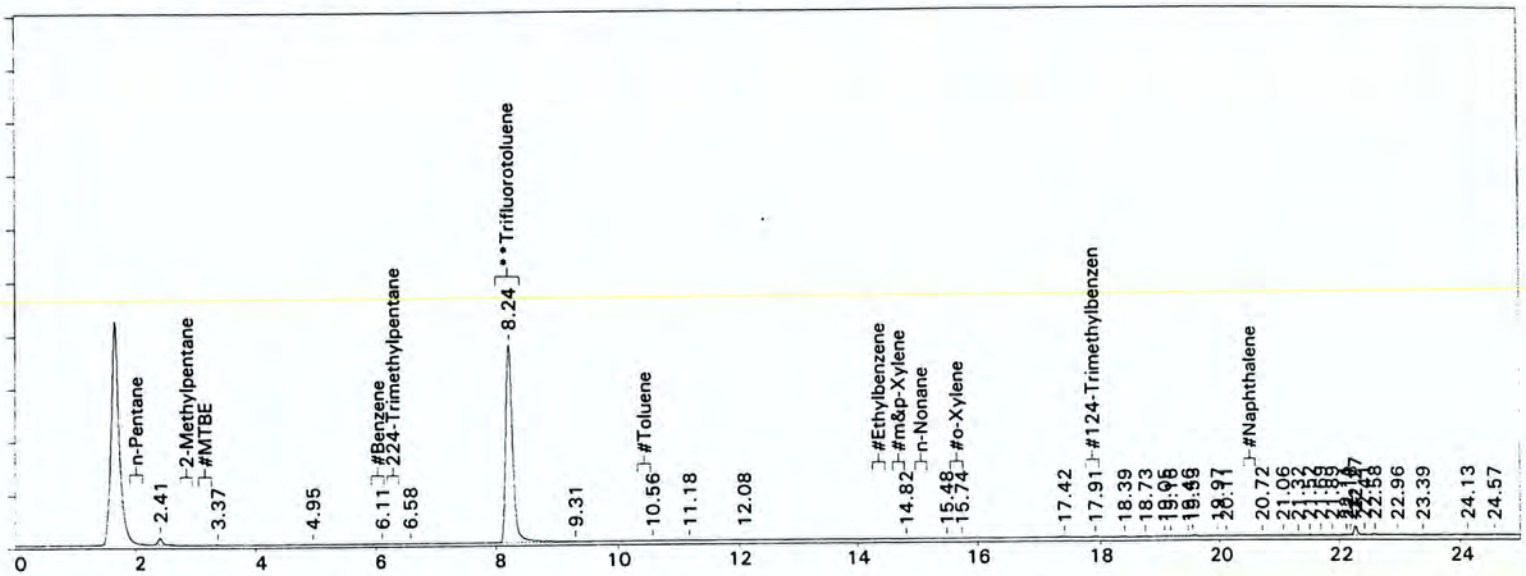
File=G:\ORG\PE2\1226QE2B.20R Date printed=12-26-2001 Time= 22:46:41
Sample Name=008-01-61336 ;01-61336 VPH Water :G12261Q1
0.0 to 25.0 min. Low Y=3.716 High Y=153.716 mv Span=150.0




ENERGY LABORATORIES, INC.----ALIPHATICS VPH CHROMATOGRAM
Sample Name: 008-01-61336 ;01-61336 VPH Water :G12261Q1
Area File: G:\ORG\PE2\1226QE2B.20A
Date & Time Collected: Dec 26, 2001 22:46:11
Method File: G:\ORG\PE2\38MAQ01B.MET
Calibration File: G:\ORG\PE2\38MAQ01B.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1
Mean RF for C5 to C8 Aliphatic Hydrocarbons: 1881.717
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 1814.195
Mean RF for all calibrated compounds: 2382.639
Rt range for Gasoline Range Organics: 2.753181 to 17.9712
Rt range for C5 to C8 Aliphatic Hydrocarbons: 1.911517 to 14.95815
Rt range for C9 to C12 Aliphatic Hydrocarbons: 15.00815 to 20.40485

MOC-19R

Peaks subtracted from Total:

| Compound Name | RT | Area | Amount | %Recovery |
|---|---|---|---|---|
| **Trifluorotoluene | 8.2 | 442,703 | 40 | 79 |

| | | | |
|---|---|---|---|
| GRO Area: | 21,460 | Quant: | 1.8 |
| TPH Area: | 71,592 | Quant: | 6.0 |

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:

| | | | |
|---|---|---|---|
| C5-C8 Area: | 25,644 | Quant: | 2.7 |
| C9-C12 Area | 17,467 | Quant: | 1.9 |

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# LABORATORY ANALYSIS REPORT

**HydroSolutions, Inc.**
**Tom Osborne**
**P.O. Box 80866**
**Billings, MT 59108**

**Project ID:** MURPHY 003
**Sample ID:** MOC-23
**Laboratory ID:** 01-61336-1
**Sample Matrix:** Water
**Sample Date:** 17-Dec-01 1015
**Received at lab:** 21-Dec-01
**Reported:** 04-Jan-02

| | Results | Units | Qual | Reporting Limit | Regulatory Limit | Method | Analyzed | |
|---|---|---|---|---|---|---|---|---|
| Calcium | 574 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0643 | RLH |
| Magnesium | 451 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0643 | RLH |
| Potassium | 13 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0643 | RLH |
| Sodium | 767 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0643 | RLH |
| Hardness, Total as CaCO3 | 3290 | mg/l | | 1 | | Calculated | | |
| Chloride | 2260 | mg/l | | 1 | | EPA 300.0 | 26-Dec-01 1656 | LDV |
| Sulfate | 1820 | mg/l | | 1 | | EPA 300.0 | 26-Dec-01 1656 | LDV |
| Alkalinity as CaCO3 | 250 | mg/l | | 1 | | SM2320B | 27-Dec-01 1116 | AK/LDV |
| Bicarbonate | 305 | mg/l | | 1 | | SM2320B | 27-Dec-01 1116 | AK/LDV |
| Carbonate | <1 | mg/l | | 1 | | SM2320B | 27-Dec-01 1116 | AK/LDV |
| Solids, Total Dissolved at 180 C | 6880 | mg/l | | 10 | | SM 2540C | 26-Dec-01 1324 | AK/LDV |
| Sodium Adsorption Ratio | 5.82 | | | | | Calculated | | |
| Nitrogen, Nitrate plus Nitrite | 20.1 | mg/l | | 0.05 | | EPA 353.2 | 27-Dec-01 1539 | DDB |
| Fluoride | 0.36 | mg/l | | 0.1 | | SM 4500FC | 02-Jan-02 1400 | ND |
| Iron, Dissolved | <0.05 | mg/l | | 0.03 | | EPA 200.7 | 01-Jan-02 0643 | RLH |
| Manganese, Dissolved | 0.02 | mg/l | | 0.01 | | EPA 200.7 | 01-Jan-02 0643 | RLH |
| Strontium, Dissolved | 7.2 | mg/l | | 0.1 | | EPA 200.7 | 01-Jan-02 0643 | RLH |

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# LABORATORY ANALYSIS REPORT

**HydroSolutions, Inc.**
**Tom Osborne**
**P.O. Box 80866**
**Billings, MT 59108**

**Project ID:** MURPHY 003
**Sample ID:** MOC-20B
**Laboratory ID:** 01-61336-2
**Sample Matrix:** Water
**Sample Date:** 17-Dec-01 1420
**Received at lab:** 21-Dec-01
**Reported:** 04-Jan-02

| | Results | Units | Qual | Reporting Limit | Regulatory Limit | Method | Analyzed | |
|---|---|---|---|---|---|---|---|---|
| Calcium | 277 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0647 | RLH |
| Magnesium | 165 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0647 | RLH |
| Potassium | 9 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0647 | RLH |
| Sodium | 497 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0647 | RLH |
| Hardness, Total as CaCO3 | 1370 | mg/l | | 1 | | Calculated | | |
| Chloride | 115 | mg/l | | 1 | | EPA 300.0 | 26-Dec-01 1706 | LDV |
| Sulfate | 1860 | mg/l | | 1 | | EPA 300.0 | 26-Dec-01 1706 | LDV |
| Alkalinity as CaCO3 | 445 | mg/l | | 1 | | SM2320B | 27-Dec-01 1125 | AK/LDV |
| Bicarbonate | 543 | mg/l | | 1 | | SM2320B | 27-Dec-01 1125 | AK/LDV |
| Carbonate | <1 | mg/l | | 1 | | SM2320B | 27-Dec-01 1125 | AK/LDV |
| Solids, Total Dissolved at 180 C | 3470 | mg/l | | 10 | | SM 2540C | 26-Dec-01 1325 | AK/LDV |
| Sodium Adsorption Ratio | 5.83 | | | | | Calculated | | |
| Nitrogen, Nitrate plus Nitrite | 2.16 | mg/l | | 0.05 | | EPA 353.2 | 27-Dec-01 1540 | DDB |
| Fluoride | 0.35 | mg/l | | 0.1 | | SM 4500FC | 02-Jan-02 1400 | ND |
| Iron, Dissolved | 8.25 | mg/l | | 0.03 | | EPA 200.7 | 01-Jan-02 0647 | RLH |
| Manganese, Dissolved | 0.94 | mg/l | | 0.01 | | EPA 200.7 | 01-Jan-02 0647 | RLH |
| Strontium, Dissolved | 2.9 | mg/l | | 0.1 | | EPA 200.7 | 01-Jan-02 0647 | RLH |

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# LABORATORY ANALYSIS REPORT

**HydroSolutions, Inc.**
**Tom Osborne**
**P.O. Box 80866**
**Billings, MT 59108**

**Project ID:** MURPHY 003
**Sample ID:** MOC-20A
**Laboratory ID:** 01-61336-3
**Sample Matrix:** Water
**Sample Date:** 19-Dec-01 1325
**Received at lab:** 21-Dec-01
**Reported:** 04-Jan-02

| | Results | Units | Qual | Reporting Limit | Regulatory Limit | Method | Analyzed | |
|---|---|---|---|---|---|---|---|---|
| Calcium | 898 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0707 | RLH |
| Magnesium | 414 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0707 | RLH |
| Potassium | 23 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0707 | RLH |
| Sodium | 672 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0707 | RLH |
| Hardness, Total as CaCO3 | 3950 | mg/l | | 1 | | Calculated | | |
| Chloride | 388 | mg/l | | 1 | | EPA 300.0 | 26-Dec-01 1717 | LDV |
| Sulfate | 2760 | mg/l | | 1 | | EPA 300.0 | 26-Dec-01 1717 | LDV |
| Alkalinity as CaCO3 | 326 | mg/l | | 1 | | SM2320B | 27-Dec-01 1354 | AK/LDV |
| Bicarbonate | 398 | mg/l | | 1 | | SM2320B | 27-Dec-01 1354 | AK/LDV |
| Carbonate | <1 | mg/l | | 1 | | SM2320B | 27-Dec-01 1354 | AK/LDV |
| Solids, Total Dissolved at 180 C | 5160 | mg/l | | 10 | | SM 2540C | 26-Dec-01 1328 | AK/LDV |
| Sodium Adsorption Ratio | 4.66 | | | | | Calculated | | |
| Nitrogen, Nitrate plus Nitrite | 35.8 | mg/l | | 0.05 | | EPA 353.2 | 27-Dec-01 1540 | DDB |
| Fluoride | 0.40 | mg/l | | 0.1 | | SM 4500FC | 02-Jan-02 1400 | ND |

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# LABORATORY ANALYSIS REPORT

**HydroSolutions, Inc.**
**Tom Osborne**
**P.O. Box 80866**
**Billings, MT 59108**

**Project ID:** MURPHY 003
**Sample ID:** MOC-17R
**Laboratory ID:** 01-61336-4
**Sample Matrix:** Water
**Sample Date:** 20-Dec-01 1235
**Received at lab:** 21-Dec-01
**Reported:** 04-Jan-02

| | Results | Units | Qual | Reporting Limit | Regulatory Limit | Method | Analyzed | |
|---|---|---|---|---|---|---|---|---|
| Calcium | 414 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0712 | RLH |
| Magnesium | 254 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0712 | RLH |
| Potassium | 56 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0712 | RLH |
| Sodium | 5420 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0712 | RLH |
| Hardness, Total as CaCO3 | 2080 | mg/l | | 1 | | Calculated | | |
| Chloride | 8880 | mg/l | | 1 | | EPA 300.0 | 03-Jan-02 1459 | LDV |
| Sulfate | 1660 | mg/l | | 1 | | EPA 300.0 | 26-Dec-01 1727 | LDV |
| Alkalinity as CaCO3 | 370 | mg/l | | 1 | | SM2320B | 27-Dec-01 1359 | AK/LDV |
| Bicarbonate | 451 | mg/l | | 1 | | SM2320B | 27-Dec-01 1359 | AK/LDV |
| Carbonate | <1 | mg/l | | 1 | | SM2320B | 27-Dec-01 1359 | AK/LDV |
| Solids, Total Dissolved at 180 C | 17100 | mg/l | | 10 | | SM 2540C | 26-Dec-01 1329 | AK/LDV |
| Sodium Adsorption Ratio | 51.7 | | | | | Calculated | | |
| Nitrogen, Nitrate plus Nitrite | 21.7 | mg/l | | 0.05 | | EPA 353.2 | 27-Dec-01 1541 | DDB |
| Fluoride | 0.37 | mg/l | | 0.1 | | SM 4500FC | 02-Jan-02 1400 | ND |
| Iron, Dissolved | <0.13 | mg/l | (1) | 0.13 | | EPA 200.7 | 01-Jan-02 0712 | RLH |
| Manganese, Dissolved | 0.04 | mg/l | | 0.01 | | EPA 200.7 | 01-Jan-02 0712 | RLH |
| Strontium, Dissolved | 8.5 | mg/l | | 0.1 | | EPA 200.7 | 01-Jan-02 0712 | RLH |

(1) Detection limit raised due to matrix interference.

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# LABORATORY ANALYSIS REPORT

**HydroSolutions, Inc.**
**Tom Osborne**
**P.O. Box 80866**
**Billings, MT 59108**

**Project ID:** MURPHY 003
**Sample ID:** MOC-13D
**Laboratory ID:** 01-61336-5
**Sample Matrix:** Water
**Sample Date:** 20-Dec-01 1035
**Received at lab:** 21-Dec-01
**Reported:** 04-Jan-02

| | Results | Units | Qual | Reporting Limit | Regulatory Limit | Method | Analyzed | |
|---|---|---|---|---|---|---|---|---|
| Calcium | 264 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0716 | RLH |
| Magnesium | 55 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0716 | RLH |
| Potassium | 26 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0716 | RLH |
| Sodium | 7870 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0716 | RLH |
| Hardness, Total as CaCO3 | 886 | mg/l | | 1 | | Calculated | | |
| Chloride | 13100 | mg/l | | 1 | | EPA 300.0 | 26-Dec-01 1748 | LDV |
| Sulfate | 184 | mg/l | | 1 | | EPA 300.0 | 26-Dec-01 1748 | LDV |
| Alkalinity as CaCO3 | 258 | mg/l | | 1 | | SM2320B | 27-Dec-01 1404 | AK/LDV |
| Bicarbonate | 315 | mg/l | | 1 | | SM2320B | 27-Dec-01 1404 | AK/LDV |
| Carbonate | <1 | mg/l | | 1 | | SM2320B | 27-Dec-01 1404 | AK/LDV |
| Solids, Total Dissolved at 180 C | 21700 | mg/l | | 10 | | SM 2540C | 26-Dec-01 1330 | AK/LDV |
| Sodium Adsorption Ratio | 115 | | | | | Calculated | | |
| Nitrogen, Nitrate plus Nitrite | <0.05 | mg/l | | 0.05 | | EPA 353.2 | 27-Dec-01 1456 | DDB |
| Fluoride | 0.57 | mg/l | | 0.1 | | SM 4500FC | 02-Jan-02 1400 | ND |
| Iron, Dissolved | 0.42 | mg/l | | 0.03 | | EPA 200.7 | 01-Jan-02 0716 | RLH |
| Manganese, Dissolved | 0.98 | mg/l | | 0.01 | | EPA 200.7 | 01-Jan-02 0716 | RLH |
| Strontium, Dissolved | 15.4 | mg/l | | 0.1 | | EPA 200.7 | 01-Jan-02 0716 | RLH |

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## LABORATORY ANALYSIS REPORT

**HydroSolutions, Inc.**
**Tom Osborne**
**P.O. Box 80866**
**Billings, MT 59108**

**Project ID:** MURPHY 003
**Sample ID:** MOC-13
**Laboratory ID:** 01-61336-6
**Sample Matrix:** Water
**Sample Date:** 19-Dec-01 1530
**Received at lab:** 21-Dec-01 **Reported:** 04-Jan-02

| | Results | Units | Qual | Reporting Limit | Regulatory Limit | Method | Analyzed | |
|---|---|---|---|---|---|---|---|---|
| Calcium | 314 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0720 | RLH |
| Magnesium | 93 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0720 | RLH |
| Potassium | 38 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0720 | RLH |
| Sodium | 8540 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0720 | RLH |
| Hardness, Total as CaCO3 | 1170 | mg/l | | 1 | | Calculated | | |
| Chloride | 14200 | mg/l | | 1 | | EPA 300.0 | 26-Dec-01 1830 | LDV |
| Sulfate | 201 | mg/l | | 1 | | EPA 300.0 | 27-Dec-01 1450 | LDV |
| Alkalinity as CaCO3 | 316 | mg/l | | 1 | | SM2320B | 27-Dec-01 1409 | AK/LDV |
| Bicarbonate | 385 | mg/l | | 1 | | SM2320B | 27-Dec-01 1409 | AK/LDV |
| Carbonate | <1 | mg/l | | 1 | | SM2320B | 27-Dec-01 1409 | AK/LDV |
| Solids, Total Dissolved at 180 C | 22600 | mg/l | | 10 | | SM 2540C | 26-Dec-01 1335 | AK/LDV |
| Sodium Adsorption Ratio | 109 | | | | | Calculated | | |
| Nitrogen, Nitrate plus Nitrite | <0.05 | mg/l | | 0.05 | | EPA 353.2 | 27-Dec-01 1457 | DDB |
| Fluoride | 0.68 | mg/l | | 0.1 | | SM 4500FC | 02-Jan-02 1400 | ND |
| Iron, Dissolved | 0.67 | mg/l | | 0.03 | | EPA 200.7 | 01-Jan-02 0720 | RLH |
| Manganese, Dissolved | 0.43 | mg/l | | 0.01 | | EPA 200.7 | 01-Jan-02 0720 | RLH |
| Strontium, Dissolved | 18.3 | mg/l | | 0.1 | | EPA 200.7 | 01-Jan-02 0720 | RLH |

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# LABORATORY ANALYSIS REPORT

**HydroSolutions, Inc.**
**Tom Osborne**
**P.O. Box 80866**
**Billings, MT 59108**

**Project ID:** MURPHY 003
**Sample ID:** MOC-19R
**Laboratory ID:** 01-61336-7
**Sample Matrix:** Water
**Sample Date:** 18-Dec-01 1615
**Received at lab:** 21-Dec-01
**Reported:** 04-Jan-02

| | Results | Units | Qual | Reporting Limit | Regulatory Limit | Method | Analyzed | |
|---|---|---|---|---|---|---|---|---|
| Nitrogen, Nitrate plus Nitrite | 0.24 | mg/l | | 0.05 | | EPA 353.2 | 27-Dec-01 1543 | DDB |
| Iron, Dissolved | 1.22 | mg/l | | 0.03 | | EPA 200.7 | 01-Jan-02 0724 | RLH |
| Manganese, Dissolved | 1.84 | mg/l | | 0.01 | | EPA 200.7 | 01-Jan-02 0724 | RLH |
| Strontium, Dissolved | 5.0 | mg/l | | 0.1 | | EPA 200.7 | 01-Jan-02 0724 | RLH |

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# LABORATORY ANALYSIS REPORT

| | | | | |
|---|---|---|---|---|
| **HydroSolutions, Inc.** | **Project ID:** | **MURPHY 003** | | |
| **Tom Osborne** | **Sample ID:** | **MOC-19R** | | |
| **P.O. Box 80866** | **Laboratory ID:** | **01-61336-8** | | |
| **Billings, MT 59108** | **Sample Matrix:** | **Water** | | |
| | **Sample Date:** | **20-Dec-01 1445** | | |
| | **Received at lab:** | **21-Dec-01** | **Reported:** | **04-Jan-02** |

| | Results | Units | Qual | Reporting Limit | Regulatory Limit | Method | Analyzed | |
|---|---|---|---|---|---|---|---|---|
| Calcium | 418 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0729 | RLH |
| Magnesium | 282 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0729 | RLH |
| Potassium | 20 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0729 | RLH |
| Sodium | 1940 | mg/l | | 1 | | EPA 200.7 | 01-Jan-02 0729 | RLH |
| Hardness, Total as CaCO3 | 2210 | mg/l | | 1 | | Calculated | | |
| Chloride | 4240 | mg/l | | 1 | | EPA 300.0 | 26-Dec-01 1841 | LDV |
| Sulfate | 372 | mg/l | | 1 | | EPA 300.0 | 26-Dec-01 1841 | LDV |
| Alkalinity as CaCO3 | 340 | mg/l | | 1 | | SM2320B | 27-Dec-01 1413 | AK/LDV |
| Bicarbonate | 414 | mg/l | | 1 | | SM2320B | 27-Dec-01 1413 | AK/LDV |
| Carbonate | <1 | mg/l | | 1 | | SM2320B | 27-Dec-01 1413 | AK/LDV |
| Solids, Total Dissolved at 180 C | 7570 | mg/l | | 10 | | SM 2540C | 26-Dec-01 1338 | AK/LDV |
| Sodium Adsorption Ratio | 18.0 | | | | | Calculated | | |
| Fluoride | 0.26 | mg/l | | 0.1 | | SM 4500FC | 02-Jan-02 1400 | ND |

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Lab Nos. 01-61336-1-8

## QUALITY ASSURANCE DATA PACKAGE

This report is a summary of the results of the quality assurance tests performed with the sample analyses. They are performed to determine if the methodology is in control and to monitor the laboratory's ability to produce accurate and precise results. The date the quality assurance sample was analyzed is consistent with Energy Laboratories' Quality Assurance Plan.

| Constituents | Duplicate Analysis - - - mg/l (ppm) - - - Original | Duplicate | Spiked Analysis % Recovery | Blank Analysis mg/l (ppm) | Calibration Sample Analysis mg/l (ppm) | True Value, Acceptable +/- 10% mg/l (ppm) |
|---|---|---|---|---|---|---|
| Calcium | 518 | 495 | 94 | <1 | 50 | 50 |
| Magnesium | 425 | 404 | 103 | <1 | 50 | 50 |
| Potassium | 267 | 255 | 103 | <1 | 51 | 50 |
| Sodium | 761 | 733 | 102 | <1 | 51 | 50 |
| Chloride | 9120 | 10100 | 104 | <1 | 25 | 25 |
| Sulfate | 1660 | 1780 | 100 | <1 | 102 | 100 |
| Alkalinity as CaCO3 | 250 | 249 | 96 | <1 | 104 | 100 |
| Solids, Total Dissolved at 180 C | 190 | 195 | 99 | <10 | NA | NA |
| Nitrogen, Nitrate plus Nitrite | 1.70 | 1.68 | 115 | <0.05 | 5.42 | 5.42 |
| Fluoride | 1.26 | 1.26 | 91 | <0.1 | 3.90 | 3.76 |
| Iron, Dissolved | 31.5 | 29.7 | 92 | <0.03 | 4.72 | 5 |
| Manganese, Dissolved | 24.6 | 23.3 | 95 | <0.01 | 4.78 | 5 |
| Strontium, Dissolved | 7.9 | 7.5 | 100 | <0.1 | 4.7 | 5 |

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Lab Nos.: 001-01-61336 - 009-01-61336

Date: 21-DEC-01

Received by: Justin McMillan

Logged In by: Randa Nees

# SAMPLE CONDITION QA/QC REPORT

This report provides information about the condition of the sample(s) and associated sample custody information on receipt at the laboratory.

| | | |
|---|---|---|
| Chain of Custody Form Completed & Signed | Yes | Comments: |
| Chain of Custody Seal | No | Comments: |
| Intact | N/A | Comments: |
| Signature Match Chain of Custody vs. Seal | N/A | Comments: |
| Temperature Received | 4 c | Comments: |
| Samples Received Within Holding Time | Yes | Comments: |
| Samples Received in Proper Containers | Yes | Comments: |
| Samples Received Properly Preserved(1) | Yes | Comments: |

**(1)Acid preservation of samples for volatile organics is not evaluated on this form.**
**Any preservation problems encountered for these samples are noted on the analytical parameter report pages.**

Record of client contact:

Who: Jim Shaeffer By: Justin McMillan Date/Time: 12/26/01

Method of Shipping: Hand del.

Additional comments: Do not run dissolved metals on sample MOC-20A, bottle was not filtered but preserved.

• The well for this sample is to be P&A'd on 10/18/01
• Contaminated by oil-leaking compressor!

# WATER MONITORING RECORD
**HydroSolutions Inc.**

**SITE ID:** MOC-18 (original well)

**Date:** 10/5/01 **Arrival Time:** 0930 **Sampling Time:** 1130 Purge Time: 1018 - 1130

**Owner/ Operator:** MURPHY OIL **Address:** Poplar, MT

**Location Description:** CNENE 10-T21N-R58E

**Water Source:** (Well) Stream Spring Other -

**Sampler's Name:** J. Shaffer **Weather:** Clear, Sl. Breezy, Upper 30's

**Type of Well:** Monitoring (P&A'd - Replaced) CTD 49.15 btosc ≈ 48.90 btopc TD: 46' bgs ft. **Well Log?:** (Y) N

**Casing Material:** 2" Schl 40 PVC **Inside Dia.:** 2" **Well Locked?:** Y (N)

**Measuring Point:** Top PVC (btopc) Outside (btosc) 3.28' stickup Inside (btopc) 2.98' stickup **Aquifer:** Water Gravel

| Meter Type: | Model: | Calibrated: | | Meter Type:: | Model:: | Flow Rate: |
|---|---|---|---|---|---|---|
| Ph: Hanna | 9025 | 10/5/01 | Red T probe | SC: YSI | 85 | |
| Eh: Hanna | 9023 | 10/5/01 | Blue T probe | DO: YSI | 85 @ 2100' alt. | |
| Water Level Probe: | Solinst | No | | Other: | | Method |

**Bore Volume (R-in., TD-ft.):** 0.163 $R^2$(TD - SWL) = — Gallons **Purging Method:** Whole Purge pump set @ 35'

| Time: | Gallons | Min. Rate | SC | Temp,°C | Hanna 9025 Ph @ Temp,°C | 9023 Eh, (mv) | D.O. (mg/l) |
|---|---|---|---|---|---|---|---|
| 1037 - 1040:30 1049 | 5 | 1.43 | mS 13.85 @ | 9.6 | 7.14 @ 10.2 Red | -83.6 @ 9.1° | 2.20 @ 9.6° |
| 1059 | — | — | 14.20 @ | 9.5 | 7.21 @ 10.1 | -79.7 @ 9.1 | 9.94 @ 9.5° |
| 1112 | — | — | 10.05 @ | 9.90 | 7.20 @ 10.30 | -78.1 @ 9.3° | 2.06 @ 9.9° |
| 1125 | — | — | 14.15 @ | 9.8° | 7.04 @ 10.40 | -80.5 @ 9.4° | 2.02 @ 9.8° |
| 1130 | — | — | 14.23 @ | 9.6° | 7.19 @ 10.3 | -82.3 @ 9.3° | 2.00 @ 9.7° |

**Description of Water:** Clear, No ODOR, No VISIBLE SHEEN

**S.W.L.** 33.83 btopc **Ft. below Measuring Point.** **Elevation (Feet):** —

**Water Temperature:** 9.6 (Celcius) (YSI 85) **DO** 2.00 (mg/l) @ 9.7°

**Alkalinity:** —

**Field SC:** — µmhos/cm **@ Field Temperature:**

**Corrected SC:** 14.23 mS µmhos/cm **@ 25 C**

**Ph:** 7.19 s. u. @ 10.30° **Eh:** -82.3 (mv) @ 9.3° (Hanna 9023)

**Water Quality Samples:** (Y) N **Well Sampling Method:** Anions/Cations: Via discharge line before flow cell; Hydrocarbons: New, 12" PVC bailer **Sample Type:** (Grab) Composite

**Decontamination** Inorganic Organic (Other: New, Unused Whole Purge Pump, New Poly Tubing

| Containers (No. & Type): | Preservative: | Handling: | Parameters: |
|---|---|---|---|
| 1-500 ml | None | Filtered | See Lab Chain of Custody |
| 2-250 ml | 1-$NO_3$, 1-$SO_4$ | Filtered | |
| 2-40ml | both HCl | Not Filtered | |

* **NOTES:** Orig well contaminated during development - hydraulic oil leak blown into well. Purged well on 10/3/01 overnight. Original well P&A - casing cemented. Replacement well MOC-18R located about 15' N of original well

See Reverse Side for More Details

J D Shaffer

# WATER MONITORING RECORD
**HydroSolutions Inc.**

**SITE ID:** MOC-16

| | | | |
|---|---|---|---|
| **Date:** 10/5/01 | **Arrival Time:** 1359 | **Sampling Time:** 1433 | Purge Time: 1420 |
| **Owner/Operator:** MURPHY OIL | | **Address:** | |
| **Location Description:** | | | |
| **Water Source:** (Well) | Stream | Spring | Other - |
| **Sampler's Name:** J. Shaffer | | **Weather:** Clear Breezy mid 50's | |
| **Type of Well:** Monitoring | | **TD:** 52.70' btoc | **Well Log?:** (Y) N |
| **Casing Material:** 2" Sch 40 PVC | | **Inside Dia.:** 2" | **Well Locked?:** Y N |
| **Measuring Point:** Top Steel Csg (btoc) | Top Steel: 2.97' agS PVC Below Steel: 0.23' | | **Aquifer:** Wiota Gravel |

| Meter Type: | Model: | Calibrated: | T. Probe | Meter Type:: | Model:: | Flow Rate: |
|---|---|---|---|---|---|---|
| Ph: Hanna | 9025 | 10/5/01 | RED | SC: YSI | 85 | |
| Eh: Hanna | 9023 | 10/5/01 | BLUE | DO: YSI | 85 | |
| Water Level Probe: | Solinst | — | | Other: | | Method |

**Bore Volume (R-in., TD-ft.):** 0.163 $R^2$(TD - SWL) = _____ Gallons **Purging Method:** Whale Pump set @ 47.5' below top steel csg.

| Time: Start 1420 | Gallons | Min. Rate | SC | Temp,°C | Ph @ Temp,°C (9025) | Eh, (mv) (9023) | D.O. (mg/l) |
|---|---|---|---|---|---|---|---|
| 1426 - 1433:15 | 5 | | — | — | — — | — | — — |
| ** 1450 - 1453 | 4 | | | | | | |

WELL NOT DEVELOPED BEFORE PURGE/SAMPLE EFFORT. TRIED VARIOUS PUMP STAGE CONFIGURATIONS. UNABLE TO GET STABLE PARAMETERS. WELL KEPT BEING PUMPED DRY. PURGED AT LEAST 3 WELL VOLUMES PARAMETERS BELOW ARE IMMED. AFTER SAMPLING

**Description of Water:** Greyish Yellow at purge start. Yellowish Brown @ 1423. DID NOT CLEAR

**S.W.L.** 30.01 btoc **Ft. below Measuring Point.** **Elevation (Feet):**

**Water Temperature:** 9.9°C (Celcius) YSI 85 **DO** 2.77 (mg/l) @ 9.9°C

**Alkalinity:** —

**Field SC:** — µmhos/cm **@ Field Temperature:**

**Corrected SC:** 42.50 mS µmhos/cm **@ 25 C**

**Ph:** 6.97 s.u. @ 10.9 **Eh:** −81.9 (mv) @ 6.40°C (Hanna 9023)

**Water Quality Samples:** (Y) N **Well Sampling Method:** **Sample Type:** (Grab) Composite

**Decontamination** Inorganic Organic Other:

**Containers (No. & Type):** **Preservative:** **Handling:** **Parameters:**

* **NOTES:** Well was not developed before this purge - Driller's compressor failed / oil leak in MOC-18. NOT USED IN THIS WELL!!

See Reverse Side for More Details

** Install 2nd 2-stage pump @ 22" btoc (25' above 1st stage set @ 47.5' btoc)

256-7782

D Shaffer

# WATER MONITORING RECORD
**HydroSolutions Inc.**

SITE ID: MOC-13 N: 48° 11.964' W: 105° 06.791' ± 24'

Date: 10/5/01 Arrival Time: 0906 Sampling Time: 1239 Purge Time: 0921 - 1239

Owner/Operator: MURPHY OIL Address: Poplar, MT

Location Description: CN1/2NE 10-T21N-R58E

Water Source: (Well) Stream Spring Other -

Sampler's Name: J. Shaffer Weather: Partly Cloudy, Breezy, mid 30's

Type of Well: Monitoring TD: 55.40 btosc ft. Well Log?: (Y) N

Casing Material: Outside 2" PVC Inside Dia.: 2" Well Locked?: (Y) N

Measuring Point: TOP STEEL CASING (btosc) PVC to top steel: 0.85' Top Steel 2.85' ags Aquifer: Wista Gravel

| Meter Type: | Model: | Calibrated: | T-probe | Meter Type:: | Model:: | Flow Rate: |
|---|---|---|---|---|---|---|
| Ph: Hanna | 9025 | 10/5 BDS | Red | SC: YSI | 85 | |
| Eh: Hanna | 9023 | 10/5/01 | blue | DO: YSI | 85 Calib 10/5 | |
| Water Level Probe: | Solinst | — | — | Other: | | Method |

Bore Volume (R-in., TD-ft.): 0.163 R²(TD - SWL) = Gallons Purging Method: (SEE NOTES) 2-stage Whale Pump set @ 52' btosc

| Time: | Gallons | Min. Rate | SC mS | Temp,°C | Ph @ Temp,°C (9025) | Eh, (mv) (9023) | D.O. (mg/l) |
|---|---|---|---|---|---|---|---|
| 0921 — 0925 | 4 | 1.0 | NM | NM | NM | NM | NM |
| 1222 | | | 37.96 | @ 15.3° | 7.62 @ 15.8 | -165.0 @ 14.9° | 0.05 @ 15.2° |
| 1239 | | | 37.14 | @ 15.5° | 7.60 @ 15.9 | -175.0 @ 15.1 | 0.02 @ 15.5 |
| 1248 | 4 | 1.0 | — | — | — | — | — |
| | | | | | | | |

Description of Water: STRONG HYDROCARBON ODOR! Water Grayish Black at Start Purge (0921)

S.W.L. 37.02 btosc Ft. below Measuring Point. (steel csg) Elevation (Feet): —

Hanna 9023 Water Temperature: 15.1 (Celcius) DO 0.02 (mg/l) @ 15.5°C

Alkalinity: —

Field SC: — µmhos/cm — @ Field Temperature:

Corrected SC: 37.14 mS µmhos/cm @ 25 C

Ph: 7.60 s.u. @ 15.9°C Eh: -175.0 (mv) @ 15.1°C (Hanna 9023)

Water Quality Samples: (Y) N Well Sampling Method: 40 micron filter in-line on discharge tubing. New disposable PVC bailer for VOA samples. Dedicated Whale purge pump to well. Removed and disposed of tubing Sample Type: (Grab) Composite

Decontamination Inorganic Organic (Other:)

| Containers (No. & Type): | Preservative: | Handling: | Parameters: |
|---|---|---|---|
| 1-500 ml | NONE | Filtered | SEE Lab Chain of Custody |
| 2-250 ml | 1-$NO_3$, 1-$SO_4$ | Filtered | |
| 2-40 ml | both HCl | Not Filtered | |

NOTES: Purge w/ 2-stage Whale Purge Pump set at 52' btosc. Bailer (New) used to sample top of water column for TPH results

See Reverse Side for More Details

Huber-1W Salt Water Disposal Well GPS N: 48° 11.966' W: 105° 06.792' ± 23'

AD Stuke

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# LABORATORY ANALYSIS REPORT

**HydroSolutions, Inc.**
**Jim Shaffer**
**P.O. Box 80866**
**Billings, MT 59108**

**Project ID:** MURPHY:003
**Sample ID:** MOC-13
**Laboratory ID:** 01-58873-2
**Sample Matrix:** Water
**Sample Date:** 05-Oct-01 1239
**Received at lab:** 08-Oct-01
**Reported:** 16-Oct-01

| | Results | Units | Qual | Reporting Limit | Regulatory Limit | Method | Analyzed | |
|---|---|---|---|---|---|---|---|---|
| Calcium | 341 | mg/l | | 1 | | EPA 200.7 | 09-Oct-01 1635 | RLH |
| Magnesium | 85 | mg/l | | 1 | | EPA 200.7 | 09-Oct-01 1635 | RLH |
| Potassium | 38 | mg/l | | 1 | | EPA 200.7 | 09-Oct-01 1635 | RLH |
| Sodium | 8540 | mg/l | | 1 | | EPA 200.7 | 09-Oct-01 1635 | RLH |
| Hardness, Total as CaCO3 | 1200 | mg/l | | 1 | | Calculated | | |
| Chloride | 14800 | mg/l ✓ | | 1 | | EPA 300.0 | 11-Oct-01 0734 | LDV |
| Sulfate | 189 | mg/l | | 1 | | EPA 300.0 | 11-Oct-01 0723 | LDV |
| Alkalinity as CaCO3 | 278 | mg/l | | 1 | | SM2320B | 10-Oct-01 1630 | AK/LDV |
| Bicarbonate | 339 | mg/l | | 1 | | SM2320B | 10-Oct-01 1630 | AK/LDV |
| Carbonate | <1 | mg/l | | 1 | | SM2320B | 10-Oct-01 1630 | AK/LDV |
| Solids, Total Dissolved at 180 C | 24300 | mg/l ✓ | | 10 | | SM 2540C | 09-Oct-01 1226 | AK/LDV |
| Sodium Adsorption Ratio | 107 | | | | | Calculated | | |
| Nitrogen, Nitrate plus Nitrite | <0.05 | mg/l | | 0.05 | | EPA 353.2 | 15-Oct-01 1426 | BS |
| Fluoride | 0.59 | mg/l | | 0.1 | | SM 4500FC mod | 09-Oct-01 1353 | DLR |
| Iron, Dissolved | <0.25 | mg/l | (1) | 0.25 | | EPA 200.7 | 09-Oct-01 1635 | RLH |
| Manganese, Dissolved | 0.69 | mg/l | | 0.01 | | EPA 200.7 | 09-Oct-01 1635 | RLH |
| Strontium, Dissolved | 21.4 | mg/l | | 0.1 | | EPA 200.7 | 09-Oct-01 1635 | RLH |

(1) Detection limit raised due to matrix interference.

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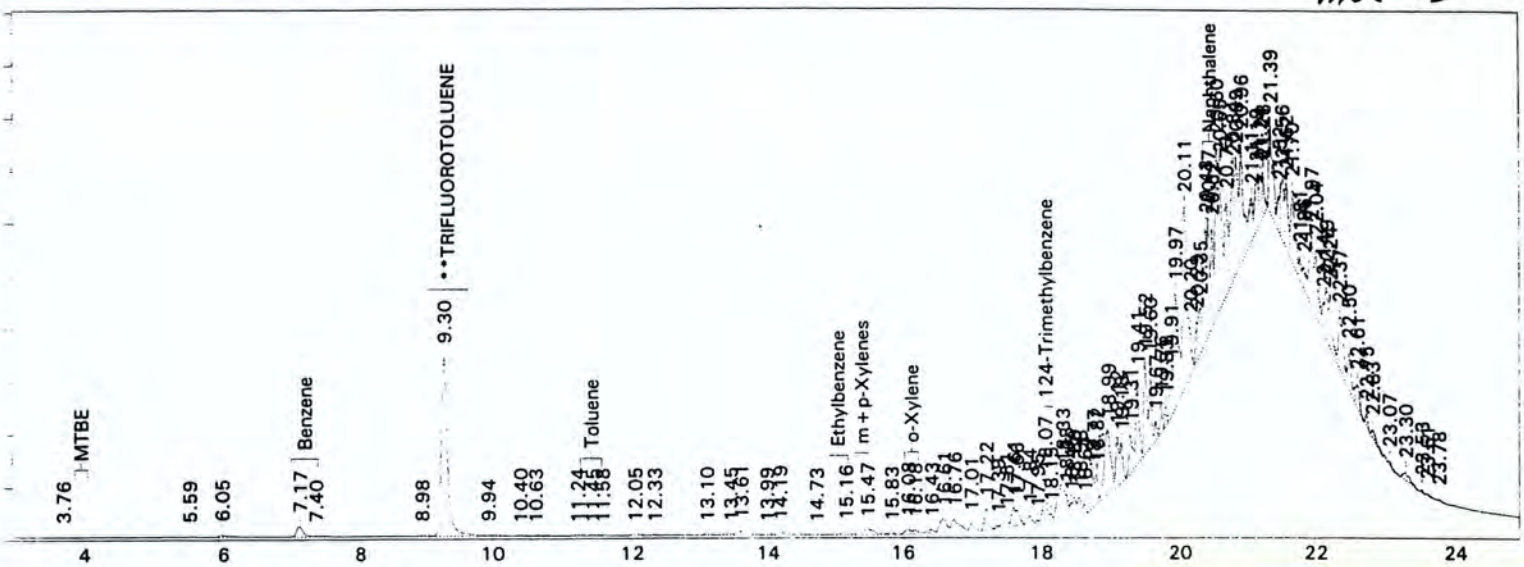
File=G:\ORG\VAR\1009VAR.68R Date printed=10-15-2001 Time= 11:16:07
Sample Name=002-01-58873 ;01-58873 VPH Water :G10091V7
3.0 to 25.0 min. Low Y=-0.293 High Y=24.707 mv Span=25.0

MOC-13




ENERGY LABORATORIES, INC.----AROMATICS VPH CHROMATOGRAM
Sample Name: 002-01-58873 ;01-58873 VPH Water :G10091V7
Area File: G:\ORG\VAR\1009VAR.68A
Date & Time Collected: Oct 11, 2001 14:47:30
Method File: G:\ORG\VAR\3201MV47.MET
Calibration File: G:\ORG\VAR\3201MAS.CAL
Sample Weight: 5 Dilution: 2 S.A.: 1

MOC-13

Mean RF for C9 to C10 Aromatic Hydrocarbons: 408.3405
Rt range for C9 to C10 Aromatic Hydrocarbons: 16.30563 to 20.38838

Aromatic Hydrocarbon Areas and Quantitations:
C9-C10 Area 232,529 Quant: 227.8

Target Analytes:

| COMPOUND | RT | Cal RRT | RRT | Area | ug/L Amount | Flag | |
|---|---|---|---|---|---|---|---|
| MTBE | 0.00 | 0.00 | 0.00 | 0 | < 2.00 | U | |
| Benzene | 7.17 | 2.11 | 2.13 | 3282 | 1.75 | | |
| Toluene | 11.45 | 11.45 | 11.45 | 278 | < 1.00 | U | |
| Ethylbenzene | 15.16 | -5.77 | -5.86 | 1059 | ~~0.93~~ | J | <1.0 |
| m+p-Xylenes | 15.47 | -6.12 | -6.17 | 3477 | ~~2.48~~ | | <3.0 Bw |
| o-Xylene | 16.08 | -6.86 | -6.78 | 1307 | ~~1.48~~ | | <2.0 |
| 124-Trimethylbenzene | 18.07 | -8.73 | -8.77 | 6303 | 6.57 | | |
| Naphthalene | 20.47 | -11.14 | -11.17 | 12513 | ~~14.04~~ | | <15 Bw |

| SURROGATE CMPND | RT | ACTUAL | MEASURED | %RECOVERY | QC LIMITS |
|---|---|---|---|---|---|
| **TRIFLUOROTOLUENE | 9.30 | 50.0 | 50.0 | 100 | 70-130 |

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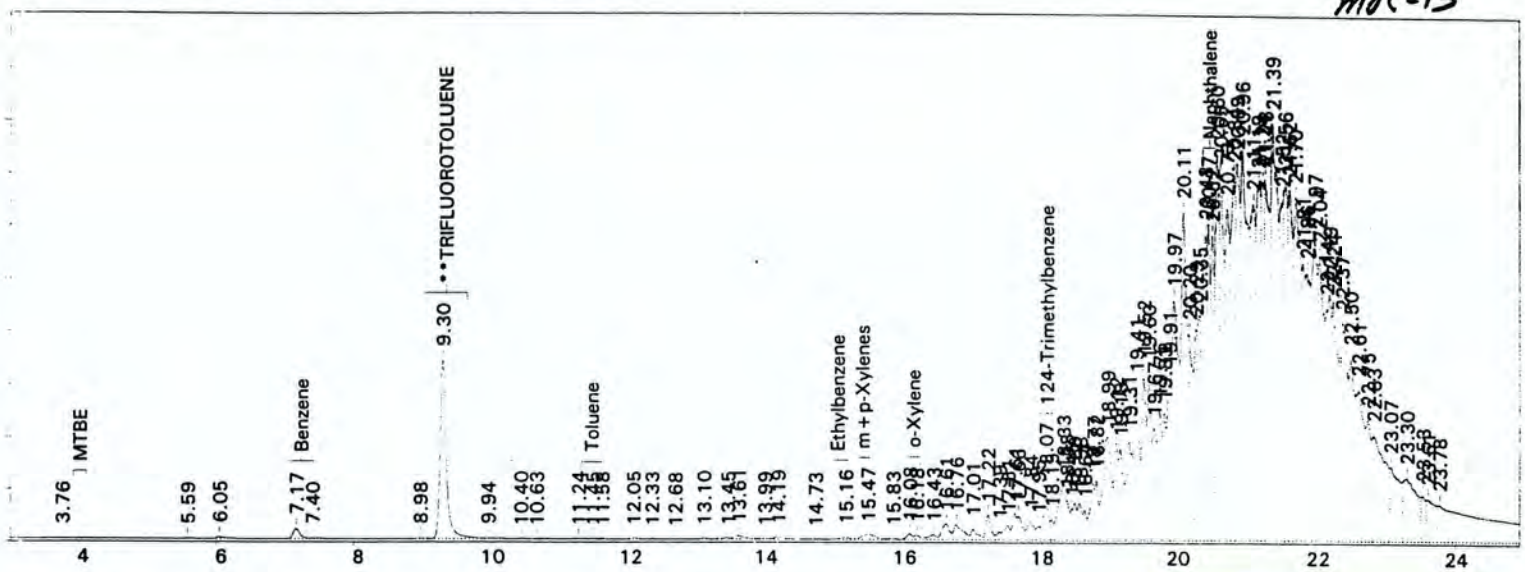
F 1009VAR.68R Date printed=10-15-2001 Time= 11:16:00

Sample Name=002-01-58873 ;01-58873 VPH Water :G10091V7

3.0 to 25.0 min. Low Y=-0.293 High Y=24.707 mv Span=25.0

MOC-13




ENERGY LABORATORIES, INC.----AROMATICS VPH CHROMATOGRAM
Sample Name: 002-01-58873 ;01-58873 VPH Water :G10091V7
Area File: G:\ORG\VAR\1009VAR.68A
Date & Time Collected: Oct 11, 2001 14:47:30
Method File: G:\ORG\VAR\3201M47.MET
Calibration File: G:\ORG\VAR\3201MAS.CAL
Sample Weight: 5 Dilution: 2 S.A.: 1

MOC-13

Mean RF for C9 to C10 Aromatic Hydrocarbons: 408.3405
Rt range for C9 to C10 Aromatic Hydrocarbons: 16.30563 to 20.38838

Aromatic Hydrocarbon Areas and Quantitations:
C9-C10 Area 705,373 Quant: 691.0

Target Analytes:

| COMPOUND | RT | Cal RRT | RRT | Area | ug/L Amount | Flag |
|---|---|---|---|---|---|---|
| MTBE | 0.00 | 0.00 | 0.00 | 0 | < 2.00 | U |
| Benzene | 7.17 | 2.11 | 2.13 | 3282 | 1.75 | |
| Toluene | 11.45 | 11.45 | 11.45 | 278 | < 1.00 | U |
| Ethylbenzene | 15.16 | -5.77 | -5.86 | 1179 | ~~1.03~~ | <1.0 |
| m+p-Xylenes | 15.47 | -6.12 | -6.17 | 3699 | ~~2.64~~ | <3.0 BW |
| o-Xylene | 16.08 | -6.86 | -6.78 | 1541 | ~~1.72~~ | <2.0 |
| 124-Trimethylbenzene | 18.07 | -8.73 | -8.77 | 11875 | 12.38 | |
| Naphthalene | 20.47 | -11.14 | -11.17 | 38987 | 43.74 | |

| SURROGATE CMPND | RT | ACTUAL | MEASURED | %RECOVERY | QC LIMITS |
|---|---|---|---|---|---|
| **TRIFLUOROTOLUENE | 9.30 | 50.0 | 50.0 | 100 | 70-130 |

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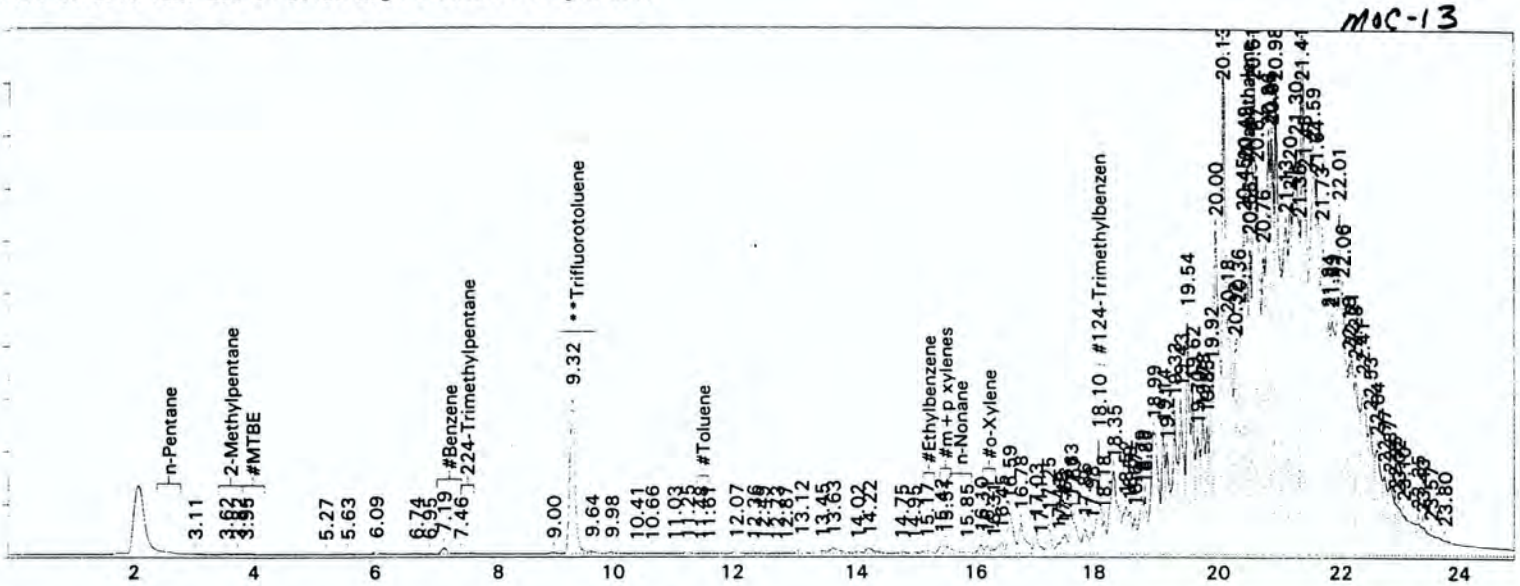
File=G:\ORG\VAR\1009VARB.68R Date printed=10-15-2001 Time= 10:41:13
Sample Name=002-01-58873 ;01-58873 VPH Water :G10091V7
0.01 to 25.0 min. Low Y=-2.723 High Y=22.277 mv Span=25.0

MOC-13




ENERGY LABORATORIES, INC.----ALIPHATICS VPH CHROMATOGRAM
Sample Name: 002-01-58873 ;01-58873 VPH Water :G10091V7
Area File: G:\ORG\VAR\1009VARB.68A
Date & Time Collected: Oct 11, 2001 14:47:30
Method File: G:\ORG\VAR\3201M47B.MET
Calibration File: G:\ORG\VAR\3201MASB.CAL
Sample Weight: 5 Dilution: 2 S.A.: 1
Mean RF for C5 to C8 Aliphatic Hydrocarbons: 159.906
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 155.2499
Mean RF for all calibrated compounds: 203.8664
Rt range for Gasoline Range Organics: 3.484643 to 18.20109
Rt range for C5 to C8 Aliphatic Hydrocarbons: 2.458333 to 15.55198
Rt range for C9 to C12 Aliphatic Hydrocarbons: 15.65198 to 20.41823

MOC-13

Peaks subtracted from Total:

| Compound Name | RT | Area | Amount | %Recovery |
|---|---|---|---|---|
| **Trifluorotoluene | 9.3 | 45,948 | 53 | 107 |

GRO Area: 139,153 Quant: 273.0
TPH Area: 2,837,238 Quant: 5,566.9

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:
C5-C8 Area: 31,480 Quant: 78.7
C9-C12 Area 827,142 Quant: 2,131.1

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**Client:** HydroSolutions, Inc.

**Login No.:** 003-01-58873
**Date:** 15-Oct-01

## VOLATILE PETROLEUM HYDROCARBONS (VPH) LABORATORY ANALYSIS REPORT

Project ID: MURPHY:003
Client ID: MOC-16
Sampled:05-Oct-01 14:33
Received:08-Oct-01

### Aromatic VPH Constituents

| CONSTITUENT | Result | Units | Qualifier | Reporting Limit | QC/Regulatory Limit | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methyl t-butylether | < 1.0 | µg/L(ppb) | | 1.0 | 30 | 10-Oct-01 16:21 | bw |
| **Benzene** | **43** | **µg/L(ppb)** | | **0.50** | **5** | 10-Oct-01 16:21 | bw |
| Toluene | < 0.50 | µg/L(ppb) | J | 0.50 | 1000 | 10-Oct-01 16:21 | bw |
| Ethylbenzene | < 0.50 | µg/L(ppb) | | 0.50 | 700 | 10-Oct-01 16:21 | bw |
| m + p-Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | | 10-Oct-01 16:21 | bw |
| o-Xylene | < 0.50 | µg/L(ppb) | | 0.50 | | 10-Oct-01 16:21 | bw |
| Total Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | 10000 | 10-Oct-01 16:21 | bw |
| Naphthalene | < 1.0 | µg/L(ppb) | | 1.0 | 28 | 10-Oct-01 16:21 | bw |
| $C_9$ to $C_{10}$ Aromatics | < 20 | µg/L(ppb) | | 20 | 100 | 10-Oct-01 16:21 | bw |
| VPH Aromatics Surrogate | 90 | % Rec. | | | 70-130 | 10-Oct-01 16:21 | bw |

### Aliphatic VPH Constituents

| CONSTITUENT | | | | | | | |
|---|---|---|---|---|---|---|---|
| $C_5$ to $C_8$ Aliphatics[a] | 47 | µg/L(ppb) | | 20 | 350 | 10-Oct-01 16:21 | bw |
| $C_9$ to $C_{12}$ Aliphatics[b] | < 20 | µg/L(ppb) | | 20 | 1000 | 10-Oct-01 16:21 | bw |
| VPH Aliphatics Surrogate | 96 | % Rec. | | | 70-130 | 10-Oct-01 16:21 | bw |
| Total Purgeable Hydrocarbons[c] | 74 | µg/L(ppb) | | 20 | | 10-Oct-01 16:21 | bw |
| pH | < 2 | s.u. | | | <2 | | |

**Notes and Qualifiers**

[a]Aromatic constituents Benzene, Toluene, Ethylbenzene and m + p-Xylenes were subtracted from this value.

[b]Aromatic constituents o-Xylene and $C_9$ to $C_{10}$ aromatics were subtracted from this value.

[c]This value is equivalent to the GRO Method Total Purgeable Hydrocarbon value.

(J)Present but less than the practical quantitation limit.

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**Client:** HydroSolutions, Inc.

**Login No.:** 002-01-58873
**Date:** 15-Oct-01

## VOLATILE PETROLEUM HYDROCARBONS (VPH) LABORATORY ANALYSIS REPORT

Project ID: MURPHY:003
Client ID: MOC-13
Sampled:05-Oct-01 12:39
Received:08-Oct-01

### Aromatic VPH Constituents

| CONSTITUENT | Result | Units | Qualifier | Reporting Limit | QC/Regulatory Limit | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methyl t-butylether | < 2.0 | µg/L(ppb) | 1 | 2.0 | 30 | 11-Oct-01 14:47 | bw |
| Benzene | 1.8 | µg/L(ppb) ✓ | | 1.0 | 5 | 11-Oct-01 14:47 | bw |
| Toluene | < 1.0 | µg/L(ppb) | 1 | 1.0 | 1000 | 11-Oct-01 14:47 | bw |
| Ethylbenzene | < 1.0 | µg/L(ppb) | 1 | 1.0 | 700 | 11-Oct-01 14:47 | bw |
| m+p-Xylenes | < 3.0 | µg/L(ppb) | 1 | 2.5 | | 11-Oct-01 14:47 | bw |
| o-Xylene | < 2.0 | µg/L(ppb) | 1 | 2.0 | | 11-Oct-01 14:47 | bw |
| Total Xylenes | < 5.0 | µg/L(ppb) | 1 | 5.0 | 10000 | 11-Oct-01 14:47 | bw |
| Naphthalene | < 15 | µg/L(ppb) | 1 | 15 | 28 | 11-Oct-01 14:47 | bw |
| **$C_9$ to $C_{10}$ Aromatics** | **691** | **µg/L(ppb)** ✓ | | **40** | **100** | 11-Oct-01 14:47 | bw |
| VPH Aromatics Surrogate | 100 | % Rec. | | | 70-130 | 11-Oct-01 14:47 | bw |

### Aliphatic VPH Constituents

| CONSTITUENT | | | | | | | |
|---|---|---|---|---|---|---|---|
| $C_5$ to $C_8$ Aliphatics[a] | 77 | µg/L(ppb) | | 40 | 350 | 11-Oct-01 14:47 | bw |
| **$C_9$ to $C_{12}$ Aliphatics[b]** | **1440** | **µg/L(ppb)** ✓ | | **40** | **1000** | 11-Oct-01 14:47 | bw |
| VPH Aliphatics Surrogate | 107 | % Rec. | | | 70-130 | 11-Oct-01 14:47 | bw |
| Total Purgeable Hydrocarbons[c] | 5570 | µg/L(ppb) ✓ | | 40 | | 11-Oct-01 14:47 | bw |
| pH | < 2 | s.u. | | | <2 | | |

**Notes and Qualifiers**

[a]Aromatic constituents Benzene, Toluene, Ethylbenzene and m+p-Xylenes were subtracted from this value.

[b]Aromatic constituents o-Xylene and $C_9$ to $C_{10}$ aromatics were subtracted from this value.

[c]This value is equivalent to the GRO Method Total Purgeable Hydrocarbon value.

(1)The reporting limit was increased due to sample matrix interference.

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# LABORATORY ANALYSIS REPORT

**HydroSolutions, Inc.**
**Jim Shaffer**
**P.O. Box 80866**
**Billings, MT 59108**

**Project ID:** MURPHY:003
**Sample ID:** MOC-16
**Laboratory ID:** 01-58873-3
**Sample Matrix:** Water
**Sample Date:** 05-Oct-01 1433
**Received at lab:** 08-Oct-01
**Reported:** 16-Oct-01

| | Results | Units | Qual | Reporting Limit | Regulatory Limit | Method | Analyzed | |
|---|---|---|---|---|---|---|---|---|
| Calcium | 688 | mg/l | | 1 | | EPA 200.7 | 09-Oct-01 1643 | RLH |
| Magnesium | 371 | mg/l | | 1 | | EPA 200.7 | 09-Oct-01 1643 | RLH |
| Potassium | 120 | mg/l | | 1 | | EPA 200.7 | 09-Oct-01 1643 | RLH |
| Sodium | 9120 | mg/l | | 1 | | EPA 200.7 | 09-Oct-01 1643 | RLH |
| Hardness, Total as CaCO3 | 3250 | mg/l | | 1 | | Calculated | | |
| Chloride | 16600 | mg/l ✓ | | 1 | | EPA 300.0 | 10-Oct-01 0019 | LDV |
| Sulfate | 996 | mg/l | | 1 | | EPA 300.0 | 10-Oct-01 0019 | LDV |
| Alkalinity as CaCO3 | 436 | mg/l | | 1 | | SM2320B | 10-Oct-01 1235 | AK/LDV |
| Bicarbonate | 532 | mg/l | | 1 | | SM2320B | 10-Oct-01 1235 | AK/LDV |
| Carbonate | <1 | mg/l | | 1 | | SM2320B | 10-Oct-01 1235 | AK/LDV |
| Solids, Total Dissolved at 180 C | 27900 | mg/l ✓ | | 10 | | SM 2540C | 09-Oct-01 1227 | AK/LDV |
| Sodium Adsorption Ratio | 69.7 | | | | | Calculated | | |
| Nitrogen, Nitrate plus Nitrite | 6.77 | mg/l | | 0.05 | | EPA 353.2 | 15-Oct-01 1427 | BS |
| Fluoride | 0.24 | mg/l | | 0.1 | | SM 4500FC mod | 09-Oct-01 1359 | DLR |
| Iron, Dissolved | <0.25 | mg/l | (1) | 0.25 | | EPA 200.7 | 09-Oct-01 1643 | RLH |
| Manganese, Dissolved | 0.39 | mg/l | | 0.01 | | EPA 200.7 | 09-Oct-01 1643 | RLH |
| Strontium, Dissolved | 17.6 | mg/l | | 0.1 | | EPA 200.7 | 09-Oct-01 1643 | RLH |

(1) Detection limit raised due to matrix interference.

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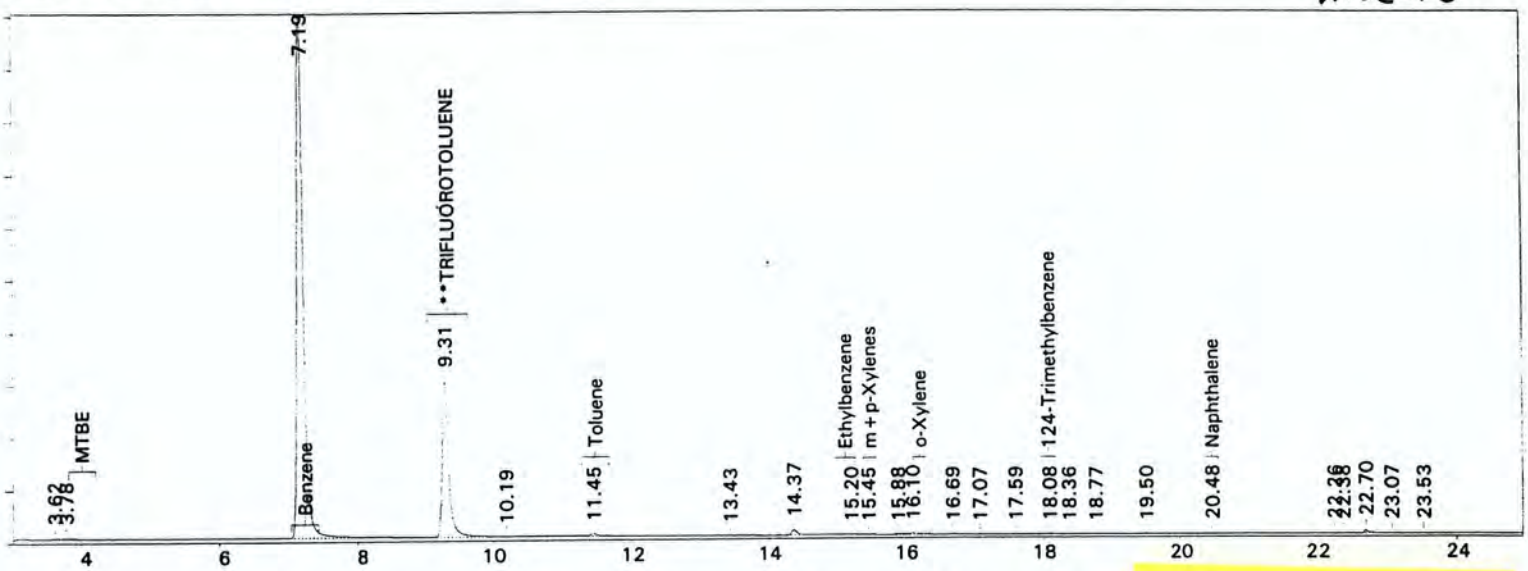
Fi 009VAR.53R Date printed=10-10-2001 Time= 16:21:14

Sample Name=003-01-58873 ;01-58873 VPH Water :G10091V5

3.0 to 25.0 min. Low Y=-0.344 High Y=24.656 mv Span=25.0

MOC-16




ENERGY LABORATORIES, INC.----AROMATICS VPH CHROMATOGRAM
Sample Name: 003-01-58873 ;01-58873 VPH Water :G10091V5
Area File: G:\ORG\VAR\1009VAR.53A
Date & Time Collected: Oct 10, 2001 16:21:11
Method File: G:\ORG\VAR\3201MAS.MET
Calibration File: G:\ORG\VAR\3201MAS.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

MOC-16

Mean RF for C9 to C10 Aromatic Hydrocarbons: 408.3405
Rt range for C9 to C10 Aromatic Hydrocarbons: 16.30563 to 20.38838

Aromatic Hydrocarbon Areas and Quantitations:
C9-C10 Area 955 Quant: 0.5

Target Analytes:

| COMPOUND | RT | Cal RRT | RRT | Area | ug/L Amount | Flag |
|---|---|---|---|---|---|---|
| MTBE | 0.00 | 0.00 | 0.00 | 0 | < 1.00 | U |
| Benzene | 7.19 | 2.11 | 2.12 | 162327 | 43.29 | |
| Toluene | 11.45 | -2.14 | -2.15 | 945 | 0.43 | J |
| Ethylbenzene | 15.20 | 15.20 | 15.20 | 103 | < 0.50 | U |
| m+p-Xylenes | 15.45 | 15.45 | 15.45 | 138 | < 0.50 | U |
| o-Xylene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| 124-Trimethylbenzene | 18.08 | 18.08 | 18.08 | 104 | < 2.00 | U |
| Naphthalene | 20.48 | 20.48 | 20.48 | 79 | < 1.00 | U |

| SURROGATE CMPND | RT | ACTUAL | MEASURED | %RECOVERY | QC LIMITS |
|---|---|---|---|---|---|
| **TRIFLUOROTOLUENE | 9.31 | 50.0 | 45.2 | 90 | 70-130 |

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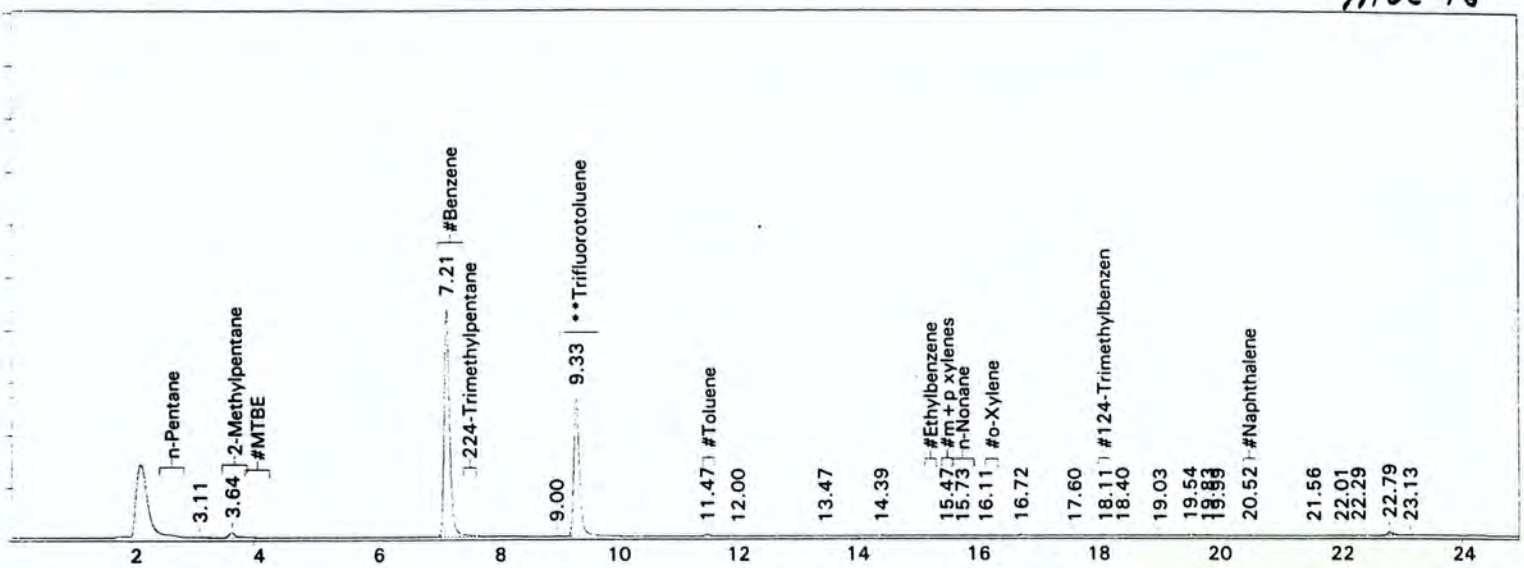
File=G:\ORG\VAR\1009VARB.53R Date printed=10-10-2001 Time= 16:21:28
Sample Name=003-01-58873 ;01-58873 VPH Water :G10091V5
0.01 to 25.0 min. Low Y=-2.708 High Y=22.292 mv Span=25.0

MOC-16




ENERGY LABORATORIES, INC.----ALIPHATICS VPH CHROMATOGRAM
Sample Name: 003-01-58873 ;01-58873 VPH Water :G10091V5
Area File: G:\ORG\VAR\1009VARB.53A
Date & Time Collected: Oct 10, 2001 16:21:11
Method File: G:\ORG\VAR\3201MASB.MET
Calibration File: G:\ORG\VAR\3201MASB.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1
Mean RF for C5 to C8 Aliphatic Hydrocarbons: 159.906
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 155.2499
Mean RF for all calibrated compounds: 203.8664
Rt range for Gasoline Range Organics: 3.484643 to 18.20109
Rt range for C5 to C8 Aliphatic Hydrocarbons: 2.458333 to 15.55198
Rt range for C9 to C12 Aliphatic Hydrocarbons: 15.65198 to 20.41823

MOC-16

Peaks subtracted from Total:

| Compound Name | RT | Area | Amount | %Recovery |
|---|---|---|---|---|
| **Trifluorotoluene | 9.3 | 41,355 | 48 | 96 |

GRO Area: 72,685 Quant: 71.3
TPH Area: 74,996 Quant: 73.6

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:
C5-C8 Area: 72,144 Quant: 90.2
C9-C12 Area 1,252 Quant: 1.6

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# LABORATORY ANALYSIS REPORT

**HydroSolutions, Inc.**
**Jim Shaffer**
**P.O. Box 80866**
**Billings, MT 59108**

**Project ID:** MURPHY:003
**Sample ID:** MOC-18(ORIG)
**Laboratory ID:** 01-58873-1
**Sample Matrix:** Water
**Sample Date:** 05-Oct-01 1130
**Received at lab:** 08-Oct-01
**Reported:** 16-Oct-01

| | Results | Units | Qual | Reporting Limit | Regulatory Limit | Method | Analyzed | |
|---|---|---|---|---|---|---|---|---|
| Calcium | 467 | mg/l | | 1 | | EPA 200.7 | 09-Oct-01 1628 | RLH |
| Magnesium | 289 | mg/l | | 1 | | EPA 200.7 | 09-Oct-01 1628 | RLH |
| Potassium | 54 | mg/l | | 1 | | EPA 200.7 | 09-Oct-01 1628 | RLH |
| Sodium | 2380 | mg/l | | 1 | | EPA 200.7 | 09-Oct-01 1628 | RLH |
| Hardness, Total as CaCO3 | 2360 | mg/l | | 1 | | Calculated | | |
| Chloride | 4200 | mg/l ✓ | | 1 | | EPA 300.0 | 09-Oct-01 2358 | LDV |
| Sulfate | 1330 | mg/l | | 1 | | EPA 300.0 | 09-Oct-01 2358 | LDV |
| Alkalinity as CaCO3 | 380 | mg/l | | 1 | | SM2320B | 10-Oct-01 1213 | AK/LDV |
| Bicarbonate | 464 | mg/l | | 1 | | SM2320B | 10-Oct-01 1213 | AK/LDV |
| Carbonate | <1 | mg/l | | 1 | | SM2320B | 10-Oct-01 1213 | AK/LDV |
| Solids, Total Dissolved at 180 C | 9290 | mg/l ✓ | | 10 | | SM 2540C | 09-Oct-01 1225 | AK/LDV |
| Sodium Adsorption Ratio | 21.4 | | | | | Calculated | | |
| Nitrogen, Nitrate plus Nitrite | 20.0 | mg/l | | 0.05 | | EPA 353.2 | 15-Oct-01 1425 | BS |
| Fluoride | 0.40 | mg/l | | 0.1 | | SM 4500FC mod | 09-Oct-01 1347 | DLR |
| Iron, Dissolved | <0.13 | mg/l | (1) | 0.13 | | EPA 200.7 | 09-Oct-01 1628 | RLH |
| Manganese, Dissolved | 0.23 | mg/l | | 0.01 | | EPA 200.7 | 09-Oct-01 1628 | RLH |
| Strontium, Dissolved | 7.0 | mg/l | | 0.1 | | EPA 200.7 | 09-Oct-01 1628 | RLH |

(1) Detection limit raised due to matrix interference.

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**Client:** HydroSolutions, Inc.

**Login No.:** 001-01-58873
**Date:** 15-Oct-01

## VOLATILE PETROLEUM HYDROCARBONS (VPH) LABORATORY ANALYSIS REPORT

Project ID: MURPHY:003
Client ID: MOC-18(ORIG)
Sampled:05-Oct-01 11:30
Received:08-Oct-01

### Aromatic VPH Constituents

| CONSTITUENT | Result | Units | Qualifier | Reporting Limit | QC/Regulatory Limit | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methyl t-butylether | < 1.0 | µg/L(ppb) | | 1.0 | 30 | 10-Oct-01 15:40 | bw |
| Benzene | < 0.50 | µg/L(ppb) | ✓ | 0.50 | 5 | 10-Oct-01 15:40 | bw |
| Toluene | < 0.50 | µg/L(ppb) | | 0.50 | 1000 | 10-Oct-01 15:40 | bw |
| Ethylbenzene | < 0.50 | µg/L(ppb) | | 0.50 | 700 | 10-Oct-01 15:40 | bw |
| m+p-Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | | 10-Oct-01 15:40 | bw |
| o-Xylene | < 0.50 | µg/L(ppb) | | 0.50 | | 10-Oct-01 15:40 | bw |
| Total Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | 10000 | 10-Oct-01 15:40 | bw |
| Naphthalene | < 1.0 | µg/L(ppb) | | 1.0 | 28 | 10-Oct-01 15:40 | bw |
| $C_9$ to $C_{10}$ Aromatics | < 20 | µg/L(ppb) | | 20 | 100 | 10-Oct-01 15:40 | bw |
| VPH Aromatics Surrogate | 87 | % Rec. | | | 70-130 | 10-Oct-01 15:40 | bw |

### Aliphatic VPH Constituents

| CONSTITUENT | | | | | | | |
|---|---|---|---|---|---|---|---|
| $C_5$ to $C_8$ Aliphatics[a] | < 20 | µg/L(ppb) | | 20 | 350 | 10-Oct-01 15:40 | bw |
| $C_9$ to $C_{12}$ Aliphatics[b] | < 20 | µg/L(ppb) | | 20 | 1000 | 10-Oct-01 15:40 | bw |
| VPH Aliphatics Surrogate | 97 | % Rec. | | | 70-130 | 10-Oct-01 15:40 | bw |
| Total Purgeable Hydrocarbons[c] | < 20 | µg/L(ppb) | ✓ | 20 | | 10-Oct-01 15:40 | bw |
| pH | < 2 | s.u. | | | <2 | | |

**Notes and Qualifiers**

[a]Aromatic constituents Benzene, Toluene, Ethylbenzene and m+p-Xylenes were subtracted from this value.

[b]Aromatic constituents o-Xylene and $C_9$ to $C_{10}$ aromatics were subtracted from this value.

[c]This value is equivalent to the GRO Method Total Purgeable Hydrocarbon value.

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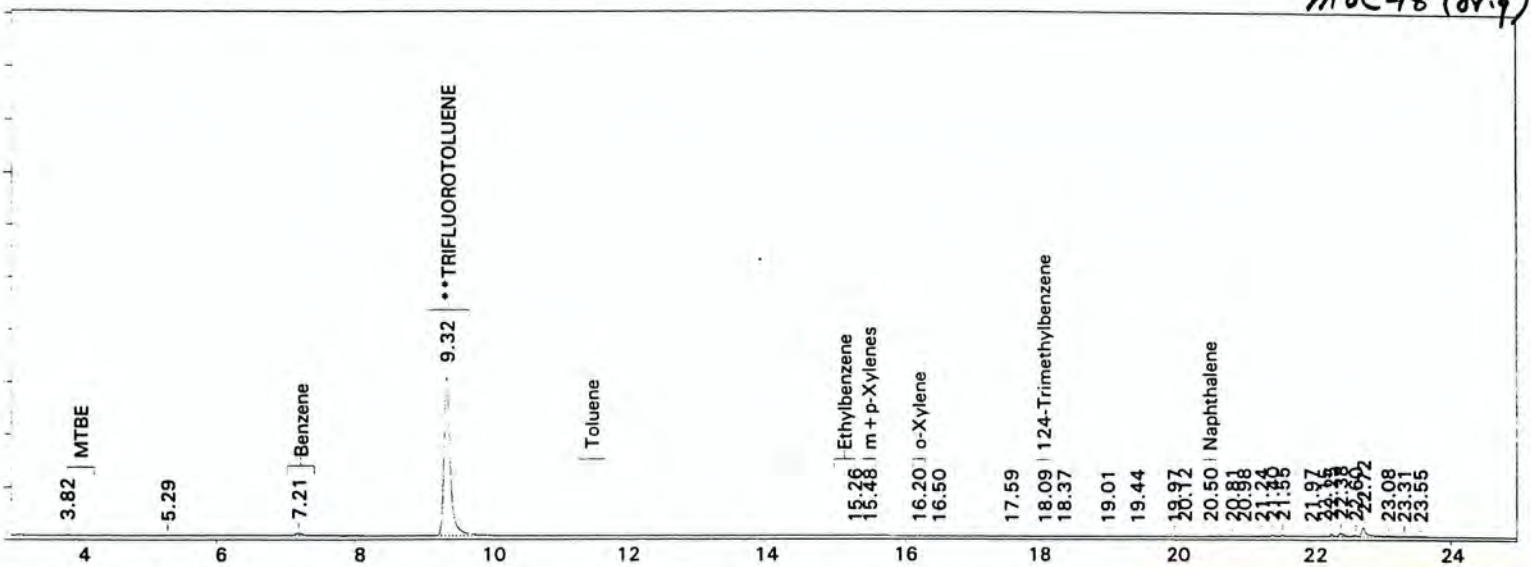
File: G:\ORG\VAR\1009VAR.52R Date printed=10-10-2001 Time= 15:40:18

Sample Name=001-01-58873 ;01-58873 VPH Water :G10091V5

3.0 to 25.0 min. Low Y=-0.353 High Y=24.647 mv Span=25.0

MOC-18 (orig)




ENERGY LABORATORIES, INC.----AROMATICS VPH CHROMATOGRAM
Sample Name: 001-01-58873 ;01-58873 VPH Water :G10091V5
Area File: G:\ORG\VAR\1009VAR.52A
Date & Time Collected: Oct 10, 2001 15:40:14
Method File: G:\ORG\VAR\3201MAS.MET
Calibration File: G:\ORG\VAR\3201MAS.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

MoC-18 (orig.)

Mean RF for C9 to C10 Aromatic Hydrocarbons: 408.3405
Rt range for C9 to C10 Aromatic Hydrocarbons: 16.30563 to 20.38838

Aromatic Hydrocarbon Areas and Quantitations:
C9-C10 Area 548 Quant: 0.3

Target Analytes:

| COMPOUND | RT | Cal RRT | RRT | Area | ug/L Amount | Flag |
|---|---|---|---|---|---|---|
| MTBE | 3.82 | 3.82 | 3.82 | 193 | < 1.00 | U |
| Benzene | 7.21 | 7.21 | 7.21 | 920 | < 0.50 | U |
| Toluene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| Ethylbenzene | 15.26 | 15.26 | 15.26 | 83 | < 0.50 | U |
| m+p-Xylenes | 15.48 | 15.48 | 15.48 | 115 | < 0.50 | U |
| o-Xylene | 16.20 | 16.20 | 16.20 | 48 | < 0.50 | U |
| 124-Trimethylbenzene | 18.09 | 18.09 | 18.09 | 57 | < 2.00 | U |
| Naphthalene | 20.50 | 20.50 | 20.50 | 136 | < 1.00 | U |

| SURROGATE CMPND | RT | ACTUAL | MEASURED | %RECOVERY | QC LIMITS |
|---|---|---|---|---|---|
| **TRIFLUOROTOLUENE | 9.32 | 50.0 | 43.6 | 87 | 70-130 |

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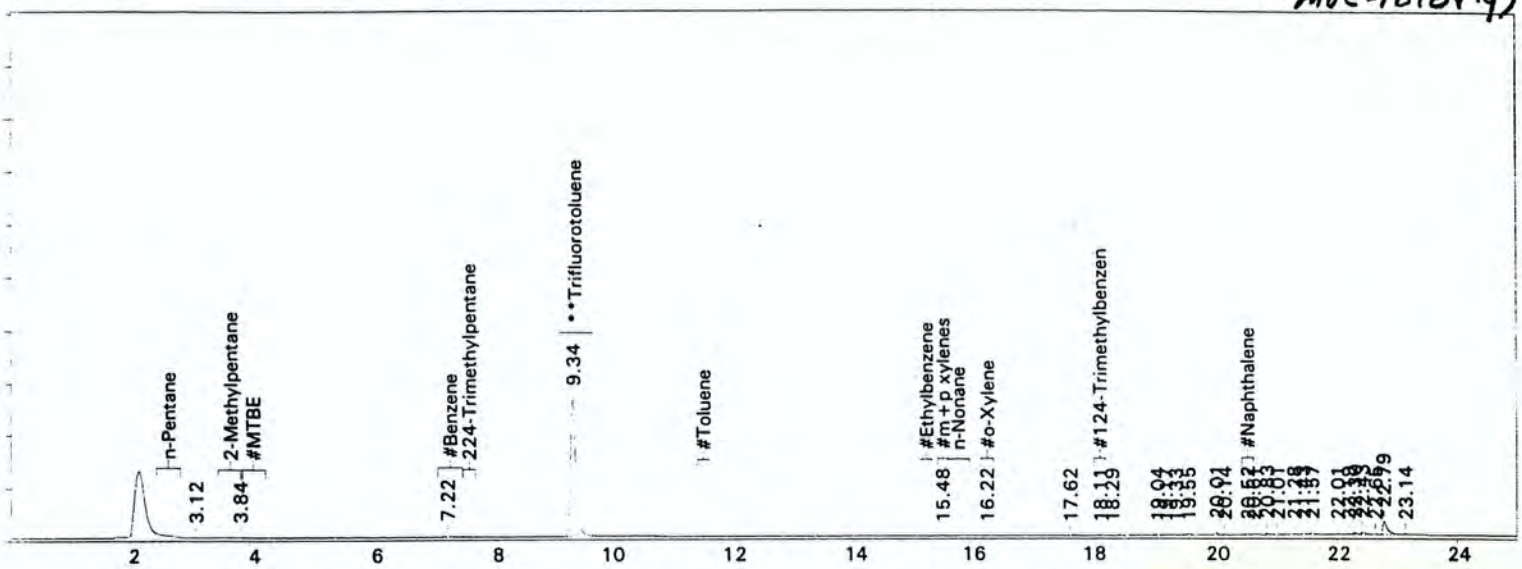
File=G:\ORG\VAR\1009VARB.52R Date printed=10-10-2001 Time= 15:40:32
Sample Name=001-01-58873 ;01-58873 VPH Water :G10091V5
0.01 to 25.0 min. Low Y=-2.722 High Y=22.278 mv Span=25.0

MOC-18(orig)




ENERGY LABORATORIES, INC.----ALIPHATICS VPH CHROMATOGRAM
Sample Name: 001-01-58873 ;01-58873 VPH Water :G10091V5
Area File: G:\ORG\VAR\1009VARB.52A
Date & Time Collected: Oct 10, 2001 15:40:14
Method File: G:\ORG\VAR\3201MASB.MET
Calibration File: G:\ORG\VAR\3201MASB.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1
Mean RF for C5 to C8 Aliphatic Hydrocarbons: 159.906
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 155.2499
Mean RF for all calibrated compounds: 203.8664
Rt range for Gasoline Range Organics: 3.484643 to 18.20109
Rt range for C5 to C8 Aliphatic Hydrocarbons: 2.458333 to 15.55198
Rt range for C9 to C12 Aliphatic Hydrocarbons: 15.65198 to 20.41823

MOC-18 (orig.)

Peaks subtracted from Total:

| Compound Name | RT | Area | Amount | %Recovery |
|---|---|---|---|---|
| **Trifluorotoluene | 9.3 | 41,631 | 48 | 97 |

| | | | |
|---|---|---|---|
| GRO Area: | 1,389 | Quant: | 1.4 |
| TPH Area: | 9,146 | Quant: | 9.0 |

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:

| | | | |
|---|---|---|---|
| C5-C8 Area: | 1,045 | Quant: | 1.3 |
| C9-C12 Area | 1,529 | Quant: | 2.0 |

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**Client:** HydroSolutions, Inc.

**Login No.:** 004-01-58873
**Date:** 15-Oct-01

## VOLATILE PETROLEUM HYDROCARBONS (VPH) LABORATORY ANALYSIS REPORT

Project ID: MURPHY:003

Client ID: TRIP BLANK

Received:08-Oct-01

### Aromatic VPH Constituents

| CONSTITUENT | Result | Units | Qualifier | Reporting Limit | QC/Regulatory Limit | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methyl t-butylether | < 1.0 | µg/L(ppb) | | 1.0 | 30 | 10-Oct-01 15:05 | bw |
| Benzene | < 0.50 | µg/L(ppb) | | 0.50 | 5 | 10-Oct-01 15:05 | bw |
| Toluene | < 0.50 | µg/L(ppb) | | 0.50 | 1000 | 10-Oct-01 15:05 | bw |
| Ethylbenzene | < 0.50 | µg/L(ppb) | | 0.50 | 700 | 10-Oct-01 15:05 | bw |
| m + p-Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | | 10-Oct-01 15:05 | bw |
| o-Xylene | < 0.50 | µg/L(ppb) | | 0.50 | | 10-Oct-01 15:05 | bw |
| Total Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | 10000 | 10-Oct-01 15:05 | bw |
| Naphthalene | < 1.0 | µg/L(ppb) | | 1.0 | 28 | 10-Oct-01 15:05 | bw |
| $C_9$ to $C_{10}$ Aromatics | < 20 | µg/L(ppb) | | 20 | 100 | 10-Oct-01 15:05 | bw |
| VPH Aromatics Surrogate | 92 | % Rec. | | | 70-130 | 10-Oct-01 15:05 | bw |

### Aliphatic VPH Constituents

| CONSTITUENT | | | | | | | |
|---|---|---|---|---|---|---|---|
| $C_5$ to $C_8$ Aliphatics[a] | < 20 | µg/L(ppb) | | 20 | 350 | 10-Oct-01 15:05 | bw |
| $C_9$ to $C_{12}$ Aliphatics[b] | < 20 | µg/L(ppb) | | 20 | 1000 | 10-Oct-01 15:05 | bw |
| VPH Aliphatics Surrogate | 101 | % Rec. | | | 70-130 | 10-Oct-01 15:05 | bw |
| Total Purgeable Hydrocarbons[c] | < 20 | µg/L(ppb) | | 20 | | 10-Oct-01 15:05 | bw |
| pH | < 2 | s.u. | | | < 2 | | |

**Notes and Qualifiers**

[a]Aromatic constituents Benzene, Toluene, Ethylbenzene and m + p-Xylenes were subtracted from this value.

[b]Aromatic constituents o-Xylene and $C_9$ to $C_{10}$ aromatics were subtracted from this value.

[c]This value is equivalent to the GRO Method Total Purgeable Hydrocarbon value.

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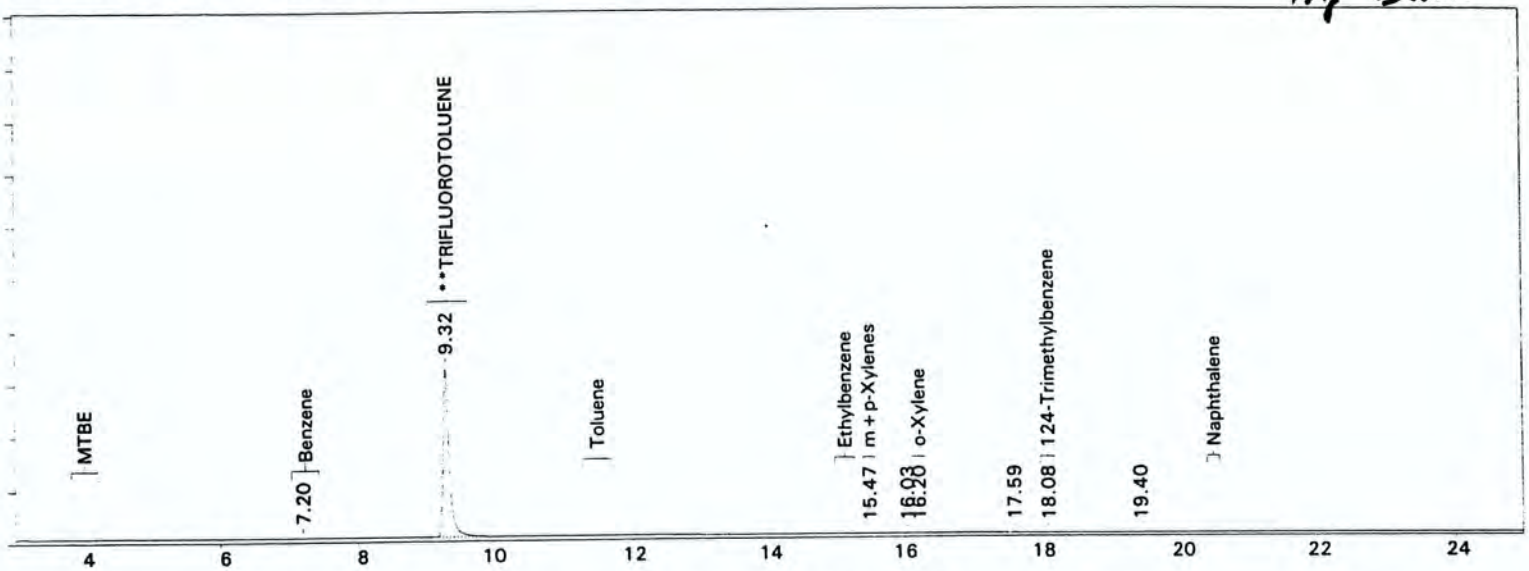
File=G:\ORG\VAR\1009VAR.51R Date printed=10-10-2001 Time= 15:05:23
Sample Name=004-01-58873 ;01-58873 VPH Water :G10091V5
3.0 to 25.0 min. Low Y=-0.354 High Y=24.646 mv Span=25.0

Trip Blank




ENERGY LABORATORIES, INC.----AROMATICS VPH CHROMATOGRAM
Sample Name: 004-01-58873 ;01-58873 VPH Water :G10091V5
Area File: G:\ORG\VAR\1009VAR.51A
Date & Time Collected: Oct 10, 2001 15:05:19
Method File: G:\ORG\VAR\3201MAS.MET
Calibration File: G:\ORG\VAR\3201MAS.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

Mean RF for C9 to C10 Aromatic Hydrocarbons: 408.3405
Rt range for C9 to C10 Aromatic Hydrocarbons: 16.30563 to 20.38838

Aromatic Hydrocarbon Areas and Quantitations:
C9-C10 Area 225 Quant: 0.1

Target Analytes:

| COMPOUND | RT | Cal RRT | RRT | Area | ug/L Amount | Flag |
|---|---|---|---|---|---|---|
| MTBE | 0.00 | 0.00 | 0.00 | 0 | < 1.00 | U |
| Benzene | 7.20 | 7.20 | 7.20 | 83 | < 0.50 | U |
| Toluene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| Ethylbenzene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| m+p-Xylenes | 15.47 | 15.47 | 15.47 | 56 | < 0.50 | U |
| o-Xylene | 16.20 | 16.20 | 16.20 | 443 | < 0.50 | U |
| 124-Trimethylbenzene | 18.08 | 18.08 | 18.08 | 26 | < 2.00 | U |
| Naphthalene | 0.00 | 0.00 | 0.00 | 0 | < 1.00 | U |

| SURROGATE CMPND | RT | ACTUAL | MEASURED | %RECOVERY | QC LIMITS |
|---|---|---|---|---|---|
| **TRIFLUOROTOLUENE | 9.32 | 50.0 | 45.9 | 92 | 70-130 |

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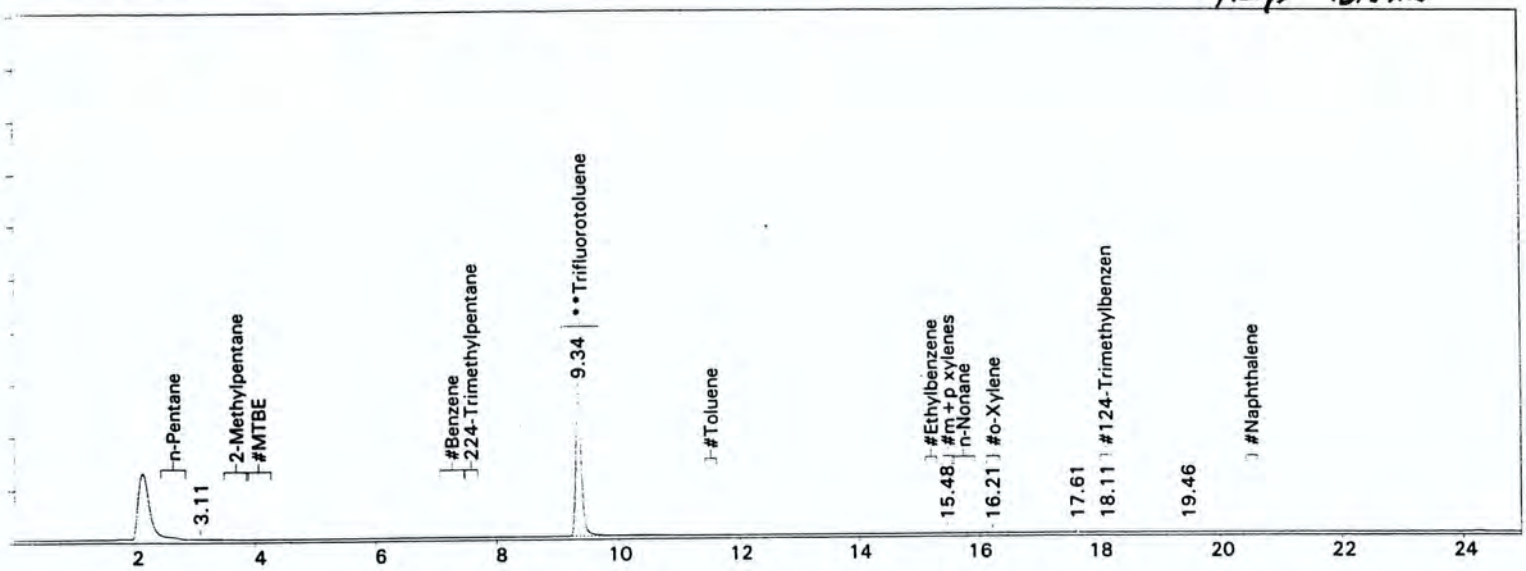
File=G:\ORG\VAR\1009VARB.51R Date printed=10-10-2001 Time= 15:05:37
Sample Name=004-01-58873 ;01-58873 VPH Water :G10091V5
0.01 to 25.0 min. Low Y=-2.718 High Y=22.282 mv Span=25.0

Trip Blank




ENERGY LABORATORIES, INC.----ALIPHATICS VPH CHROMATOGRAM
Sample Name: 004-01-58873 ;01-58873 VPH Water :G10091V5
Area File: G:\ORG\VAR\1009VARB.51A
Date & Time Collected: Oct 10, 2001 15:05:19
Method File: G:\ORG\VAR\3201MASB.MET
Calibration File: G:\ORG\VAR\3201MASB.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1
Mean RF for C5 to C8 Aliphatic Hydrocarbons: 159.906
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 155.2499
Mean RF for all calibrated compounds: 203.8664
Rt range for Gasoline Range Organics: 3.484643 to 18.20109
Rt range for C5 to C8 Aliphatic Hydrocarbons: 2.458333 to 15.55198
Rt range for C9 to C12 Aliphatic Hydrocarbons: 15.65198 to 20.41823

Peaks subtracted from Total:

| Compound Name | RT | Area | Amount | %Recovery |
|---|---|---|---|---|
| **Trifluorotoluene | 9.3 | 43,523 | 51 | 101 |

| | | | |
|---|---|---|---|
| GRO Area: | 282 | Quant: | 0.3 |
| TPH Area: | 457 | Quant: | 0.4 |

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:

| | | | |
|---|---|---|---|
| C5-C8 Area: | 216 | Quant: | 0.3 |
| C9-C12 Area | 242 | Quant: | 0.3 |

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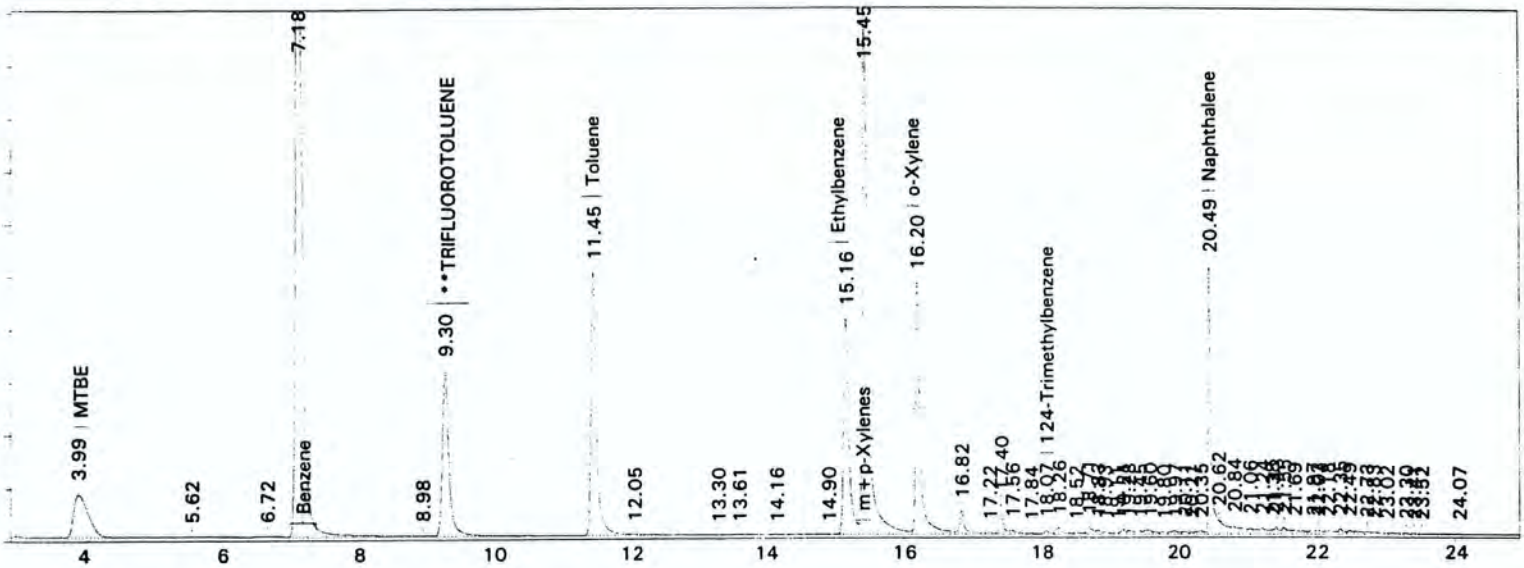
F:\ORG\VAR\1009VAR.29R Date printed=10-15-2001 Time= 10:46:53

Sample Name=MSG003-01-58543 ;01-58543 VPH Water :G10091V3(125ug/l)

3.0 to 25.0 min. Low Y=-0.323 High Y=24.677 mv Span=25.0




ENERGY LABORATORIES, INC.----AROMATICS VPH CHROMATOGRAM
Sample Name: MSG003-01-58543 ;01-58543 VPH Water :G10091V3(125ug/l)
Area File: G:\ORG\VAR\1009VAR.29A
Date & Time Collected: Oct 9, 2001 14:43:06
Method File: G:\ORG\VAR\3201M42.MET
Calibration File: G:\ORG\VAR\3201MAS.CAL
Sample Weight: 5 Dilution: 5 S.A.: 1

Mean RF for C9 to C10 Aromatic Hydrocarbons: 408.3405
Rt range for C9 to C10 Aromatic Hydrocarbons: 16.30563 to 20.38838

Aromatic Hydrocarbon Areas and Quantitations:
C9-C10 Area 29,434 Quant: 72.1

Target Analytes:

| COMPOUND | RT | Cal RRT | RRT | Area | ug/L Amount | Flag |
|---|---|---|---|---|---|---|
| MTBE | 3.99 | 5.33 | 5.32 | 30156 | 97.12 | |
| Benzene | 7.18 | 2.11 | 2.12 | 242032 | 322.72 | |
| Toluene | 11.45 | -2.14 | -2.15 | 71034 | 112.09 | |
| Ethylbenzene | 15.16 | -5.77 | -5.86 | 54395 | 118.90 | |
| m+p-Xylenes | 15.45 | -6.12 | -6.14 | 131951 | 235.27 | |
| o-Xylene | 16.20 | -6.86 | -6.89 | 55348 | 110.91 | |
| 124-Trimethylbenzene | 18.07 | 18.07 | 18.07 | 898 | < 10.00 | U |
| Naphthalene | 20.49 | -11.14 | -11.19 | 33638 | 94.34 | |

| SURROGATE CMPND | RT | ACTUAL | MEASURED | %RECOVERY | QC LIMITS |
|---|---|---|---|---|---|
| **TRIFLUOROTOLUENE | 9.30 | 50.0 | 48.3 | 97 | 70-130 |

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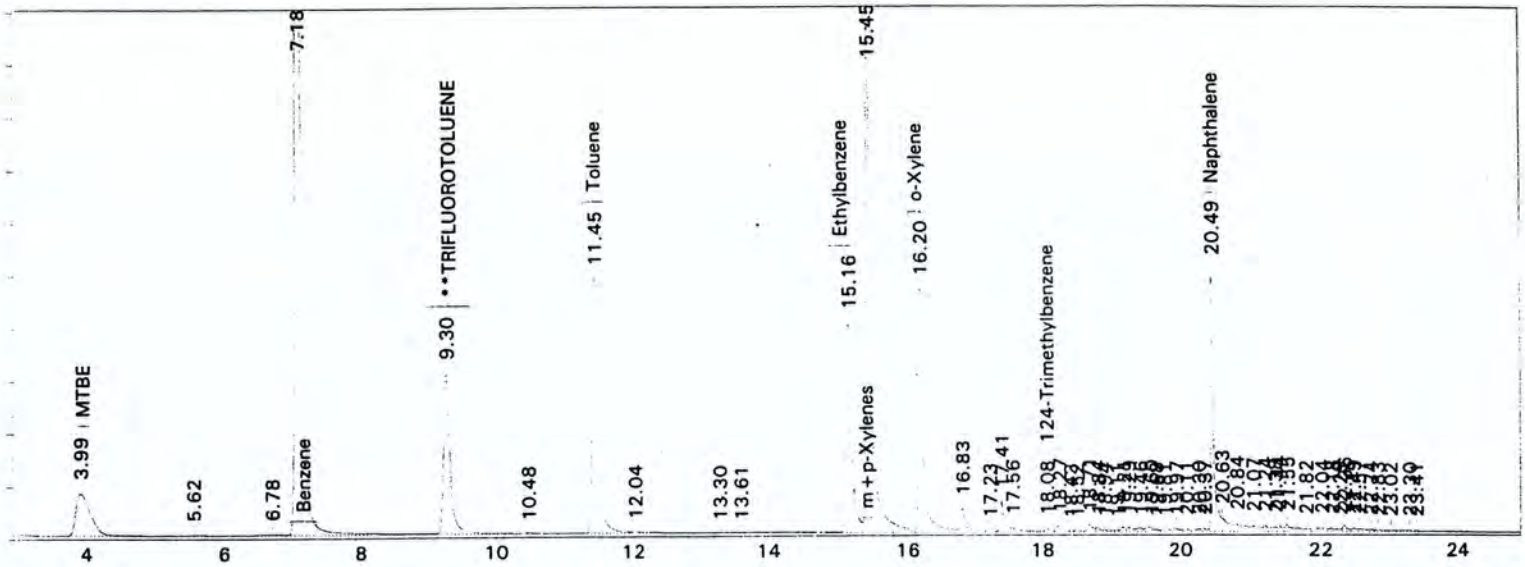
File=G:\ORG\VAR\1009VAR.30R Date printed=10-15-2001 Time= 10:46:59
Sample Name=MSDG003-01-58543 ;01-58543 VPH Water :G10091V3(125ug/L)
3.0 to 25.0 min. Low Y=-0.321 High Y=24.679 mv Span=25.0




ENERGY LABORATORIES, INC.----AROMATICS VPH CHROMATOGRAM
Sample Name: MSDG003-01-58543 ;01-58543 VPH Water :G10091V3(125ug/L)
Area File: G:\ORG\VAR\1009VAR.30A
Date & Time Collected: Oct 9, 2001 15:18:37
Method File: G:\ORG\VAR\3201M43.MET
Calibration File: G:\ORG\VAR\3201MAS.CAL
Sample Weight: 5 Dilution: 5 S.A.: 1

Mean RF for C9 to C10 Aromatic Hydrocarbons: 408.3405
Rt range for C9 to C10 Aromatic Hydrocarbons: 16.30563 to 20.38838

Aromatic Hydrocarbon Areas and Quantitations:
C9-C10 Area 29,973 Quant: 73.4

Target Analytes:

| COMPOUND | RT | Cal RRT | RRT | Area | ug/L Amount | Flag |
|---|---|---|---|---|---|---|
| MTBE | 3.99 | 5.33 | 5.31 | 29531 | 95.11 | |
| Benzene | 7.18 | 2.11 | 2.12 | 242203 | 322.95 | |
| Toluene | 11.45 | -2.14 | -2.15 | 69691 | 110.15 | |
| Ethylbenzene | 15.16 | -5.77 | -5.86 | 53180 | 116.24 | |
| m+p-Xylenes | 15.45 | -6.12 | -6.15 | 129975 | 231.74 | |
| o-Xylene | 16.20 | -6.86 | -6.90 | 54463 | 109.30 | |
| 124-Trimethylbenzene | 18.08 | 18.08 | 18.08 | 929 | < 10.00 | U |
| Naphthalene | 20.49 | -11.14 | -11.19 | 33496 | 93.94 | |

| SURROGATE CMPND | RT | ACTUAL | MEASURED | %RECOVERY | QC LIMITS |
|---|---|---|---|---|---|
| **TRIFLUOROTOLUENE | 9.30 | 50.0 | 47.4 | 95 | 70-130 |

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Lab Nos. 01-58873-1-3

## QUALITY ASSURANCE DATA PACKAGE

This report is a summary of the results of the quality assurance tests performed with the sample analyses. They are performed to determine if the methodology is in control and to monitor the laboratory's ability to produce accurate and precise results. The date the quality assurance sample was analyzed is consistent with Energy Laboratories' Quality Assurance Plan.

| Constituents | Duplicate Analysis - - - mg/l (ppm) - - - Original | Duplicate | Spiked Analysis % Recovery | Blank Analysis mg/l (ppm) | Calibration Sample Analysis mg/l (ppm) | True Value, Acceptable +/- 10% mg/l (ppm) |
|---|---|---|---|---|---|---|
| Calcium | 467 | 472 | 101 | <1 | 53 | 50 |
| Magnesium | 289 | 291 | 104 | <1 | 54 | 50 |
| Potassium | 54 | 55 | 99 | <1 | 51 | 50 |
| Sodium | 2380 | 2360 | 102 | <1 | 53 | 50 |
| Chloride | 155 | 152 | 108 | <1 | 26 | 25 |
| Sulfate | 104 | 102 | 110 | <1 | 106 | 100 |
| Alkalinity as CaCO3 | 283 | 279 | 96 | <1 | 103 | 100 |
| Solids, Total Dissolved at 180 C | 169 | 171 | 101 | <10 | NA | NA |
| Nitrogen, Nitrate plus Nitrite | 4.43 | 4.44 | 91 | <0.05 | 5.36 | 5.42 |
| Fluoride | 3.19 | 3.19 | 96 | <0.1 | 3.86 | 3.76 |
| Iron, Dissolved | <0.03 | <0.03 | 102 | <0.03 | 5.32 | 5 |
| Manganese, Dissolved | 0.23 | 0.25 | 100 | <0.01 | 5.21 | 5 |
| Strontium, Dissolved | 7.0 | 7.1 | 106 | <0.1 | 5.4 | 5 |

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## AROMATIC VPH CONTINUING CALIBRATION REPORT

This continuing calibration report applies to the following analysis runs:
001-01-58873,003-01-58873,004-01-58873

---

Sample Name: cc5 GRO Continuing Cal :G10091V5 Fiv8017
Area File: G:\ORG\VAR\1009VAR.45A
Date & Time Collected: Oct 10, 2001 10:53:47
Method File: G:\ORG\VAR\3201M34.MET
Calibration File: G:\ORG\VAR\3201MAS.CAL

| COMPOUND | ACTUAL | MEASURED | %RECOVERY | %RECOVERY LIMITS |
|---|---|---|---|---|
| MTBE | 300 | 314 | 105 | 75-125 |
| Benzene | 100 | 102 | 102 | 75-125 |
| Toluene | 300 | 299 | 100 | 75-125 |
| Ethylbenzene | 100 | 97 | 97 | 75-125 |
| m+p-Xylenes | 400 | 407 | 102 | 75-125 |
| o-Xylene | 200 | 196 | 98 | 75-125 |
| 124-Trimethylbenzene | 200 | 195 | 98 | 75-125 |
| Naphthalene | 200 | 196 | 98 | 75-125 |
| **TRIFLUOROTOLUENE | 250 | 240 | 96 | 75-125 |

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# AROMATIC VPH CONTINUING CALIBRATION REPORT

This continuing calibration report applies to the following analysis runs:
002-01-58873

---

Sample Name: cc7 GRO Continuing Cal :G10091V7 Fiv8017
Area File: G:\ORG\VAR\1009VAR.64A
Date & Time Collected: Oct 11, 2001 12:26:47
Method File: G:\ORG\VAR\3201M44.MET
Calibration File: G:\ORG\VAR\3201MAS.CAL

| COMPOUND | ACTUAL | MEASURED | %RECOVERY | %RECOVERY LIMITS |
|---|---|---|---|---|
| MTBE | 300 | 313 | 104 | 75-125 |
| Benzene | 100 | 101 | 101 | 75-125 |
| Toluene | 300 | 299 | 100 | 75-125 |
| Ethylbenzene | 100 | 99 | 99 | 75-125 |
| m+p-Xylenes | 400 | 414 | 104 | 75-125 |
| o-Xylene | 200 | 198 | 99 | 75-125 |
| 124-Trimethylbenzene | 200 | 201 | 100 | 75-125 |
| Naphthalene | 200 | 187 | 93 | 75-125 |
| **TRIFLUOROTOLUENE | 250 | 239 | 96 | 75-125 |

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# ALIPHATIC VPH CONTINUING CALIBRATION REPORT

This continuing calibration report applies to the following analysis runs:
001-01-58873,003-01-58873,004-01-58873

---

Sample Name: cc5 GRO Continuing Cal :G10091V5 Fiv8017
Area File: G:\ORG\VAR\1009VARB.45A
Date & Time Collected: Oct 10, 2001 10:53:47
Method File: G:\ORG\VAR\3201M33B.MET
Calibration File: G:\ORG\VAR\3201MASB.CAL

| COMPOUND | ACTUAL | MEASURED | %RECOVERY | %RECOVERY LIMITS |
|---|---|---|---|---|
| n-Pentane | 200 | 180 | 90 | 75-125 |
| 2-Methylpentane | 300 | 283 | 94 | 75-125 |
| 224-Trimethylpentane | 300 | 315 | 105 | 75-125 |
| n-Nonane | 200 | 231 | 115 | 75-125 |
| TOTAL RESPONSE | 1000 | 1008 | 101 | 75-125 |
| **Trifluorotoluene | 250 | 240 | 96 | 75-125 |

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## ALIPHATIC VPH CONTINUING CALIBRATION REPORT

This continuing calibration report applies to the following analysis runs:
002-01-58873

---

Sample Name: cc7 GRO Continuing Cal :G10091V7 Fiv8017
Area File: G:\ORG\VAR\1009VARB.64A
Date & Time Collected: Oct 11, 2001 12:26:47
Method File: G:\ORG\VAR\3201M44B.MET
Calibration File: G:\ORG\VAR\3201MASB.CAL

| COMPOUND | ACTUAL | MEASURED | %RECOVERY | %RECOVERY LIMITS |
|---|---|---|---|---|
| n-Pentane | 200 | 175 | 88 | 75-125 |
| 2-Methylpentane | 300 | 291 | 97 | 75-125 |
| 224-Trimethylpentane | 300 | 333 | 111 | 75-125 |
| n-Nonane | 200 | 247 | 124 | 75-125 |
| TOTAL RESPONSE | 1000 | 1046 | 105 | 75-125 |
| **Trifluorotoluene | 250 | 240 | 96 | 75-125 |

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**Date:** 15-Oct-01

## QUALITY ASSURANCE REPORT FOR VOLATILE PETROLEUM HYDROCARBONS (VPH)

**Method Blank Results:**

| MTBE | Benzene | Toluene | Ethylbenzene | m+p-Xylenes | o-Xylene | Naphthalene | C9 to C10 Aromatics | C5 to C8 Aliphatics | C9 to C12 Aliphatics |
|---|---|---|---|---|---|---|---|---|---|
| < 1.0 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 1.0 | < 20 | < 20 | < 20 |

Concentration Units = µg/L(ppb)

Aromatic Surrogate % Recovery = 93 — Date Analyzed: 10-Oct-01 12:30

Aliphatic Surrogate % Recovery = 97 — Sequence I.D.: B10091V5

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| < 1.0 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 1.0 | < 20 | < 20 | < 20 |

Concentration Units = µg/L(ppb)

Aromatic Surrogate % Recovery = 92 — Date Analyzed: 11-Oct-01 14:11

Aliphatic Surrogate % Recovery = 98 — Sequence I.D.: B10091V7

### LABORATORY FORTIFIED BLANK RESULTS

Date Analyzed: 10-Oct-01 11:33

Sequence I.D.: B10091V5

| Constituent | SPIKE ADDED µg/L(ppb) | MS CONC. µg/L(ppb) | MS %Rec. | QC Limit %Rec. | Surrogate %Rec. |
|---|---|---|---|---|---|
| MTBE | 20 | 16 | 80 | 70-130 | 95 |
| Benzene | 20 | 18 | 90 | 70-130 | |
| Toluene | 20 | 20 | 100 | 70-130 | |
| Ethylbenzene | 20 | 20 | 100 | 70-130 | |
| m+p-Xylenes | 40 | 44 | 110 | 70-130 | |
| o-Xylene | 20 | 21 | 105 | 70-130 | |
| Naphthalene | 20 | 20 | 100 | 70-130 | |

### LABORATORY FORTIFIED BLANK RESULTS

Date Analyzed: 11-Oct-01 13:01

Sequence I.D.: B10091V7

| Constituent | SPIKE ADDED µg/L(ppb) | MS CONC. µg/L(ppb) | MS %Rec. | QC Limit %Rec. | Surrogate %Rec. |
|---|---|---|---|---|---|
| MTBE | 20 | 15 | 75 | 70-130 | 93 |
| Benzene | 20 | 17 | 85 | 70-130 | |
| Toluene | 20 | 19 | 95 | 70-130 | |
| Ethylbenzene | 20 | 20 | 100 | 70-130 | |
| m+p-Xylenes | 40 | 42 | 105 | 70-130 | |
| o-Xylene | 20 | 20 | 100 | 70-130 | |
| Naphthalene | 20 | 18 | 90 | 70-130 | |

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**Date:** 15-Oct-01

## VOLATILE ORGANIC CHEMICALS MATRIX SPIKE REPORTS

### VOC MATRIX SPIKE REPORT

Laboratory Number: 003-01-58543

Date Analyzed: 09-Oct-01 14:43

| Constituent | Spike Added µg/L(ppb) | Sample Conc. µg/L(ppb) | MS CONC. µg/L(ppb) | MS %Rec. | QC Limit %Rec. | Surrogate %Rec. |
|---|---|---|---|---|---|---|
| MTBE | 125 | < 1.0 | 97 | 78 | 70-130 | 97 |
| Benzene | 125 | 207 | 323 | 93 | 70-130 | |
| Toluene | 125 | < 0.50 | 112 | 90 | 70-130 | |
| Ethylbenzene | 125 | 2.2 | 119 | 93 | 70-130 | |
| m+p-Xylenes | 250 | 1.9 | 235 | 93 | 70-130 | |
| o-Xylene | 125 | 0.57 | 111 | 88 | 70-130 | |
| Naphthalene | 125 | < 1.0 | 94 | 75 | 70-130 | |

### VOC MATRIX SPIKE DUPLICATE REPORT

Laboratory Number: 003-01-58543

Date Analyzed: 09-Oct-01 15:18:00

| Constituent | Spike Added µg/L(ppb) | MSD Conc. µg/L(ppb) | MS %REC. | RPD | QC Limit RPD | QC Limit %Rec. | Surrogate %Rec. |
|---|---|---|---|---|---|---|---|
| MTBE | 125 | 95 | 76 | 2 | 20 | 70-130 | 95 |
| Benzene | 125 | 323 | 93 | 0 | 20 | 70-130 | |
| Toluene | 125 | 110 | 88 | 2 | 20 | 70-130 | |
| Ethylbenzene | 125 | 116 | 91 | 3 | 20 | 70-130 | |
| mp-Xylenes | 250 | 232 | 92 | 1 | 20 | 70-130 | |
| o-Xylene | 125 | 109 | 87 | 2 | 20 | 70-130 | |
| Naphthalene | 125 | 94 | 75 | 0 | 20 | 70-130 | |

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Lab Nos.: 001-01-58873 - 004-01-58873

Date: 08-OCT-01

Received by: Randa Nees

Logged In by: Justin McMillan

# SAMPLE CONDITION QA/QC REPORT

This report provides information about the condition of the sample(s) and associated sample custody information on receipt at the laboratory.

| | | |
|---|---|---|
| Chain of Custody Form Completed & Signed | Yes | Comments: |
| Chain of Custody Seal | No | Comments: |
| Intact | N/A | Comments: |
| Signature Match Chain of Custody vs. Seal | N/A | Comments: |
| Temperature Received | 4 C | Comments: |
| Samples Received Within Holding Time | Yes | Comments: |
| Samples Received in Proper Containers | Yes | Comments: |
| Samples Received Properly Preserved(1) | Yes | Comments: |

**(1)Acid preservation of samples for volatile organics is not evaluated on this form.**
**Any preservation problems encountered for these samples are noted on the analytical parameter report pages.**

Record of client contact:

Who: _____ By: _____ Date/Time: _____

Method of Shipping: Hand del.

Additional comments: _____

ENERGY LABORATORIES

# CHAIN OF CUSTODY RECORD

**PLEASE PRINT OR TYPE ALL INFORMATION EXCEPT SIGNATURES**

Received Date: _____ Cust. No.: _____
Login Date: _____ Custody Seal: Yes/No
Shipped by: _____ Intact: Yes/No
Shipping Bill #: _____ Signature Match?: Yes/No
Code Six: _____ If no - Reason:
For Lab Use Only


BILLINGS, MT
P.O. Box 30916 (59107)
1120 South 27th (59101)
watts 800-735-4489
voice 406-252-6325
Fax 406-252-6069

CASPER, WY
P.O. Box 3258 (82602)
2393 Salt Creek Highway (82601)
watts 888-235-0515
voice 307-235-0515
Fax 307-234-1639

GILLETTE, WY
1105 West First Street (82716)
voice 307-686-7175
Fax 307-682-4625

HELENA, MT
P.O. Box 5688 (59604)
2704 Billings Ave. (59601)
Voice/Fax 406-442-0711

RAPID CITY, SD
P.O. Box 2470 (57709)
610 Farnwood (57701)
watts 888-672-1225
voice 605-342-1225
Fax 605-342-1397


P.O. #

Project Name / Address: MURPHY: ~~OGZ~~ 003-130

Contact Name & Phone: J. m Shaffer 406-655-9555

Sampler's Signature: James D Shaffer

Invoice to: HYDROSOLUTIONS INC, P.O. BOX 80866, Billings, MT 59108

Report to: ~~As Above~~ Carolyn Ostby, Crowley Law Firm, Billings, MT

| DATE | TIME | SAMPLE I.D. | number of containers / Sample Type: A W S V U O / Air Water Soils/Solids Vegetation Urine Other | 40 ml-HCl: VPH | 250 ml H2SO4: NO2 + NO3 | 250 ml HNO3: Fe, Sr, Mn (dissolved) | 500 ml - Ca, Mg, Na, K, HCO3, CO3, SO4, Cl, F, Alk, TDS, Hard, SAR | | | | Comments, Special Instructions, etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2001 | | | | | | | | | | | |
| 10/5 | 1150 | MOC-18 (orig) | W | X | X | X | X | | | | RUSH! |
| 10/5 | 1239 | MOC-13 | W | X | X | X | X | | | | RUSH! |
| 10/5 | 1433 | MOC-16 | W | X | X | X | X | | | | RUSH! |
| | | Trip Blank | | X | | | | | | | |
| | | | | Unfiltered Sample to Lab | Filtered Sample to Lab | Filtered Sample to Lab | Filtered Sample to Lab | | | | |

Date | Time | Received for Laboratory by: (signature)

HydroSolutions, Inc.
2611 GABEL ROAD, #200
P.O. BOX 80866
BILLINGS, MT 59108-0866

# WATER LEVEL MONITORING RECORD

**Site (Project):** Murphy : 002 **Performed by:** M.N. T.J.O.

**Date:** 9/8/01 - 9/9/01 **Company:** HSI

**Weather:** Cool, partly cloudy (occasional rain on 9/8/01)

All Measurements in Feet and Hundreths below MP

| | Well No. | Time | Water Source * (see below) | Measuring (Reference) Point (MP) | Casing Stickup Above Ground | Depth to Water (from MP) | Cased Well Depth | Comments: (conditions, problems, etc.) |
|---|---|---|---|---|---|---|---|---|
| | MOC-18 | 15:20 | CW | TOPC | . | 26.81 | . | TOPC to TOS .52 Steel 2.95 |
| | MOC-2 | 15:22 | CW | TOPVC | Steel 3.81 | 73.56 | . | TOPVC to Top Steel = 1.34' |
| | MOC-3 | 15:15 | CW | TOPC | . | 52.85 | . | TOPC to TOS 1.17 Steel 3.38 |
| | MOC-4 | : | CW | " | Steel 3.05 | 24.68 | . | TOPC to Top Steel 1.44 |
| 9/8 | MOC-5 | 12:00 | CW | TOCPVC | . | 20.21 | . | |
| | MOC-6 | 13:48 | CW | TOCPVC | Steel 2.72 | 41.54 | . | Top PVC to Top Steel .93 |
| | MOC-7 | 13:53 | CW | TOCPVC | Steel 3.21 | 33.55 | . | Top PVC to Top St. 1.25'. No lock |
| 9/8 | MOC-8 | 13:53 | | | Steel 2.64 | 75.23 | . | Top PVC to Top St. 1.46' |
| | MOC-9 | 13:56 | CW | TOCPVC | Steel 2.13' | 26.14 | . | |
| | MOC-10 | : | | | Steel 2.82 | 30.45 | . | Top PVC to Top Steel .86 |
| | MOC-11 | : | | | Steel 2.00 | 74.69 | . | Top PVC to Top Steel 1.49 |
| | MOC-12 | : | | | Steel 2.26 | 54.54 | . | Top PVC to Top Steel 1.25 |
| | MOC-13 | : | | | Steel 2.51 | 36.21 | . | Top PVC to Top Steel .86 |
| | MOC-14 | : | | | Steel 1.82 | 34.33 | . | Top of PVC to Top Steel 1.04 |
| | MOC-15 | 13:30 | CW | TOCPVC | Steel 2.29 | 78.89 | . | Top PVC to Top Steel = 0.99 [illegible] |
| | FPB 93-3 | : | | | . | 35.20 | . | |
| | FPB 93-5 | : | | | . | 57.00 | . | |
| | | : | | | . | . | . | |
| | | : | | | . | . | . | |
| | | : | | | . | . | . | |

Water Source: WP=Well Point CW= Cased Well ST=Stream SP=Spring P=Pond L=Lake Other (describe)
Measuring Pt: GL = Ground Level TOPC = Top of PVC Casing TOSC = Top of Steel Casing Other (describe)

**General Comments (Notes):** Cement Pads are 0.30' ags.
MOC2 is tipped ~5° to NW and is loose.

**Monitoring (measurement) Method / Equipment:** Solinst WLI

# WATER MONITORING RECORD
HydroSolutions Inc.

**SITE ID:** MOC-5

| | | | |
|---|---|---|---|
| **Date:** 9/8/01 | **Arrival Time:** 1200 | **Sampling Time:** 1320 | |
| **Owner/ Operator:** MURPHY OIL | | **Address:** Poplar, MT | |
| **Location Description:** SW of South Central Battery | | N48° 11.713' W105° 2.427', 2143' | |
| **Water Source:** (Well) Stream | Spring | Other - | |
| **Sampler's Name:** TJO / MN | | **Weather:** cldy 60°F | |
| **Type of Well:** Mon7. | | **TD:** 35.6 ft. | **Well Log?:** (Y) N |
| **Casing Material:** PVC | | **Inside Dia.:** ____ ft. | **Well Locked?:** Y (N) |
| **Measuring Point:** Top of PVC casing | | | **Aquifer:** QW ?? |

| Meter Type: | Model: | Calibrated: | | Meter Type:: | Model:: | Flow Rate: |
|---|---|---|---|---|---|---|
| Ph: Hanna | 9025 | 7/10 | | SC: YSI | 85 | |
| Eh: " | 9023 | | | DO: " | " | |
| Water Level Probe: | | | | Other: | | Method |

**Bore Volume (R-in., TD-ft.):** 0.163 $R^{2*}$(TD - SWL) = 2.51 **Gallons Purge** 7.53 **Purging Method:** Bailer - St. st.

| Time: 1240 start | Gallons | Min. Rate | SCMS | Temp,°C | Ph @ Temp,°C | Eh, (mv) | D.O. (mg/l) |
|---|---|---|---|---|---|---|---|
| 1300 | | | 8.66 | | | | |
| 1320 | | | 8.7 | | 6.45 | | 1.9 |
| | | | | | | | |
| | | | | | | | |
| Measurements done in clear plastic bucket | | | | | | | |

**Description of Water:** 1st bail clear, becoming cloudy brown with continued bailing.

**S.W.L.** 20.21 BTOPC **Ft. below Measuring Point.** **Elevation (Feet):**

**Water Temperature:** 9.0 **(Celcius)** **DO** 1.9 **(mg/l)** (in open bucket)

**Alkalinity:**

**Field SC:** _____ µmhos/cm **@ Field Temperature:**

**Corrected SC:** 8.7 mS µmhos/cm **@ 25 C**

**Ph:** 6.45 **s. u.** **Eh:** N.A. **(mv)**

**Water Quality Samples:** (Y) N **Well Sampling Method:** Bailer - poly **Sample Type:** (Grab) Composite

**Decontamination** **Inorganic** (Organic) **Other:**

| Containers (No. & Type): | Preservative: | Handling: | Parameters: |
|---|---|---|---|
| 2 VOA's | HCl | Chill | 8260 long list |
| 2 VOA's | HCl | " | VPH |
| 2 250ml. Plas. | None | " | Inorganics |

**NOTES:** Well bails down to near total well depth. Very low yield.

See Reverse Side for More Details

**WATER MONITORING RECORD**
**HydroSolutions Inc.**

**SITE ID:** FPB 93-5

| | | | |
|---|---|---|---|
| **Date:** 9/9/01 | **Arrival Time:** 1025 | **Sampling Time:** 1250 | |
| **Owner/ Operator:** USGS/Tribe | | **Address:** | |
| **Location Description:** | | N 49° 11.420' W 105° 8.733' | |
| **Water Source:** (Well) Stream Spring | | Other - | |
| **Sampler's Name:** TJO/MN | | **Weather:** P.cldy, 60, windy | |
| **Type of Well:** | | **TD:** 104 ft. | **Well Log?:** (Y) N |
| **Casing Material:** | | **Inside Dia.:** 4 in | **Well Locked?:** (Y) N |
| **Measuring Point:** TOC PVC | | | **Aquifer:** QW |

| Meter Type: | Model: | Calibrated: | | Meter Type:: | Model:: | Flow Rate: |
|---|---|---|---|---|---|---|
| Ph: Hanna | 9025 | 7/10 | | SC: YSI | 85 | 5 gal/5.5 min |
| Eh: " | 9023 | | | DO: " | " | = 0.91 gpm |
| Water Level Probe: | | | | Other: | | Restart 5 gal 3:17 Method = 1.52 gpm |

**Bore Volume (R-in., TD-ft.):** 0.163 $R^2$(TD - SWL) = 32 **Gallons** 96 Total **Purging Method:** Elec. Pump

| Time: START 1056 | Gallons | Min. Rate | SC mS | Temp,°C | Ph @ Temp,°C | Eh, (mv) | D.O. (mg/l) |
|---|---|---|---|---|---|---|---|
| 1101 | 4.75 | | 25.25 | 10.3 | | | |
| 1105 | | | 32.04 | 10.2 | | | .44 @ 9.8 |
| 1108 | | | 32.87 | 9.9 | | | .38 @ 9.9 |
| 1112 | | | 33.55 | 10.0 | | | .33 10.0 |
| 1117 | 17 | | 33.34 | 10.4 | 7.02 | 5.2 | .26 |
| Shutdown 1130 - 1150 | | | | | | | |
| 1158 | | | 33.64 | 9.8 | 6.88 | 1.8 | .26 @ 9.8 |
| 1210 | | | 33.23 | 9.7 | 7.04 | 0.0 | .21 |
| 1233 | | | 33.11 | 9.7 | 7.06 @ 10.6 | -0.1 | .15 @ 9.7 |
| 1247 | | | 33.24 | 9.7 | 6.84 @ 10.6 | -0.4 | .15 @ 9.7 |
| 1250 | | | 33.23 | 9.7 | 7.01 @ 10.7 | -0.3 | .15 @ 9.8 |

**Description of Water:** Clear, no odor

**S.W.L.** 57.00 **Ft. below Measuring Point.** **Elevation (Feet):**

**Water Temperature:** 9.7 **(Celcius)** **DO** 0.15 **(mg/l)**

**Alkalinity:**

**Field SC:** _____ µmhos/cm **@ Field Temperature:**

**Corrected SC:** 33.24 mS ~~µmhos/cm~~ **@ 25 C**

**Ph:** 7.01 **s. u.** **Eh:** -0.3 **(mv)**

**Water Quality Samples:** (Y) N **Well Sampling Method:** pump slowly VOC's bailed **Sample Type:** (Grab) Composite

**Decontamination** (Inorganic) (Organic) **Other:**

| Containers (No. & Type): | Preservative: | Handling: | Parameters: |
|---|---|---|---|
| 4 VOAs | HCl | Chill | VOC's (1 dup set) |
| 2 250 ml plas | NO | " | Cations |

**NOTES:** Used 2 whale pumps in series. Grundfos pump inoperable.

See Reverse Side for More Details

**WATER MONITORING RECORD**
**HydroSolutions Inc.**

**SITE ID:** MOC-9

| | | | |
|---|---|---|---|
| **Date:** 9/19/0 | **Arrival Time:** 1356 | **Sampling Time:** 1455 | |
| **Owner/ Operator:** MURPHY OIL | | **Address:** | |
| **Location Description:** NC Battery | | | |
| **Water Source:** (Well) Stream Spring Other - | | | |
| **Sampler's Name:** TDD | | **Weather:** Partly 60 °F windy | |
| **Type of Well:** | | **TD:** _____ ft. | **Well Log?:** (Y) N |
| **Casing Material:** | | **Inside Dia.:** _____ ft. | **Well Locked?:** (Y) N |
| **Measuring Point:** TOC PVC | | | **Aquifer:** |

| **Meter Type:** | **Model:** | **Calibrated:** | | **Meter Type::** | **Model::** | **Flow Rate:** 5 gal/3:50 |
|---|---|---|---|---|---|---|
| **Ph:** Hanna | 9025 | 7/10 | | **SC:** YSI | 85 | ~1.3 gpm |
| **Eh:** " | 9023 | | | **DO:** " | " | |
| **Water Level Probe:** | Solinst | | | **Other:** | | **Method** |

**Bore Volume (R-in., TD-ft.):** 0.163 $R^{2*}$(TD - SWL) = 2.25 **Gallons** 6.75 **Purging Method:**

| **Time:** START 1415 | **Gallons** | **Min. Rate** | **SC** mS | **Temp,°C** | **Ph @ Temp,°C** | **Eh, (mv)** | **D.O. (mg/l)** |
|---|---|---|---|---|---|---|---|
| 1433 | | 1.3 gpm | 25.48 | 9.6 | 7.21 | 402 | 2.30 @ 9.6 |
| 1437 | | | 25.58 | 9.5 | | 291 | 2.06 @ 9.6 |
| 1443 | | | 25.73 | 9.3 | 7.20 @ 10.0 | 193.5 | 1.90 @ 9.3 |
| 1447 | | | 26.81 | 9.2 | | | 1.75 9.2 |
| 1450 | | | 25.82 | 9.2 | 7.17 @ 10.0 | 179.5 | 1.8 9.2 |

**Description of Water:** Gray-brown w/ sediment at first. Clearing by 1430

**S.W.L.** 26.14 **Ft. below Measuring Point.** **Elevation (Feet):**

**Water Temperature:** 9.2 (Celcius) **DO** 1.8 (mg/l)

**Alkalinity:**

**Field SC:** _____ µmhos/cm **@ Field Temperature:**

**Corrected SC:** 25.88 µmhos/cm **@ 25 C**

**Ph:** 7.17 s. u. **Eh:** 179.5 (mv) (not meas. in flow through cell)

**Water Quality Samples:** (Y) N **Well Sampling Method:** bail - Poly. **Sample Type:** (Grab) Composite

**Decontamination** (Inorganic) (Organic) **Other:**

| **Containers (No. & Type):** | **Preservative:** | **Handling:** | **Parameters:** |
|---|---|---|---|
| 2 250 ml Plas | NO | Chill | Conventions |
| 2 VOA's | HCl | " | VOCs |

**NOTES:** Measurements made in open bucket due to lack of pump pressure for flow cell.

See Reverse Side for More Details

**WATER MONITORING RECORD**
**HydroSolutions Inc.**

**SITE ID:** MOC-8

| | | | |
|---|---|---|---|
| **Date:** 9/8/01 | **Arrival Time:** 1353 | **Sampling Time:** N.A. | |
| **Owner/ Operator:** Murphy Oil | | **Address:** | |
| **Location Description:** | | N48° 11.207' W105° 8.009' | |
| **Water Source:** (Well) | Stream | Spring | Other - |
| **Sampler's Name:** TJS / MN | | **Weather:** Cldy 60 F | |
| **Type of Well:** Drilled | | **TD:** 109 ft. | **Well Log?:** (Y) N |
| **Casing Material:** | | **Inside Dia.:** ____ ft. | **Well Locked?:** (Y) N |
| **Measuring Point:** BTOPC | | | **Aquifer:** |

| **Meter Type:** | **Model:** | **Calibrated:** | | **Meter Type::** | **Model::** | **Flow Rate:** |
|---|---|---|---|---|---|---|
| **Ph:** | | | | **SC:** | | |
| **Eh:** | | | | **DO:** | | |
| **Water Level Probe:** | | | | **Other:** | | **Method** |

**Bore Volume (R-in., TD-ft.):** 0.163 $R^{2*}$(TD - SWL) = 34.4 **Gallons** 103.3 **Purging Method:**

| **Time:** | **Gallons** | **Min. Rate** | **SC** | **Temp,°C** | **Ph @ Temp,°C** | **Eh, (mv)** | **D.O. (mg/l)** |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

**Description of Water:**

**S.W.L.** 75.23 **Ft. below Measuring Point.** **Elevation (Feet):**

**Water Temperature:** **(Celcius)** **DO** **(mg/l)**

**Alkalinity:**

**Field SC:** _____ µmhos/cm **@ Field Temperature:**

**Corrected SC:** _____ µmhos/cm **@ 25 C**

**Ph:** **s. u.** **Eh:** **(mv)**

**Water Quality Samples:** Y (N) Not Sampled * **Well Sampling Method:** **Sample Type:** Grab Composite

**Decontamination** **Inorganic** **Organic** **Other:**

**Containers (No. & Type):** **Preservative:** **Handling:** **Parameters:**

**NOTES:** TOPVC - TOS 1.46' GL - TopPad .35' TopPad - TopSteel 2.64

* Attempted to sample. Grundfos pump broke after couple minutes.

See Reverse Side for More Details

SEP 2 8 2001

**NORTHERN**
**Analytical Laboratories, Inc.**

*602 South 25th Street*
*P O Box 30315*
*Billings, MT 59107*
*Telephone: (406) 254-7226*
*Fax: (406) 254-1389*

**REPORT TO:** ATTN: CAROLYN OSTBY
CROWLEY LAW FIRM
490 NORTH 31ST
BILLINGS MT 59101

**DATE:** September 27, 2001
**JOB NUMBER:** 01-129
**PAGE:** 1 of 10
**INVOICE NO.:** 90077

**REPORT OF:** Water Analysis – Crowley Law Firm

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**CASE NARRATIVE:**

On September 11, 2001, this water sample (laboratory number 2001090077-1) was received in our laboratory for analysis. Tests were conducted in accordance with SW-846 *"Test Methods for Evaluating Solid Waste", 3rd Edition*, updates I, II, IIA, IIB, III.

The condition of the sample upon receipt at the laboratory is noted on the attached sample receipt checklist. Chain of custody documentation is enclosed.

The test results are shown on the following pages.

A < sign indicates the value reported was the practical quantitation limit for this sample using the method described. Concentrations of analyte, if present, below this were not quantifiable.

Reviewed by _____
Kathleen A. Smit - Laboratory Manager

Attachments: Chain of Custody
Sample Receipt Checklist

caj

As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of our clients and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval. Test results apply specifically to the samples tested only. The entire report shall not be reproduced, except in full, without the written approval of the laboratory. Samples will be disposed of after testing is completed unless other arrangements are agreed to in writing.

# Northern Analytical Laboratories, Inc.



**Client Name:** CROWLEY LAW FIRM

**Project No.:** NONE GIVEN

**Project Name:** CROWLEY LAW FIRM

**Sample No.:** 2001090077-1 **Description:** FPB 93-5
**Date Received:** 09/11/2001
**Date Collected:** 09/09/2001 **Collected by:** MARK NITZ **Matrix:** WATER

| Laboratory Test | Measured Value | Test Units | Test Method | Date of Analysis |
|---|---|---|---|---|
| **EPA METHOD 8260** | | | | |
| Data File Number-Volatiles | 0919011006 | ---- | | |
| Benzene | <1 | ug/l | 8260B | 09/19/2001 |
| Bromobenzene | <1 | ug/l | 8260B | 09/19/2001 |
| Bromochloromethane | <1 | ug/l | 8260B | 09/19/2001 |
| Bromodichloromethane | <1 | ug/l | 8260B | 09/19/2001 |
| Bromoform | <1 | ug/l | 8260B | 09/19/2001 |
| Bromomethane | <1 | ug/l | 8260B | 09/19/2001 |
| n-Butylbenzene | <1 | ug/l | 8260B | 09/19/2001 |
| sec-Butylbenzene | <1 | ug/l | 8260B | 09/19/2001 |
| t-Butylbenzene | <1 | ug/l | 8260B | 09/19/2001 |
| Carbon tetrachloride | <1 | ug/l | 8260B | 09/19/2001 |
| Chlorobenzene | <1 | ug/l | 8260B | 09/19/2001 |
| Chloroethane | <1 | ug/l | 8260B | 09/19/2001 |
| Chloroform | <1 | ug/l | 8260B | 09/19/2001 |
| Chloromethane (Methyl chloride) | <1 | ug/l | 8260B | 09/19/2001 |
| 4-Chlorotoluene | <1 | ug/l | 8260B | 09/19/2001 |
| 2-Chlorotoluene | <1 | ug/l | 8260B | 09/19/2001 |
| Dibromochloromethane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2-Dibromo-3-chloropropane | <5 | ug/l | 8260B | 09/19/2001 |
| 1,2-Dibromoethane | <1 | ug/l | 8260B | 09/19/2001 |
| Dichlorodifluoromethane | <1 | ug/l | 8260B | 09/19/2001 |
| Dibromomethane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2-Dichlorobenzene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,3-Dichlorobenzene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,4-Dichlorobenzene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,1-Dichloroethane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2-Dichloroethane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,1-Dichloroethene | <1 | ug/l | 8260B | 09/19/2001 |

# Northern Analytical Laboratories, Inc.



**Client Name:** CROWLEY LAW FIRM

**Project No.:** NONE GIVEN

**Project Name:** CROWLEY LAW FIRM

**Sample No.:** 2001090077-1 **Description:** FPB 93-5

**Date Received:** 09/11/2001

**Date Collected:** 09/09/2001 **Collected by:** MARK NITZ **Matrix:** WATER

| Laboratory Test | Measured Value | Test Units | Test Method | Date of Analysis |
|---|---|---|---|---|
| c-1,2-Dichloroethene | <1 | ug/l | 8260B | 09/19/2001 |
| t-1,2-Dichloroethene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2-Dichloropropane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,3-Dichloropropane | <1 | ug/l | 8260B | 09/19/2001 |
| 2,2-Dichloropropane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,1-Dichloropropene | <1 | ug/l | 8260B | 09/19/2001 |
| Ethylbenzene | <1 | ug/l | 8260B | 09/19/2001 |
| Hexachlorobutadiene | <1 | ug/l | 8260B | 09/19/2001 |
| Cumene (Isopropylbenzene) | <1 | ug/l | 8260B | 09/19/2001 |
| Isopropyltoluene | <1 | ug/l | 8260B | 09/19/2001 |
| Methylene chloride | <5 | ug/l | 8260B | 09/19/2001 |
| n-Propylbenzene | <1 | ug/l | 8260B | 09/19/2001 |
| Naphthalene | <5 | ug/l | 8260B | 09/19/2001 |
| Styrene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,1,1,2-Tetrachloroethane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,1,2,2-Tetrachloroethane | <1 | ug/l | 8260B | 09/19/2001 |
| Tetrachloroethene | <1 | ug/l | 8260B | 09/19/2001 |
| Toluene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2,3-Trichlorobenzene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2,4-Trichlorobenzene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,1,1-Trichloroethane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,1,2-Trichloroethane | <1 | ug/l | 8260B | 09/19/2001 |
| Trichloroethene | <1 | ug/l | 8260B | 09/19/2001 |
| Trichlorofluoromethane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2,3-Trichloropropane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2,4-Trimethylbenzene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,3,5-Trimethylbenzene | <1 | ug/l | 8260B | 09/19/2001 |
| Vinyl chloride | <1 | ug/l | 8260B | 09/19/2001 |
| Total Xylenes | <2 | ug/l | 8260B | 09/19/2001 |

# Northern Analytical Laboratories, Inc.



**Client Name:** CROWLEY LAW FIRM

**Project No.:** NONE GIVEN

**Project Name:** CROWLEY LAW FIRM

**Sample No.:** 2001090077-1 **Description:** FPB 93-5

**Date Received:** 09/11/2001

**Date Collected:** 09/09/2001 **Collected by:** MARK NITZ **Matrix:** WATER

| Laboratory Test | Measured Value | Test Units | Test Method | Date of Analysis |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surrogate) | 103 | % [73-121] | 8260B | 09/19/2001 |
| Toluene-d8 (Surrogate) | 99 | % [91-109] | 8260B | 09/19/2001 |
| 4-Bromofluorobenzene (Surrogate) | 100 | % [85-115] | 8260B | 09/19/2001 |

# Northern Analytical Laboratories, Inc.



**Client Name:** QUALITY ASSURANCE

**Project No.:** 59-100

**Project Name:** 8260 METHOD BLANK

**Sample No.:** 2001090008-10 **Description:** 8260 METHOD BLANK
**Date Received:** 09/05/2001
**Date Collected:** ----- **Collected by:** LABORATORY **Matrix:** WATER

| Laboratory Test | Measured Value | Test Units | Test Method | Date of Analysis |
|---|---|---|---|---|
| **EPA METHOD 8260** | | | | |
| Data File Number-Volatiles | 0919011003 | ---- | | |
| Benzene | <1 | ug/l | 8260B | 09/19/2001 |
| Bromobenzene | <1 | ug/l | 8260B | 09/19/2001 |
| Bromochloromethane | <1 | ug/l | 8260B | 09/19/2001 |
| Bromodichloromethane | <1 | ug/l | 8260B | 09/19/2001 |
| Bromoform | <1 | ug/l | 8260B | 09/19/2001 |
| Bromomethane | <1 | ug/l | 8260B | 09/19/2001 |
| n-Butylbenzene | <1 | ug/l | 8260B | 09/19/2001 |
| sec-Butylbenzene | <1 | ug/l | 8260B | 09/19/2001 |
| t-Butylbenzene | <1 | ug/l | 8260B | 09/19/2001 |
| Carbon tetrachloride | <1 | ug/l | 8260B | 09/19/2001 |
| Chlorobenzene | <1 | ug/l | 8260B | 09/19/2001 |
| Chloroethane | <1 | ug/l | 8260B | 09/19/2001 |
| Chloroform | <1 | ug/l | 8260B | 09/19/2001 |
| Chloromethane (Methyl chloride) | <1 | ug/l | 8260B | 09/19/2001 |
| 4-Chlorotoluene | <1 | ug/l | 8260B | 09/19/2001 |
| 2-Chlorotoluene | <1 | ug/l | 8260B | 09/19/2001 |
| Dibromochloromethane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2-Dibromo-3-chloropropane | <5 | ug/l | 8260B | 09/19/2001 |
| 1,2-Dibromoethane | <1 | ug/l | 8260B | 09/19/2001 |
| Dichlorodifluoromethane | <1 | ug/l | 8260B | 09/19/2001 |
| Dibromomethane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2-Dichlorobenzene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,3-Dichlorobenzene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,4-Dichlorobenzene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,1-Dichloroethane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2-Dichloroethane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,1-Dichloroethene | <1 | ug/l | 8260B | 09/19/2001 |

# Northern Analytical Laboratories, Inc.



**Client Name:** QUALITY ASSURANCE

**Project No.:** 59-100

**Project Name:** 8260 METHOD BLANK

**Sample No.:** 2001090008-10 **Description:** 8260 METHOD BLANK
**Date Received:** 09/05/2001
**Date Collected:** ----- **Collected by:** LABORATORY **Matrix:** WATER

| Laboratory Test | Measured Value | Test Units | Test Method | Date of Analysis |
|---|---|---|---|---|
| c-1,2-Dichloroethene | <1 | ug/l | 8260B | 09/19/2001 |
| t-1,2-Dichloroethene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2-Dichloropropane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,3-Dichloropropane | <1 | ug/l | 8260B | 09/19/2001 |
| 2,2-Dichloropropane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,1-Dichloropropene | <1 | ug/l | 8260B | 09/19/2001 |
| Ethylbenzene | <1 | ug/l | 8260B | 09/19/2001 |
| Hexachlorobutadiene | <1 | ug/l | 8260B | 09/19/2001 |
| Cumene (Isopropylbenzene) | <1 | ug/l | 8260B | 09/19/2001 |
| Isopropyltoluene | <1 | ug/l | 8260B | 09/19/2001 |
| Methylene chloride | <5 | ug/l | 8260B | 09/19/2001 |
| Naphthalene | <5 | ug/l | 8260B | 09/19/2001 |
| n-Propylbenzene | <1 | ug/l | 8260B | 09/19/2001 |
| Styrene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,1,1,2-Tetrachloroethane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,1,2,2-Tetrachloroethane | <1 | ug/l | 8260B | 09/19/2001 |
| Tetrachloroethene | <1 | ug/l | 8260B | 09/19/2001 |
| Toluene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2,3-Trichlorobenzene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2,4-Trichlorobenzene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,1,1-Trichloroethane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,1,2-Trichloroethane | <1 | ug/l | 8260B | 09/19/2001 |
| Trichloroethene | <1 | ug/l | 8260B | 09/19/2001 |
| Trichlorofluoromethane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2,3-Trichloropropane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2,4-Trimethylbenzene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,3,5-Trimethylbenzene | <1 | ug/l | 8260B | 09/19/2001 |
| Vinyl chloride | <1 | ug/l | 8260B | 09/19/2001 |
| Total Xylenes | <2 | ug/l | 8260B | 09/19/2001 |

# Northern Analytical Laboratories, Inc.



**Client Name:** QUALITY ASSURANCE

**Project No.:** 59-100

**Project Name:** 8260 METHOD BLANK

**Sample No.:** 2001090008-10 **Description:** 8260 METHOD BLANK
**Date Received:** 09/05/2001
**Date Collected:** ----- **Collected by:** LABORATORY **Matrix:** WATER

| Laboratory Test | Measured Value | Test Units | Test Method | Date of Analysis |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surrogate) | 99 | % [73-121] | 8260B | 09/19/2001 |
| Toluene-d8 (Surrogate) | 97 | % [91-109] | 8260B | 09/19/2001 |
| 4-Bromofluorobenzene (Surrogate) | 97 | % [85-115] | 8260B | 09/19/2001 |

# Northern Analytical Laboratories, Inc.



**Client Name:** QUALITY ASSURANCE

**Project No.:** 59-100

**Project Name:** 8260 LCS

**Sample No.:** 2001090007-11 **Description:** 8260 LABORATORY CONTROL SAMPLE
**Date Received:** 09/05/2001
**Date Collected:** ----- **Collected by:** LABORATORY **Matrix:** WATER

| Laboratory Test | Measured Value | Test Units | Test Method | Date of Analysis |
|---|---|---|---|---|
| **EPA METHOD 8260** | | | | |
| Data File Number-Volatiles | 0919011005 | — | | |
| Benzene | 88 | % [76-112] | 8260B | 09/19/2001 |
| Bromobenzene | <1 | ug/l | 8260B | 09/19/2001 |
| Bromochloromethane | <1 | ug/l | 8260B | 09/19/2001 |
| Bromodichloromethane | <1 | ug/l | 8260B | 09/19/2001 |
| Bromoform | <1 | ug/l | 8260B | 09/19/2001 |
| Bromomethane | <1 | ug/l | 8260B | 09/19/2001 |
| n-Butylbenzene | <1 | ug/l | 8260B | 09/19/2001 |
| sec-Butylbenzene | <1 | ug/l | 8260B | 09/19/2001 |
| t-Butylbenzene | <1 | ug/l | 8260B | 09/19/2001 |
| Carbon tetrachloride | <1 | ug/l | 8260B | 09/19/2001 |
| Chlorobenzene | 91 | % [76-112] | 8260B | 09/19/2001 |
| Chloroethane | <1 | ug/l | 8260B | 09/19/2001 |
| Chloroform | <1 | ug/l | 8260B | 09/19/2001 |
| Chloromethane (Methyl chloride) | <1 | ug/l | 8260B | 09/19/2001 |
| 4-Chlorotoluene | <1 | ug/l | 8260B | 09/19/2001 |
| 2-Chlorotoluene | <1 | ug/l | 8260B | 09/19/2001 |
| Dibromochloromethane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2-Dibromo-3-chloropropane | <5 | ug/l | 8260B | 09/19/2001 |
| 1,2-Dibromoethane | <1 | ug/l | 8260B | 09/19/2001 |
| Dichlorodifluoromethane | <1 | ug/l | 8260B | 09/19/2001 |
| Dibromomethane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2-Dichlorobenzene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,3-Dichlorobenzene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,4-Dichlorobenzene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,1-Dichloroethane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2-Dichloroethane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,1-Dichloroethene | 97 | % [50-134] | 8260B | 09/19/2001 |

# Northern Analytical Laboratories, Inc.



**Client Name:** QUALITY ASSURANCE

**Project No.:** 59-100

**Project Name:** 8260 LCS

**Sample No.:** 2001090007-11 **Description:** 8260 LABORATORY CONTROL SAMPLE

**Date Received:** 09/05/2001

**Date Collected:** ----- **Collected by:** LABORATORY **Matrix:** WATER

| Laboratory Test | Measured Value | Test Units | Test Method | Date of Analysis |
|---|---|---|---|---|
| c-1,2-Dichloroethene | <1 | ug/l | 8260B | 09/19/2001 |
| t-1,2-Dichloroethene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2-Dichloropropane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,3-Dichloropropane | <1 | ug/l | 8260B | 09/19/2001 |
| 2,2-Dichloropropane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,1-Dichloropropene | <1 | ug/l | 8260B | 09/19/2001 |
| Ethylbenzene | <1 | ug/l | 8260B | 09/19/2001 |
| Hexachlorobutadiene | <1 | ug/l | 8260B | 09/19/2001 |
| Cumene (Isopropylbenzene) | <1 | ug/l | 8260B | 09/19/2001 |
| Isopropyltoluene | <1 | ug/l | 8260B | 09/19/2001 |
| Methylene chloride | <5 | ug/l | 8260B | 09/19/2001 |
| n-Propylbenzene | <1 | ug/l | 8260B | 09/19/2001 |
| Naphthalene | <5 | ug/l | 8260B | 09/19/2001 |
| Styrene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,1,1,2-Tetrachloroethane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,1,2,2-Tetrachloroethane | <1 | ug/l | 8260B | 09/19/2001 |
| Tetrachloroethene | <1 | ug/l | 8260B | 09/19/2001 |
| Toluene | 93 | % [81-111] | 8260B | 09/19/2001 |
| 1,2,3-Trichlorobenzene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2,4-Trichlorobenzene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,1,1-Trichloroethane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,1,2-Trichloroethane | <1 | ug/l | 8260B | 09/19/2001 |
| Trichloroethene | 89 | % [81-111] | 8260B | 09/19/2001 |
| Trichlorofluoromethane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2,3-Trichloropropane | <1 | ug/l | 8260B | 09/19/2001 |
| 1,2,4-Trimethylbenzene | <1 | ug/l | 8260B | 09/19/2001 |
| 1,3,5-Trimethylbenzene | <1 | ug/l | 8260B | 09/19/2001 |
| Vinyl chloride | <1 | ug/l | 8260B | 09/19/2001 |
| Total Xylenes | <2 | ug/l | 8260B | 09/19/2001 |

# Northern Analytical Laboratories, Inc.



**Client Name:** QUALITY ASSURANCE

**Project No.:** 59-100

**Project Name:** 8260 LCS

**Sample No.:** 2001090007-11 **Description:** 8260 LABORATORY CONTROL SAMPLE

**Date Received:** 09/05/2001

**Date Collected:** ----- **Collected by:** LABORATORY **Matrix:** WATER

| Laboratory Test | Measured Value | Test Units | Test Method | Date of Analysis |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surrogate) | 73 | % [73-121] | 8260B | 09/19/2001 |
| Toluene-d8 (Surrogate) | 98 | % [91-109] | 8260B | 09/19/2001 |
| 4-Bromofluorobenzene (Surrogate) | 97 | % [85-115] | 8260B | 09/19/2001 |

# ATTACHMENTS

Crowley Law Firm
Project or Site Name

01-129

Project Number

Mark Nitz — HydroSolutions Inc 655-9555
Sampler Name (Printed)

Carolyn Ostby
Contact Name

# CHAIN OF CUSTODY RECORD

**NORTHERN**
**Analytical Laboratories, Inc.**

602 South 25th Street
Billings, Montana 59101
Ph: 406-254-7226 • Fax: 406-254-1389

Crowley Law Firm
Report to (Firm or Agency)

490 N 31st
Address

Billings MT 59101
City State Zip

252 - 3441
Phone Fax

| DATE COLLECTED | TIME COLLECTED | SAMPLE LOCATION OR DESCRIPTION | COMP OR GRAB | SAMPLE MATRIX | NO. OF CONTAINERS | ANALYSIS REQUIRED: 8260 Short list | | | | | | | NOTES | LAB NUMBER 2001 090077 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9/9/01 | 1250 | FPB 93-5 | ~~Comp~~ Grab | Water | 2 | X | | | | | | | | -1 |
| | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

| Relinquished by: | Date | Time | Received by: | |
|---|---|---|---|---|
| [signature] | 9/11/01 | 1225 | [signature] | Water in cooler |
| Relinquished by: | Date | Time | Received by: | |
| Relinquished by: | Date | Time | Received by: | |

**NORTHERN**
Analytical Laboratories, Inc.

# SAMPLE RECEIPT CHECKLIST

Dear Valued Client: This checklist documents the condition of your sample(s) as it (they) arrived at our lab. Please review it and familiarize yourself with its contents. Should you have any questions or comments, please contact us. Thank you for your use of our services.

Client Name: Crowley Law

Project: NA

Laboratory Number(s): 090077

Checklist Completed by: MW 9-11-01 (Initials / Date)

Date/Time Received: 9-11-01 1225 (Date / Time)

Received by: CS

Carrier Name: Hand

Sample Type: $H_2O$

| | YES | NO |
|---|---|---|
| 1. Shipping container in good condition? | ✓ | |
| 2. Custody seals present on shipping container? Condition: Intact ____ Broken ____ | | ✓ |
| 3. Chain of custody present? | ✓ | |
| 4. Chain of custody signed when relinquished and received? | ✓ | |
| 5. Chain of custody agrees with sample labels? | ✓ | |
| 6. Custody seals on sample bottles? Condition: Intact ____ Broken ____ | | ✓ |
| 7. Samples in proper container/bottle?* | ✓ | |
| 8. Sample containers intact?* | ✓ | |
| 9. Sufficient sample volume for indicated test?* | ✓ | |
| 10. Ice/Frozen Blue Ice present in shipping container? (circle one) Cool container temperature 1.____ 2.____ 3.____ * (if <0 or>10) | | |
| 11. All samples rec'd within holding time?* | ✓ | |
| 12. VOA vials have zero headspace? * (if contains >5mm headspace) | NA | |
| 13. Trip Blank received? | | ✓ |

| | YES | NO |
|---|---|---|
| 14. pH check performed by: _____ | | |
| 15. Metals bottle(s) pH <2? | NA | |
| 16. Nutrient bottle(s) pH <2? | | |
| 17. Cyanide bottle(s) pH >12? | | |
| 18. Sulfide bottle(s) pH >9? | | |
| 19. TOC bottle(s) pH <2? | | |
| 20. Phenolics bottle(s) pH <2? | | |
| 21. Oil & grease bottle(s) pH <2? (checked by analyst) | | |
| 22. DRO/418.1 bottle(s) pH <2? (checked by analyst) | | ✓ |
| 23. Volatiles (VOA) pH <2? (VOA pH checked by analyst) | ✓ | |
| 24. Herbicides (515) pH <2? (checked by analyst) | NA | |
| 25. Semivolatiles (525) pH <2? (checked by analyst) | | ✓ |
| 26. Client contacted? | | |
| 27. Person contacted | | |
| 28. Date contacted | | |

**NOTES:** **Samples may be affected when not transported at the temperature recommended by the EPA for the test you've selected. Please contact the lab if you have concerns about the temperature of your samples.**

*** Critical item - if marked "NO" contact lab manager.**

**COMMENTS:** _____

ENERGY LABORATORIES

# CHAIN OF CUSTODY RECORD

**PLEASE PRINT OR TYPE ALL INFORMATION EXCEPT SIGNATURES**

| For Lab Use Only | | | |
|---|---|---|---|
| Received Date: | 09/10/01 | Cust. No.: | H1181 |
| Login Date: | L | Custody Seal: | Yes/No |
| Shipped by: | Hand del. | Intact: | Yes/No |
| Shipping Bill #: | | Signature Match?: | Yes/No |
| Sample Temp: | 4 °C | If no - Reason: | |


**BILLINGS, MT** P.O. Box 30916 (59107) 1120 South 27th (59101) watts 800-735-4489 voice 406-252-6325 Fax 406-252-6069

**CASPER, WY** P.O. Box 3258 (82602) 2393 Salt Creek Highway (82601) watts 888-235-0515 voice 307-235-0515 Fax 307-234-1639

**GILLETTE, WY** 1105 West First Street (82716) voice 307-686-7175 Fax 307-682-4625

**HELENA, MT** P.O. Box 5688 (59604) 2704 Billings Ave. (59601) Watts 877-472-0711 Voice/Fax 406-442-0711

**RAPID CITY, SD** P.O. Box 2470 (57709) 610 Farnwood (57701) watts 888-672-1225 voice 605-342-1225 Fax 605-342-1397


P.O. #

Project Name / Address: Crowley Law Firm, Carolyn Ostby, P.O. Box 2529, Billings, MT 59103-2529

Contact Name & Phone: Tom Osborne 655-9555

Sampler's Signature: Thomas J Osborne

Invoice to: Hydrosolutions Inc, PO Box 80866, Billings, MT 59108

Report to: Carolyn Ostby (above)

| Lab No. (For Lab Use Only) | DATE | TIME | SAMPLE I.D. | number of containers / Sample Type: A W S V U O / Air Water Soils/Solids Vegetation Urine Other | Chloride, TDS | VOCs, 524.2 LONGLIST | Ca, Mg, K, Na, SO4, Cl, F | Alkalinity, TDS, HCO3, CO3 | | | | RUSH | Comments, Special Instructions, etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001-01-57850 | 9/8/01 | 1950 | Poplar River near USGS Gage | 1W | | | ✓ | ✓ | | | | ✓ | 1 L glass |
| 002 | 9/8/01 | 1910 | Poplar River near M-2 | 1W | | | ✓ | ✓ | | | | ✓ | " |
| 003 | 9/8/01 | 1755 | Poplar River bl. NC Battery | 1W | | | ✓ | ✓ | | | | ✓ | " |
| 004 | 9/8/01 | 1840 | Poplar River above NC Battery | 1W | | | ✓ | ✓ | | | | ✓ | " |
| 005 | 9/8/01 | 1200 | MOC-5 | 3W | ✓ | ✓ | | | | | | ✓ | 2 VOAs, 1 250ml |
| 006 | 9/9/01 | 1250 ~~0825~~ | FPB93-5 | 3W | ✓ | ✓ | | | | | | ✓ | " " |
| 007 | 9/9/01 | 1455 | MOC-9 | 3W | ✓ | ✓ | | | | | | ✓ | " " |
| 008 | | | Trip blank | 1-U | | X | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| 1. Relinquished (signature) | Date | Time | Received by: (signature) | 2. Relinquished (signature) | Date | Time | Received for Laboratory by: (signature) |
|---|---|---|---|---|---|---|---|
| Thomas J Osborne | 9/10/01 | 0830 | James D Alexander | James D Alexander | 9/10/01 | 1115 | [illegible] |

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800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

# LABORATORY ANALYSIS REPORT

| | | | | |
|---|---|---|---|---|
| **HydroSolutions, Inc.** | **Project ID:** | **CROWLEY LAW FIRM** | | |
| **Tom Osborne** | **Sample ID:** | **MOC-5** | | |
| **P.O. Box 80866** | **Laboratory ID:** | **01-57850-5** | | |
| **Billings, MT 59108** | **Sample Matrix:** | **Water** | | |
| | **Sample Date:** | **08-Sep-01 1200** | | |
| | **Received at lab:** | **10-Sep-01** | **Reported:** | **13-Sep-01** |

| | Results | Units | Qual | Reporting Limit | Regulatory Limit | Method | Analyzed | |
|---|---|---|---|---|---|---|---|---|
| Chloride | 190 | mg/l | | 1 | | EPA 300.0 | 11-Sep-01 1552 | LDV |
| Solids, Total Dissolved at 180 C | 8620 | mg/l | | 10 | | SM 2540C | 12-Sep-01 1150 | LDV/AK |

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## LABORATORY ANALYSIS REPORT

| | | | | |
|---|---|---|---|---|
| **HydroSolutions, Inc.** | **Project ID:** | **CROWLEY LAW FIRM** | | |
| **Tom Osborne** | **Sample ID:** | **FPB93-5** | | |
| **P.O. Box 80866** | **Laboratory ID:** | **01-57850-6** | | |
| **Billings, MT 59108** | **Sample Matrix:** | **Water** | | |
| | **Sample Date:** | **09-Sep-01 1250** | | |
| | **Received at lab:** | **10-Sep-01** | **Reported:** | **13-Sep-01** |

| | Results | Units | Qual | Reporting Limit | Regulatory Limit | Method | Analyzed | |
|---|---|---|---|---|---|---|---|---|
| Chloride | 13700 | mg/l | | 1 | | EPA 300.0 | 11-Sep-01 1603 | LDV |
| Solids, Total Dissolved at 180 C | 22700 | mg/l | | 10 | | SM 2540C | 12-Sep-01 1150 | LDV/AK |

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## LABORATORY ANALYSIS REPORT

| | | | | |
|---|---|---|---|---|
| **HydroSolutions, Inc.** | **Project ID:** | **CROWLEY LAW FIRM** | | |
| **Tom Osborne** | **Sample ID:** | **MOC-9** | | |
| **P.O. Box 80866** | **Laboratory ID:** | **01-57850-7** | | |
| **Billings, MT 59108** | **Sample Matrix:** | **Water** | | |
| | **Sample Date:** | **09-Sep-01 1455** | | |
| | **Received at lab:** | **10-Sep-01** | **Reported:** | **13-Sep-01** |

| | Results | Units | Qual | Reporting Limit | Regulatory Limit | Method | Analyzed | |
|---|---|---|---|---|---|---|---|---|
| Chloride | 8960 | mg/l | | 1 | | EPA 300.0 | 11-Sep-01 1439 | LDV |
| Solids, Total Dissolved at 180 C | 16500 | mg/l | | 10 | | SM 2540C | 12-Sep-01 1152 | LDV/AK |

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Lab Nos. 01-57850-1-8

QUALITY ASSURANCE DATA PACKAGE

This report is a summary of the results of the quality assurance tests performed with the sample analyses. They are performed to determine if the methodology is in control and to monitor the laboratory's ability to produce accurate and precise results. The date the quality assurance sample was analyzed is consistent with Energy Laboratories' Quality Assurance Plan.

| Constituents | Duplicate Analysis --- mg/l (ppm) --- Original | Duplicate | Spiked Analysis % Recovery | Blank Analysis mg/l (ppm) | Calibration Sample Analysis mg/l (ppm) | True Value, Acceptable +/-10% mg/l (ppm) |
|---|---|---|---|---|---|---|
| Calcium | 129 | 129 | 86 | <1 | 96 | 100 |
| Magnesium | 30 | 30 | 99 | <1 | 100 | 100 |
| Potassium | 6 | 6 | 106 | <1 | 102 | 100 |
| Sodium | 44 | 44 | 101 | <1 | 101 | 100 |
| Chloride | 2 | 2 | 89 | <1 | 25 | 25 |
| Sulfate | 37 | 37 | 100 | <1 | 107 | 100 |
| Alkalinity as CaCO3 | 550 | 547 | 108 | <1 | 101 | 100 |
| Solids, Total Dissolved at 180 C | 5070 | 5070 | 95 | <10 | NA | NA |
| Fluoride | 1.45 | 1.45 | 102 | <0.1 | 3.82 | 3.76 |

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800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

**Client: HydroSolutions, Inc.**
**Date Sampled: 08-SEP-2001 12:00**
**Date Received: 10-SEP-2001 00:00**
**Analysis Date: 14-SEP-2001 15:07**
**File: /chem/5971A.i/va091401.b/sep140801008.d**
**Project Info: CROWLEY LAW FIRM**
**Sample Info: MOC-5**

**Lab No.: 005-01-57850**
**Report Date: 09/17/2001 10:05**
**Extraction Method: EPA 5030**
**Sample Matrix: WATER; pH= < 2**

# EPA METHOD 524.2
# VOLATILE ORGANICS ANALYSIS REPORT

CONCENTRATION UNITS = ug/L

| COMPOUNDS | CAS NO. | EPA MCL | RESULT | QUALIFIER |
|---|---|---|---|---|
| ----------REGULATED VOLATILE ORGANIC CHEMICALS (VOC'S)---------- | | | | |
| Benzene | 71-43-2 | 5 | <0.50 | U |
| Carbon Tetrachloride | 56-23-5 | 5 | <0.50 | U |
| Chlorobenzene | 108-90-7 | 100 | <0.50 | U |
| 1,2-Dichlorobenzene | 95-50-1 | 600 | <0.50 | U |
| 1,4-Dichlorobenzene | 106-46-7 | 75 | <0.50 | U |
| 1,2-Dichloroethane | 107-06-2 | 5 | <0.50 | U |
| 1,1-Dichloroethene | 75-35-4 | 7 | <0.50 | U |
| cis-1,2-Dichloroethene | 156-59-2 | 70 | <0.50 | U |
| trans-1,2-Dichloroethene | 156-60-5 | 100 | <0.50 | U |
| 1,2-Dichloropropane | 78-87-5 | 5 | <0.50 | U |
| Ethylbenzene | 100-41-4 | 700 | <0.50 | U |
| Methylene Chloride | 75-09-2 | 5 | <0.50 | U |
| Styrene | 100-42-5 | 100 | <0.50 | U |
| Tetrachloroethene | 127-18-4 | 5 | <0.50 | U |
| Toluene | 108-88-3 | 1000 | <0.50 | U |
| 1,2,4-Trichlorobenzene | 120-82-1 | 70 | <0.50 | U |
| 1,1,1-Trichloroethane | 71-55-6 | 200 | <0.50 | U |
| 1,1,2-Trichloroethane | 79-00-5 | 5 | <0.50 | U |
| Trichloroethene | 79-01-6 | 5 | <0.50 | U |
| Vinyl Chloride | 75-01-4 | 2 | <0.50 | U |
| m+p-Xylenes | 108383/106423 | | <0.50 | U |
| o-Xylene | 95-47-6 | | <0.50 | U |
| Total Xylenes | | 10000 | <0.50 | U |
| ----------REGULATED VOC'S: TRIHALOMETHANES---------- | | | | |
| **Bromodichloromethane** | **75-27-4** | **Total** | **0.59** | |
| Bromoform | 75-25-2 | of all | <0.50 | U |
| **Chlorodibromomethane** | **124-48-1** | **four** | **<0.50** | **0.49J** |
| **Chloroform** | **67-66-3** | **100** | **0.60** | |
| ----------OTHER EPA LISTED VOC'S---------- | | | | |
| Acetone | 67-64-1 | NR | <50 | U |
| Acrylonitrile | 107-13-1 | NR | <20 | U |
| Allyl chloride | 107-05-1 | NR | <1.0 | U |
| Bromobenzene | 108-86-1 | NR | <0.50 | U |
| Bromochloromethane | 74-97-5 | NR | <0.50 | U |
| Bromomethane | 74-83-9 | NR | <0.50 | U |
| n-Butylbenzene | 104-51-8 | NR | <0.50 | U |
| sec-Butylbenzene | 135-98-8 | NR | <0.50 | U |
| tert-Butylbenzene | 98-06-6 | NR | <0.50 | U |
| Carbon disulfide | 75-15-0 | NR | <1.0 | U |
| Chloroethane | 75-00-3 | NR | <0.50 | U |
| Chloromethane | 74-87-3 | NR | <0.50 | U |
| 2-Chlorotoluene | 95-49-8 | NR | <0.50 | U |

(report continued on page 2)

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## EPA METHOD 524.2 VOLATILE ORGANICS ANALYSIS REPORT (cont.)

CONCENTRATION UNITS = ug/L

| COMPOUNDS | CAS NO. | EPA MCL | RESULT | QUALIFIER |
|---|---|---|---|---|
| 4-Chlorotoluene | 106-43-4 | NR | <0.50 | U |
| 1,2-Dibromo-3-chloropropane | 96-12-8 | NA | <1.0 | U |
| 1,2-Dibromoethane | 106-93-4 | NA | <0.50 | U |
| Dibromomethane | 74-95-3 | NR | <0.50 | U |
| 1,3-Dichlorobenzene | 541-73-1 | NR | <0.50 | U |
| trans-1,4-Dichloro-2-butene | 110-57-6 | NR | <2.0 | U |
| Dichlorodifluoromethane | 75-71-8 | NR | <0.50 | U |
| 1,1-Dichloroethane | 75-34-3 | NR | <0.50 | U |
| 1,1-Dichloropropene | 563-58-6 | NR | <0.50 | U |
| 1,3-Dichloropropane | 142-28-9 | NR | <0.50 | U |
| cis-1,3-Dichloropropene | 10061-01-5 | NR | <0.50 | U |
| trans-1,3-Dichloropropene | 10061-02-6 | NR | <0.50 | U |
| 2,2-Dichloropropane | 594-20-7 | NR | <0.50 | U |
| Ethyl ether | 60-29-7 | NR | <20 | U |
| Ethyl methacrylate | 97-63-2 | NR | <1.0 | U |
| Hexachlorobutadiene | 87-68-3 | NR | <0.50 | U |
| 2-Hexanone | 591-78-6 | NR | <20 | U |
| Isopropylbenzene | 98-82-8 | NR | <0.50 | U |
| Iodomethane | 74-88-4 | NR | <1.0 | U |
| p-Isopropyltoluene | 99-87-6 | NR | <0.50 | U |
| Methacrylonitrile | 126-98-7 | NR | <20 | U |
| Methyl ethyl ketone | 78-93-3 | NR | <20 | U |
| Methyl methacrylate | 80-62-6 | NR | <1.0 | U |
| Methyl isobutyl ketone | 108-10-1 | NR | <20 | U |
| Methyl-t-butyl ether | 1634-04-4 | NR | <0.50 | U |
| Naphthalene | 91-20-3 | NR | <0.50 | U |
| Pentachloroethane | 76-01-7 | NR | <1.0 | U |
| Propionitrile | 107-12-0 | NR | <20 | U |
| n-Propylbenzene | 103-65-1 | NR | <0.50 | U |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | NR | <0.50 | U |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | NR | <0.50 | U |
| Trichlorofluoromethane | 75-69-4 | NR | <0.50 | U |
| 1,2,3-Trichlorobenzene | 87-61-6 | NR | <0.50 | U |
| 1,2,3-Trichloropropane | 96-18-4 | NR | <0.50 | U |
| 1,2,4-Trimethylbenzene | 95-63-6 | NR | <0.50 | U |
| 1,3,5-Trimethylbenzene | 108-67-8 | NR | <0.50 | U |

### SURROGATE RECOVERY REPORT

| Surrogate Compound | Added ug/L | Measured ug/L | %Rec | QC Limits |
|---|---|---|---|---|
| 1,2-Dichloroethane d4 | 10.0 | 10.3 | 103 | 74--120 |
| Toluene d8 | 10.0 | 9.90 | 99 | 80--120 |
| p-Bromofluorobenzene | 10.0 | 10.0 | 100 | 80--120 |

QUALIFIER CODE EXPLANATIONS AND NOTES:

U= Indicates compound was analyzed for but not detected. NR= No currently regulated amount.

J= Estimated value. Present, but less than the limit of quantitation.

NA= Not applicable to this method. Concentrations are presented for screening purposes. For regulatory compliance, analyze using EPA method 504 which has lower detection limits.

REPORT COMMENTS: None

Analyst: HJC Reviewing Supervisor: MM

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**Client: HydroSolutions, Inc.**
**Date Sampled: 09-SEP-2001 12:50**
**Date Received: 10-SEP-2001 00:00**
**Analysis Date: 14-SEP-2001 15:56**
**File: /chem/5971A.i/va091401.b/sep140901009.d**
**Project Info: CROWLEY LAW FIRM**
**Sample Info: FPB93-5**

**Lab No.: 006-01-57850**
**Report Date: 09/17/2001 10:05**
**Extraction Method: EPA 5030**
**Sample Matrix: WATER; pH= < 2**

# EPA METHOD 524.2
# VOLATILE ORGANICS ANALYSIS REPORT

CONCENTRATION UNITS = ug/L

| COMPOUNDS | CAS NO. | EPA MCL | RESULT | QUALIFIER |
|---|---|---|---|---|
| ----------REGULATED VOLATILE ORGANIC CHEMICALS (VOC'S)---------- | | | | |
| Benzene | 71-43-2 | 5 | <0.50 | U |
| Carbon Tetrachloride | 56-23-5 | 5 | <0.50 | U |
| Chlorobenzene | 108-90-7 | 100 | <0.50 | U |
| 1,2-Dichlorobenzene | 95-50-1 | 600 | <0.50 | U |
| 1,4-Dichlorobenzene | 106-46-7 | 75 | <0.50 | U |
| 1,2-Dichloroethane | 107-06-2 | 5 | <0.50 | U |
| 1,1-Dichloroethene | 75-35-4 | 7 | <0.50 | U |
| cis-1,2-Dichloroethene | 156-59-2 | 70 | <0.50 | U |
| trans-1,2-Dichloroethene | 156-60-5 | 100 | <0.50 | U |
| 1,2-Dichloropropane | 78-87-5 | 5 | <0.50 | U |
| Ethylbenzene | 100-41-4 | 700 | <0.50 | U |
| Methylene Chloride | 75-09-2 | 5 | <0.50 | U |
| Styrene | 100-42-5 | 100 | <0.50 | U |
| Tetrachloroethene | 127-18-4 | 5 | <0.50 | U |
| Toluene | 108-88-3 | 1000 | <0.50 | U |
| 1,2,4-Trichlorobenzene | 120-82-1 | 70 | <0.50 | U |
| 1,1,1-Trichloroethane | 71-55-6 | 200 | <0.50 | U |
| 1,1,2-Trichloroethane | 79-00-5 | 5 | <0.50 | U |
| Trichloroethene | 79-01-6 | 5 | <0.50 | U |
| Vinyl Chloride | 75-01-4 | 2 | <0.50 | U |
| m+p-Xylenes | 108383/106423 | | <0.50 | U |
| o-Xylene | 95-47-6 | | <0.50 | U |
| Total Xylenes | | 10000 | <0.50 | U |
| ----------REGULATED VOC'S: TRIHALOMETHANES---------- | | | | |
| Bromodichloromethane | 75-27-4 | Total | <0.50 | U |
| Bromoform | 75-25-2 | of all | <0.50 | U |
| Chlorodibromomethane | 124-48-1 | four | <0.50 | U |
| Chloroform | 67-66-3 | 100 | <0.50 | U |
| ----------OTHER EPA LISTED VOC'S---------- | | | | |
| Acetone | 67-64-1 | NR | <50 | U |
| Acrylonitrile | 107-13-1 | NR | <20 | U |
| Allyl chloride | 107-05-1 | NR | <1.0 | U |
| Bromobenzene | 108-86-1 | NR | <0.50 | U |
| Bromochloromethane | 74-97-5 | NR | <0.50 | U |
| Bromomethane | 74-83-9 | NR | <0.50 | U |
| n-Butylbenzene | 104-51-8 | NR | <0.50 | U |
| sec-Butylbenzene | 135-98-8 | NR | <0.50 | U |
| tert-Butylbenzene | 98-06-6 | NR | <0.50 | U |
| Carbon disulfide | 75-15-0 | NR | <1.0 | U |
| Chloroethane | 75-00-3 | NR | <0.50 | U |
| Chloromethane | 74-87-3 | NR | <0.50 | U |
| 2-Chlorotoluene | 95-49-8 | NR | <0.50 | U |

(report continued on page 2)

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## EPA METHOD 524.2 VOLATILE ORGANICS ANALYSIS REPORT (cont.)

CONCENTRATION UNITS = ug/L

| COMPOUNDS | CAS NO. | EPA MCL | RESULT | QUALIFIER |
|---|---|---|---|---|
| 4-Chlorotoluene | 106-43-4 | NR | <0.50 | U |
| 1,2-Dibromo-3-chloropropane | 96-12-8 | NA | <1.0 | U |
| 1,2-Dibromoethane | 106-93-4 | NA | <0.50 | U |
| Dibromomethane | 74-95-3 | NR | <0.50 | U |
| 1,3-Dichlorobenzene | 541-73-1 | NR | <0.50 | U |
| trans-1,4-Dichloro-2-butene | 110-57-6 | NR | <2.0 | U |
| Dichlorodifluoromethane | 75-71-8 | NR | <0.50 | U |
| 1,1-Dichloroethane | 75-34-3 | NR | <0.50 | U |
| 1,1-Dichloropropene | 563-58-6 | NR | <0.50 | U |
| 1,3-Dichloropropane | 142-28-9 | NR | <0.50 | U |
| cis-1,3-Dichloropropene | 10061-01-5 | NR | <0.50 | U |
| trans-1,3-Dichloropropene | 10061-02-6 | NR | <0.50 | U |
| 2,2-Dichloropropane | 594-20-7 | NR | <0.50 | U |
| Ethyl ether | 60-29-7 | NR | <20 | U |
| Ethyl methacrylate | 97-63-2 | NR | <1.0 | U |
| Hexachlorobutadiene | 87-68-3 | NR | <0.50 | U |
| 2-Hexanone | 591-78-6 | NR | <20 | U |
| Isopropylbenzene | 98-82-8 | NR | <0.50 | U |
| Iodomethane | 74-88-4 | NR | <1.0 | U |
| p-Isopropyltoluene | 99-87-6 | NR | <0.50 | U |
| Methacrylonitrile | 126-98-7 | NR | <20 | U |
| Methyl ethyl ketone | 78-93-3 | NR | <20 | U |
| Methyl methacrylate | 80-62-6 | NR | <1.0 | U |
| Methyl isobutyl ketone | 108-10-1 | NR | <20 | U |
| Methyl-t-butyl ether | 1634-04-4 | NR | <0.50 | U |
| Naphthalene | 91-20-3 | NR | <0.50 | U |
| Pentachloroethane | 76-01-7 | NR | <1.0 | U |
| Propionitrile | 107-12-0 | NR | <20 | U |
| n-Propylbenzene | 103-65-1 | NR | <0.50 | U |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | NR | <0.50 | U |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | NR | <0.50 | U |
| Trichlorofluoromethane | 75-69-4 | NR | <0.50 | U |
| 1,2,3-Trichlorobenzene | 87-61-6 | NR | <0.50 | U |
| 1,2,3-Trichloropropane | 96-18-4 | NR | <0.50 | U |
| 1,2,4-Trimethylbenzene | 95-63-6 | NR | <0.50 | U |
| 1,3,5-Trimethylbenzene | 108-67-8 | NR | <0.50 | U |

### SURROGATE RECOVERY REPORT

| Surrogate Compound | Added ug/L | Measured ug/L | %Rec | QC Limits |
|---|---|---|---|---|
| 1,2-Dichloroethane d4 | 10.0 | 10.3 | 103 | 74--120 |
| Toluene d8 | 10.0 | 9.94 | 99 | 80--120 |
| p-Bromofluorobenzene | 10.0 | 10.0 | 100 | 80--120 |

QUALIFIER CODE EXPLANATIONS AND NOTES:

U= Indicates compound was analyzed for but not detected.

NR= No currently regulated amount.

NA= Not applicable to this method. Concentrations are presented for screening purposes. For regulatory compliance, analyze using EPA method 504 which has lower detection limits.

REPORT COMMENTS: None

Analyst: HJC Reviewing Supervisor: MJ

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**Client:** HydroSolutions, Inc.
**Date Sampled:** 09-SEP-2001 14:55
**Date Received:** 10-SEP-2001 00:00
**Analysis Date:** 14-SEP-2001 16:31
**File:** /chem/5971A.i/va091401.b/sep141001010.d
**Project Info:** CROWLEY LAW FIRM
**Sample Info:** MOC-9

**Lab No.:** 007-01-57850
**Report Date:** 09/17/2001 10:05
**Extraction Method:** EPA 5030
**Sample Matrix:** WATER; pH= < 2

# EPA METHOD 524.2
## VOLATILE ORGANICS ANALYSIS REPORT

CONCENTRATION UNITS = ug/L

| COMPOUNDS | CAS NO. | EPA MCL | RESULT | QUALIFIER |
|---|---|---|---|---|
| ----------REGULATED VOLATILE ORGANIC CHEMICALS (VOC'S)---------- | | | | |
| Benzene | 71-43-2 | 5 | <0.50 | U |
| Carbon Tetrachloride | 56-23-5 | 5 | <0.50 | U |
| Chlorobenzene | 108-90-7 | 100 | <0.50 | U |
| 1,2-Dichlorobenzene | 95-50-1 | 600 | <0.50 | U |
| 1,4-Dichlorobenzene | 106-46-7 | 75 | <0.50 | U |
| 1,2-Dichloroethane | 107-06-2 | 5 | <0.50 | U |
| 1,1-Dichloroethene | 75-35-4 | 7 | <0.50 | U |
| cis-1,2-Dichloroethene | 156-59-2 | 70 | <0.50 | U |
| trans-1,2-Dichloroethene | 156-60-5 | 100 | <0.50 | U |
| 1,2-Dichloropropane | 78-87-5 | 5 | <0.50 | U |
| Ethylbenzene | 100-41-4 | 700 | <0.50 | U |
| Methylene Chloride | 75-09-2 | 5 | <0.50 | U |
| Styrene | 100-42-5 | 100 | <0.50 | U |
| Tetrachloroethene | 127-18-4 | 5 | <0.50 | U |
| Toluene | 108-88-3 | 1000 | <0.50 | U |
| 1,2,4-Trichlorobenzene | 120-82-1 | 70 | <0.50 | U |
| 1,1,1-Trichloroethane | 71-55-6 | 200 | <0.50 | U |
| 1,1,2-Trichloroethane | 79-00-5 | 5 | <0.50 | U |
| Trichloroethene | 79-01-6 | 5 | <0.50 | U |
| Vinyl Chloride | 75-01-4 | 2 | <0.50 | U |
| m+p-Xylenes | 108383/106423 | | <0.50 | U |
| o-Xylene | 95-47-6 | | <0.50 | U |
| Total Xylenes | | 10000 | <0.50 | U |
| ----------REGULATED VOC'S: TRIHALOMETHANES---------- | | | | |
| Bromodichloromethane | 75-27-4 | Total | <0.50 | U |
| Bromoform | 75-25-2 | of all | <0.50 | U |
| Chlorodibromomethane | 124-48-1 | four | <0.50 | U |
| Chloroform | 67-66-3 | 100 | <0.50 | U |
| ----------OTHER EPA LISTED VOC'S---------- | | | | |
| Acetone | 67-64-1 | NR | <50 | U |
| Acrylonitrile | 107-13-1 | NR | <20 | U |
| Allyl chloride | 107-05-1 | NR | <1.0 | U |
| Bromobenzene | 108-86-1 | NR | <0.50 | U |
| Bromochloromethane | 74-97-5 | NR | <0.50 | U |
| Bromomethane | 74-83-9 | NR | <0.50 | U |
| n-Butylbenzene | 104-51-8 | NR | <0.50 | U |
| sec-Butylbenzene | 135-98-8 | NR | <0.50 | U |
| tert-Butylbenzene | 98-06-6 | NR | <0.50 | U |
| Carbon disulfide | 75-15-0 | NR | <1.0 | U |
| Chloroethane | 75-00-3 | NR | <0.50 | U |
| Chloromethane | 74-87-3 | NR | <0.50 | U |
| 2-Chlorotoluene | 95-49-8 | NR | <0.50 | U |

(report continued on page 2)

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**Lab No.: 007-01-57850**
**Sample Info: MOC-9**



## EPA METHOD 524.2 VOLATILE ORGANICS ANALYSIS REPORT (cont.)

CONCENTRATION UNITS = ug/L

| COMPOUNDS | CAS NO. | EPA MCL | RESULT | QUALIFIER |
|---|---|---|---|---|
| 4-Chlorotoluene | 106-43-4 | NR | <0.50 | U |
| 1,2-Dibromo-3-chloropropane | 96-12-8 | NA | <1.0 | U |
| 1,2-Dibromoethane | 106-93-4 | NA | <0.50 | U |
| Dibromomethane | 74-95-3 | NR | <0.50 | U |
| 1,3-Dichlorobenzene | 541-73-1 | NR | <0.50 | U |
| trans-1,4-Dichloro-2-butene | 110-57-6 | NR | <2.0 | U |
| Dichlorodifluoromethane | 75-71-8 | NR | <0.50 | U |
| 1,1-Dichloroethane | 75-34-3 | NR | <0.50 | U |
| 1,1-Dichloropropene | 563-58-6 | NR | <0.50 | U |
| 1,3-Dichloropropane | 142-28-9 | NR | <0.50 | U |
| cis-1,3-Dichloropropene | 10061-01-5 | NR | <0.50 | U |
| trans-1,3-Dichloropropene | 10061-02-6 | NR | <0.50 | U |
| 2,2-Dichloropropane | 594-20-7 | NR | <0.50 | U |
| Ethyl ether | 60-29-7 | NR | <20 | U |
| Ethyl methacrylate | 97-63-2 | NR | <1.0 | U |
| Hexachlorobutadiene | 87-68-3 | NR | <0.50 | U |
| 2-Hexanone | 591-78-6 | NR | <20 | U |
| Isopropylbenzene | 98-82-8 | NR | <0.50 | U |
| Iodomethane | 74-88-4 | NR | <1.0 | U |
| p-Isopropyltoluene | 99-87-6 | NR | <0.50 | U |
| Methacrylonitrile | 126-98-7 | NR | <20 | U |
| Methyl ethyl ketone | 78-93-3 | NR | <20 | U |
| Methyl methacrylate | 80-62-6 | NR | <1.0 | U |
| Methyl isobutyl ketone | 108-10-1 | NR | <20 | U |
| Methyl-t-butyl ether | 1634-04-4 | NR | <0.50 | U |
| Naphthalene | 91-20-3 | NR | <0.50 | U |
| Pentachloroethane | 76-01-7 | NR | <1.0 | U |
| Propionitrile | 107-12-0 | NR | <20 | U |
| n-Propylbenzene | 103-65-1 | NR | <0.50 | U |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | NR | <0.50 | U |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | NR | <0.50 | U |
| Trichlorofluoromethane | 75-69-4 | NR | <0.50 | U |
| 1,2,3-Trichlorobenzene | 87-61-6 | NR | <0.50 | U |
| 1,2,3-Trichloropropane | 96-18-4 | NR | <0.50 | U |
| 1,2,4-Trimethylbenzene | 95-63-6 | NR | <0.50 | U |
| 1,3,5-Trimethylbenzene | 108-67-8 | NR | <0.50 | U |

### SURROGATE RECOVERY REPORT

| Surrogate Compound | Added ug/L | Measured ug/L | %Rec | QC Limits |
|---|---|---|---|---|
| 1,2-Dichloroethane d4 | 10.0 | 10.1 | 101 | 74--120 |
| Toluene d8 | 10.0 | 9.96 | 100 | 80--120 |
| p-Bromofluorobenzene | 10.0 | 10.4 | 104 | 80--120 |

QUALIFIER CODE EXPLANATIONS AND NOTES:

U= Indicates compound was analyzed for but not detected.

NR= No currently regulated amount.

NA= Not applicable to this method. Concentrations are presented for screening purposes. For regulatory compliance, analyze using EPA method 504 which has lower detection limits.

REPORT COMMENTS: None

Analyst: HJC Reviewing Supervisor: [illegible]

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**Client:** HydroSolutions, Inc.
**Date Sampled:**
**Date Received:** 10-SEP-2001 00:00
**Analysis Date:** 14-SEP-2001 17:06
**File:** /chem/5971A.i/va091401.b/sep141101011.d
**Project Info:** CROWLEY LAW FIRM
**Sample Info:** TRIP BLANK

**Lab No.:** 008-01-57850
**Report Date:** 09/17/2001 10:05
**Extraction Method:** EPA 5030
**Sample Matrix:** WATER; pH= < 2

# EPA METHOD 524.2
## VOLATILE ORGANICS ANALYSIS REPORT

CONCENTRATION UNITS = ug/L

| COMPOUNDS | CAS NO. | EPA MCL | RESULT | QUALIFIER |
|---|---|---|---|---|
| ----------REGULATED VOLATILE ORGANIC CHEMICALS (VOC'S)---------- | | | | |
| Benzene | 71-43-2 | 5 | <0.50 | U |
| Carbon Tetrachloride | 56-23-5 | 5 | <0.50 | U |
| Chlorobenzene | 108-90-7 | 100 | <0.50 | U |
| 1,2-Dichlorobenzene | 95-50-1 | 600 | <0.50 | U |
| 1,4-Dichlorobenzene | 106-46-7 | 75 | <0.50 | U |
| 1,2-Dichloroethane | 107-06-2 | 5 | <0.50 | U |
| 1,1-Dichloroethene | 75-35-4 | 7 | <0.50 | U |
| cis-1,2-Dichloroethene | 156-59-2 | 70 | <0.50 | U |
| trans-1,2-Dichloroethene | 156-60-5 | 100 | <0.50 | U |
| 1,2-Dichloropropane | 78-87-5 | 5 | <0.50 | U |
| Ethylbenzene | 100-41-4 | 700 | <0.50 | U |
| Methylene Chloride | 75-09-2 | 5 | <0.50 | U |
| Styrene | 100-42-5 | 100 | <0.50 | U |
| Tetrachloroethene | 127-18-4 | 5 | <0.50 | U |
| Toluene | 108-88-3 | 1000 | <0.50 | U |
| 1,2,4-Trichlorobenzene | 120-82-1 | 70 | <0.50 | U |
| 1,1,1-Trichloroethane | 71-55-6 | 200 | <0.50 | U |
| 1,1,2-Trichloroethane | 79-00-5 | 5 | <0.50 | U |
| Trichloroethene | 79-01-6 | 5 | <0.50 | U |
| Vinyl Chloride | 75-01-4 | 2 | <0.50 | U |
| m+p-Xylenes | 108383/106423 | | <0.50 | U |
| o-Xylene | 95-47-6 | | <0.50 | U |
| Total Xylenes | | 10000 | <0.50 | U |
| ----------REGULATED VOC'S: TRIHALOMETHANES---------- | | | | |
| Bromodichloromethane | 75-27-4 | Total | <0.50 | U |
| Bromoform | 75-25-2 | of all | <0.50 | U |
| Chlorodibromomethane | 124-48-1 | four | <0.50 | U |
| Chloroform | 67-66-3 | 100 | <0.50 | U |
| ----------OTHER EPA LISTED VOC'S---------- | | | | |
| Acetone | 67-64-1 | NR | <50 | U |
| Acrylonitrile | 107-13-1 | NR | <20 | U |
| Allyl chloride | 107-05-1 | NR | <1.0 | U |
| Bromobenzene | 108-86-1 | NR | <0.50 | U |
| Bromochloromethane | 74-97-5 | NR | <0.50 | U |
| Bromomethane | 74-83-9 | NR | <0.50 | U |
| n-Butylbenzene | 104-51-8 | NR | <0.50 | U |
| sec-Butylbenzene | 135-98-8 | NR | <0.50 | U |
| tert-Butylbenzene | 98-06-6 | NR | <0.50 | U |
| Carbon disulfide | 75-15-0 | NR | <1.0 | U |
| Chloroethane | 75-00-3 | NR | <0.50 | U |
| Chloromethane | 74-87-3 | NR | <0.50 | U |
| 2-Chlorotoluene | 95-49-8 | NR | <0.50 | U |

(report continued on page 2)

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**Lab No.: 008-01-57850**
**Sample Info: TRIP BLANK**



## EPA METHOD 524.2 VOLATILE ORGANICS ANALYSIS REPORT (cont.)

CONCENTRATION UNITS = ug/L

| COMPOUNDS | CAS NO. | EPA MCL | RESULT | QUALIFIER |
|---|---|---|---|---|
| 4-Chlorotoluene | 106-43-4 | NR | <0.50 | U |
| 1,2-Dibromo-3-chloropropane | 96-12-8 | NA | <1.0 | U |
| 1,2-Dibromoethane | 106-93-4 | NA | <0.50 | U |
| Dibromomethane | 74-95-3 | NR | <0.50 | U |
| 1,3-Dichlorobenzene | 541-73-1 | NR | <0.50 | U |
| trans-1,4-Dichloro-2-butene | 110-57-6 | NR | <2.0 | U |
| Dichlorodifluoromethane | 75-71-8 | NR | <0.50 | U |
| 1,1-Dichloroethane | 75-34-3 | NR | <0.50 | U |
| 1,1-Dichloropropene | 563-58-6 | NR | <0.50 | U |
| 1,3-Dichloropropane | 142-28-9 | NR | <0.50 | U |
| cis-1,3-Dichloropropene | 10061-01-5 | NR | <0.50 | U |
| trans-1,3-Dichloropropene | 10061-02-6 | NR | <0.50 | U |
| 2,2-Dichloropropane | 594-20-7 | NR | <0.50 | U |
| Ethyl ether | 60-29-7 | NR | <20 | U |
| Ethyl methacrylate | 97-63-2 | NR | <1.0 | U |
| Hexachlorobutadiene | 87-68-3 | NR | <0.50 | U |
| 2-Hexanone | 591-78-6 | NR | <20 | U |
| Isopropylbenzene | 98-82-8 | NR | <0.50 | U |
| Iodomethane | 74-88-4 | NR | <1.0 | U |
| p-Isopropyltoluene | 99-87-6 | NR | <0.50 | U |
| Methacrylonitrile | 126-98-7 | NR | <20 | U |
| Methyl ethyl ketone | 78-93-3 | NR | <20 | U |
| Methyl methacrylate | 80-62-6 | NR | <1.0 | U |
| Methyl isobutyl ketone | 108-10-1 | NR | <20 | U |
| Methyl-t-butyl ether | 1634-04-4 | NR | <0.50 | U |
| Naphthalene | 91-20-3 | NR | <0.50 | U |
| Pentachloroethane | 76-01-7 | NR | <1.0 | U |
| Propionitrile | 107-12-0 | NR | <20 | U |
| n-Propylbenzene | 103-65-1 | NR | <0.50 | U |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | NR | <0.50 | U |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | NR | <0.50 | U |
| Trichlorofluoromethane | 75-69-4 | NR | <0.50 | U |
| 1,2,3-Trichlorobenzene | 87-61-6 | NR | <0.50 | U |
| 1,2,3-Trichloropropane | 96-18-4 | NR | <0.50 | U |
| 1,2,4-Trimethylbenzene | 95-63-6 | NR | <0.50 | U |
| 1,3,5-Trimethylbenzene | 108-67-8 | NR | <0.50 | U |

### SURROGATE RECOVERY REPORT

| Surrogate Compound | Added ug/L | Measured ug/L | %Rec | QC Limits |
|---|---|---|---|---|
| 1,2-Dichloroethane d4 | 10.0 | 10.0 | 100 | 74--120 |
| Toluene d8 | 10.0 | 9.99 | 100 | 80--120 |
| p-Bromofluorobenzene | 10.0 | 10.4 | 104 | 80--120 |

QUALIFIER CODE EXPLANATIONS AND NOTES:

U= Indicates compound was analyzed for but not detected.

NR= No currently regulated amount.

NA= Not applicable to this method. Concentrations are presented for screening purposes. For regulatory compliance, analyze using EPA method 504 which has lower detection limits.

REPORT COMMENTS: None

Analyst: HJC Reviewing Supervisor: [illegible]

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**Quality Control Sample: Laboratory Reagent Blank 14-SEP-2001 13:47**
**Report Date: 09/14/2001 15:43**
**Extraction Method: EPA 5030**
**Sample Matrix: WATER**
**File: /chem/5971A.i/va091401.b/sep140601006.d**
**Remarks: This Laboratory Reagent Blank Quality Control Sample was extracted and analyzed with your set of samples to determine if method analytes or other interferences are present in the laboratory environment, the reagents, or the apparatus.**

## EPA METHOD 524.2
## VOLATILE ORGANICS ANALYSIS REPORT

CONCENTRATION UNITS = ug/L

| COMPOUNDS | CAS NO. | EPA MCL | RESULT | QUALIFIER |
|---|---|---|---|---|
| ----------REGULATED VOLATILE ORGANIC CHEMICALS (VOC'S)---------- | | | | |
| Benzene | 71-43-2 | 5 | <0.50 | U |
| Carbon Tetrachloride | 56-23-5 | 5 | <0.50 | U |
| Chlorobenzene | 108-90-7 | 100 | <0.50 | U |
| 1,2-Dichlorobenzene | 95-50-1 | 600 | <0.50 | U |
| 1,4-Dichlorobenzene | 106-46-7 | 75 | <0.50 | U |
| 1,2-Dichloroethane | 107-06-2 | 5 | <0.50 | U |
| 1,1-Dichloroethene | 75-35-4 | 7 | <0.50 | U |
| cis-1,2-Dichloroethene | 156-59-2 | 70 | <0.50 | U |
| trans-1,2-Dichloroethene | 156-60-5 | 100 | <0.50 | U |
| 1,2-Dichloropropane | 78-87-5 | 5 | <0.50 | U |
| Ethylbenzene | 100-41-4 | 700 | <0.50 | U |
| Methylene Chloride | 75-09-2 | 5 | <0.50 | U |
| Styrene | 100-42-5 | 100 | <0.50 | U |
| Tetrachloroethene | 127-18-4 | 5 | <0.50 | U |
| Toluene | 108-88-3 | 1000 | <0.50 | U |
| 1,2,4-Trichlorobenzene | 120-82-1 | 70 | <0.50 | U |
| 1,1,1-Trichloroethane | 71-55-6 | 200 | <0.50 | U |
| 1,1,2-Trichloroethane | 79-00-5 | 5 | <0.50 | U |
| Trichloroethene | 79-01-6 | 5 | <0.50 | U |
| Vinyl Chloride | 75-01-4 | 2 | <0.50 | U |
| m+p-Xylenes | 108383/106423 | | <0.50 | U |
| o-Xylene | 95-47-6 | | <0.50 | U |
| Total Xylenes | | 10000 | <0.50 | U |
| ----------REGULATED VOC'S: TRIHALOMETHANES---------- | | | | |
| Bromodichloromethane | 75-27-4 | Total | <0.50 | U |
| Bromoform | 75-25-2 | of all | <0.50 | U |
| Chlorodibromomethane | 124-48-1 | four | <0.50 | U |
| Chloroform | 67-66-3 | 100 | <0.50 | U |
| ----------OTHER EPA LISTED VOC'S---------- | | | | |
| Acetone | 67-64-1 | NR | <50 | U |
| Acrylonitrile | 107-13-1 | NR | <20 | U |
| Allyl chloride | 107-05-1 | NR | <1.0 | U |
| Bromobenzene | 108-86-1 | NR | <0.50 | U |
| Bromochloromethane | 74-97-5 | NR | <0.50 | U |
| Bromomethane | 74-83-9 | NR | <0.50 | U |
| n-Butylbenzene | 104-51-8 | NR | <0.50 | U |
| sec-Butylbenzene | 135-98-8 | NR | <0.50 | U |
| tert-Butylbenzene | 98-06-6 | NR | <0.50 | U |
| Carbon disulfide | 75-15-0 | NR | <1.0 | U |
| Chloroethane | 75-00-3 | NR | <0.50 | U |
| Chloromethane | 74-87-3 | NR | <0.50 | U |
| 2-Chlorotoluene | 95-49-8 | NR | <0.50 | U |

(report continued on page 2)

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## EPA METHOD 524.2 VOLATILE ORGANICS ANALYSIS REPORT (cont.)

CONCENTRATION UNITS = ug/L

| COMPOUNDS | CAS NO. | EPA MCL | RESULT | QUALIFIER |
|---|---|---|---|---|
| 4-Chlorotoluene | 106-43-4 | NR | <0.50 | U |
| 1,2-Dibromo-3-chloropropane | 96-12-8 | NA | <1.0 | U |
| 1,2-Dibromoethane | 106-93-4 | NA | <0.50 | U |
| Dibromomethane | 74-95-3 | NR | <0.50 | U |
| 1,3-Dichlorobenzene | 541-73-1 | NR | <0.50 | U |
| trans-1,4-Dichloro-2-butene | 110-57-6 | NR | <2.0 | U |
| Dichlorodifluoromethane | 75-71-8 | NR | <0.50 | U |
| 1,1-Dichloroethane | 75-34-3 | NR | <0.50 | U |
| 1,1-Dichloropropene | 563-58-6 | NR | <0.50 | U |
| 1,3-Dichloropropane | 142-28-9 | NR | <0.50 | U |
| cis-1,3-Dichloropropene | 10061-01-5 | NR | <0.50 | U |
| trans-1,3-Dichloropropene | 10061-02-6 | NR | <0.50 | U |
| 2,2-Dichloropropane | 594-20-7 | NR | <0.50 | U |
| Ethyl ether | 60-29-7 | NR | <20 | U |
| Ethyl methacrylate | 97-63-2 | NR | <1.0 | U |
| Hexachlorobutadiene | 87-68-3 | NR | <0.50 | U |
| 2-Hexanone | 591-78-6 | NR | <20 | U |
| Isopropylbenzene | 98-82-8 | NR | <0.50 | U |
| Iodomethane | 74-88-4 | NR | <1.0 | U |
| p-Isopropyltoluene | 99-87-6 | NR | <0.50 | U |
| Methacrylonitrile | 126-98-7 | NR | <20 | U |
| Methyl ethyl ketone | 78-93-3 | NR | <20 | U |
| Methyl methacrylate | 80-62-6 | NR | <1.0 | U |
| Methyl isobutyl ketone | 108-10-1 | NR | <20 | U |
| Methyl-t-butyl ether | 1634-04-4 | NR | <0.50 | U |
| Naphthalene | 91-20-3 | NR | <0.50 | U |
| Pentachloroethane | 76-01-7 | NR | <1.0 | U |
| Propionitrile | 107-12-0 | NR | <20 | U |
| n-Propylbenzene | 103-65-1 | NR | <0.50 | U |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | NR | <0.50 | U |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | NR | <0.50 | U |
| Trichlorofluoromethane | 75-69-4 | NR | <0.50 | U |
| 1,2,3-Trichlorobenzene | 87-61-6 | NR | <0.50 | U |
| 1,2,3-Trichloropropane | 96-18-4 | NR | <0.50 | U |
| 1,2,4-Trimethylbenzene | 95-63-6 | NR | <0.50 | U |
| 1,3,5-Trimethylbenzene | 108-67-8 | NR | <0.50 | U |

### SURROGATE RECOVERY REPORT

| Surrogate Compound | Added ug/L | Measured ug/L | %Rec | QC Limits |
|---|---|---|---|---|
| 1,2-Dichloroethane d4 | 10.0 | 10.0 | 100 | 74--120 |
| Toluene d8 | 10.0 | 9.86 | 99 | 80--120 |
| p-Bromofluorobenzene | 10.0 | 10.3 | 103 | 80--120 |

QUALIFIER CODE EXPLANATIONS AND NOTES:

U= Indicates compound was analyzed for but not detected.

NR= No currently regulated amount.

NA= Not applicable to this method. Concentrations are presented for screening purposes. For regulatory compliance, analyze using EPA method 504 which has lower detection limits.

REPORT COMMENTS: None

Analyst: HJC Reviewing Supervisor: [illegible]

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# EPA METHOD 524.2 BLANK SPIKE REPORT

**Quality Control Sample: Reference Sample Analysis 14-SEP-2001 12:38**
**Report Date: 09/14/2001 13:45**
**Extraction Method: EPA 5030**
**Sample Matrix: WATER**
**File: /chem/5971A.i/va091401.b/sep140401004.d**
**Remarks: This reference sample was spiked into a blank sample matrix then extracted and analyzed with your set of samples to determine if the methodology is in control and to monitor the laboratory's ability to produce accurate results.**

CONCENTRATION UNITS = ug/L

| Spike Compound | Added | Measured | %Rec | QC Limits |
|---|---|---|---|---|
| Benzene | 5.00 | 4.87 | 97 | 60--140 |
| Carbon Tetrachloride | 5.00 | 5.52 | 110 | 60--140 |
| Chlorobenzene | 5.00 | 4.90 | 98 | 60--140 |
| 1,2-Dichlorobenzene | 5.00 | 4.60 | 92 | 60--140 |
| 1,4-Dichlorobenzene | 5.00 | 4.68 | 94 | 60--140 |
| 1,2-Dichloroethane | 5.00 | 4.86 | 97 | 60--140 |
| 1,1-Dichloroethene | 5.00 | 4.74 | 95 | 60--140 |
| cis-1,2-Dichloroethene | 5.00 | 4.60 | 92 | 60--140 |
| trans-1,2-Dichloroethene | 5.00 | 4.77 | 95 | 60--140 |
| 1,2-Dichloropropane | 5.00 | 5.20 | 104 | 60--140 |
| Ethylbenzene | 5.00 | 4.96 | 99 | 60--140 |
| Methylene Chloride | 5.00 | 4.74 | 95 | 60--140 |
| Styrene | 5.00 | 5.04 | 101 | 60--140 |
| Tetrachloroethene | 5.00 | 5.77 | 115 | 60--140 |
| Toluene | 5.00 | 4.95 | 99 | 60--140 |
| 1,2,4-Trichlorobenzene | 5.00 | 4.70 | 94 | 60--140 |
| 1,1,1-Trichloroethane | 5.00 | 5.35 | 107 | 60--140 |
| 1,1,2-Trichloroethane | 5.00 | 5.15 | 103 | 60--140 |
| Trichloroethene | 5.00 | 4.97 | 99 | 60--140 |
| Vinyl Chloride | 5.00 | 4.87 | 97 | 60--140 |
| m+p-Xylenes | 10.0 | 10.2 | 102 | 60--140 |
| o-Xylene | 5.00 | 5.16 | 103 | 60--140 |
| Total Xylenes | 15.0 | 15.4 | 103 | 60--140 |
| Bromodichloromethane | 5.00 | 5.26 | 105 | 60--140 |
| Bromoform | 5.00 | 5.00 | 100 | 60--140 |
| Chlorodibromomethane | 5.00 | 5.28 | 106 | 60--140 |
| Chloroform | 5.00 | 4.92 | 98 | 60--140 |
| Acetone | 50.0 | 50.8 | 102 | 60--140 |
| Acrylonitrile | 50.0 | 46.8 | 94 | 60--140 |
| Allyl chloride | 5.00 | 5.27 | 105 | 60--140 |
| Bromobenzene | 5.00 | 4.74 | 95 | 60--140 |
| Bromochloromethane | 5.00 | 4.71 | 94 | 60--140 |
| Bromomethane | 5.00 | 5.89 | 118 | 60--140 |
| n-Butylbenzene | 5.00 | 4.93 | 99 | 60--140 |
| sec-Butylbenzene | 5.00 | 4.80 | 96 | 60--140 |
| tert-Butylbenzene | 5.00 | 5.34 | 107 | 60--140 |
| Carbon disulfide | 5.00 | 5.29 | 106 | 60--140 |
| Chloroethane | 5.00 | 4.65 | 93 | 60--140 |
| Chloromethane | 5.00 | 4.87 | 97 | 60--140 |
| 2-Chlorotoluene | 5.00 | 5.01 | 100 | 60--140 |
| 4-Chlorotoluene | 5.00 | 4.90 | 98 | 60--140 |
| 1,2-Dibromo-3-chloropropane | 5.00 | 4.40 | 88 | 60--140 |
| 1,2-Dibromoethane | 5.00 | 5.21 | 104 | 60--140 |

(report continued on page 2)

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**Lab No.: vref091401**
**Sample Info:**



## EPA METHOD 524.2
## VOLATILE ORGANICS ANALYSIS REPORT (continued)

CONCENTRATION UNITS = ug/L

| Spike Compound | Added | Measured | %Rec | QC Limits |
|---|---|---|---|---|
| Dibromomethane | 5.00 | 5.49 | 110 | 60--140 |
| 1,3-Dichlorobenzene | 5.00 | 4.67 | 93 | 60--140 |
| trans-1,4-Dichloro-2-butene | 5.00 | 7.42 | 148* | 60--140 |
| Dichlorodifluoromethane | 5.00 | 4.86 | 97 | 60--140 |
| 1,1-Dichloroethane | 5.00 | 4.53 | 91 | 60--140 |
| 1,1-Dichloropropene | 5.00 | 4.90 | 98 | 60--140 |
| 1,3-Dichloropropane | 5.00 | 5.20 | 104 | 60--140 |
| cis-1,3-Dichloropropene | 5.00 | 5.08 | 102 | 60--140 |
| trans-1,3-Dichloropropene | 5.00 | 5.39 | 108 | 60--140 |
| 2,2-Dichloropropane | 5.00 | 5.37 | 107 | 60--140 |
| Ethyl ether | 50.0 | 48.0 | 96 | 60--140 |
| Ethyl methacrylate | 5.00 | 5.74 | 115 | 60--140 |
| Hexachlorobutadiene | 5.00 | 4.65 | 93 | 60--140 |
| 2-Hexanone | 50.0 | 52.4 | 105 | 60--140 |
| Isopropylbenzene | 5.00 | 4.84 | 97 | 60--140 |
| Iodomethane | 5.00 | 6.06 | 121 | 60--140 |
| p-Isopropyltoluene | 5.00 | 4.82 | 96 | 60--140 |
| Methacrylonitrile | 50.0 | 47.3 | 95 | 60--140 |
| Methyl ethyl ketone | 50.0 | 44.6 | 89 | 60--140 |
| Methyl methacrylate | 5.00 | 4.83 | 97 | 60--140 |
| Methyl isobutyl ketone | 50.0 | 52.5 | 105 | 60--140 |
| Methyl-t-butyl ether | 5.00 | 4.71 | 94 | 60--140 |
| Naphthalene | 5.00 | 4.20 | 84 | 60--140 |
| Pentachloroethane | 5.00 | 5.53 | 111 | 60--140 |
| Propionitrile | 50.0 | 42.2 | 84 | 60--140 |
| n-Propylbenzene | 5.00 | 4.81 | 96 | 60--140 |
| 1,1,1,2-Tetrachloroethane | 5.00 | 4.97 | 99 | 60--140 |
| 1,1,2,2-Tetrachloroethane | 5.00 | 4.77 | 95 | 60--140 |
| Trichlorofluoromethane | 5.00 | 5.49 | 110 | 60--140 |
| 1,2,3-Trichlorobenzene | 5.00 | 4.50 | 90 | 60--140 |
| 1,2,3-Trichloropropane | 5.00 | 4.85 | 97 | 60--140 |
| 1,2,4-Trimethylbenzene | 5.00 | 4.75 | 95 | 60--140 |
| 1,3,5-Trimethylbenzene | 5.00 | 4.87 | 97 | 60--140 |

### SURROGATE RECOVERY REPORT

| Surrogate Compound | Added ug/L | Measured ug/L | %Rec | QC Limits |
|---|---|---|---|---|
| 1,2-Dichloroethane d4 | 10.0 | 9.90 | 99 | 74--120 |
| Toluene d8 | 10.0 | 9.84 | 98 | 80--120 |
| p-Bromofluorobenzene | 10.0 | 10.0 | 100 | 80--120 |

*= Value outside QC advisory limits.

REPORT COMMENTS: None

Analyst: HJC Reviewing Supervisor: MD

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Lab Nos.: 001-01-57850 - 008-01-57850

Date: 10-SEP-01

Received by: Krystal McDonald

Logged In by: Justin McMillan

# SAMPLE CONDITION QA/QC REPORT

This report provides information about the condition of the sample(s) and associated sample custody information on receipt at the laboratory.

| | | |
|---|---|---|
| Chain of Custody Form Completed & Signed | Yes | Comments: |
| Chain of Custody Seal | No | Comments: |
| Intact | N/A | Comments: |
| Signature Match Chain of Custody vs. Seal | N/A | Comments: |
| Temperature Received | 4 C | Comments: |
| Samples Received Within Holding Time | Yes | Comments: |
| Samples Received in Proper Containers | Yes | Comments: |
| Samples Received Properly Preserved(1) | Yes | Comments: |

**(1)Acid preservation of samples for volatile organics is not evaluated on this form.**
**Any preservation problems encountered for these samples are noted on the analytical parameter report pages.**

Record of client contact:

Who: _____ By: _____ Date/Time: _____

Method of Shipping: Hand del.

Additional comments: _____

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# Case Narrative

**18-Sep-01**

**HydroSolutions, Inc.**
**P.O. Box 80866**
**Billings, MT 59108**

**PROJECT NAME: CROWLEY LAW FIRM, BILLINGS, MT** **LOGIN NUMBER: 01-56153**

The following sample(s) were submitted to our Billings, Montana laboratory for analysis:

| LAB NUMBER | CLIENT SAMPLE ID | MATRIX | SAMPLED | SUBMITTED | ANALYSIS REQUEST |
|---|---|---|---|---|---|
| 01-56153-1 | MOC-8 | Water | 20-Jul-01 11:03 | 23-Jul-01 | Purgeable Organics (VOC's) Short List; Alkalinity as CaCO3; Calcium; Cation-Anion Balance; Chloride; Carbonate; Dissolved Organic Carbon; Fluoride; Iron, Dissolved; Total Hardness as CaCO3; Bicarbonate; Potassium; Magnesium; Manganese, Dissolved; Sodium; Nitrogen, Nitrate plus Nitrite; Sodium Adsorption Ratio; Sulfate; Strontium, Dissolved; Sulfide; Total Dissolved Solids at 180 C; Volatile Petroleum Hydrocarbons |
| 01-56153-2 | MOC-13 | Water | 20-Jul-01 13:51 | 23-Jul-01 | Alkalinity as CaCO3; Calcium; Cation-Anion Balance; Chloride; Carbonate; Dissolved Organic Carbon; Fluoride; Iron, Dissolved; Total Hardness as CaCO3; Bicarbonate; Potassium; Magnesium; Manganese, Dissolved; Sodium; Nitrogen, Nitrate plus Nitrite; Sodium Adsorption Ratio; Sulfate; Strontium, Dissolved; Sulfide; Total Dissolved Solids at 180 C; Volatile Petroleum Hydrocarbons |
| 01-56153-3 | MOC-15 | Water | 20-Jul-01 16:00 | 23-Jul-01 | Alkalinity as CaCO3; Calcium; Cation-Anion Balance; Chloride; Carbonate; Fluoride; Iron, Dissolved; Total Hardness as CaCO3; Bicarbonate; Potassium; Magnesium; Manganese, Dissolved; Sodium; Nitrogen, Nitrate plus Nitrite; Sodium Adsorption Ratio; Sulfate; Strontium, Dissolved; Total Dissolved Solids at 180 C; Volatile Petroleum Hydrocarbons |
| 01-56153-4 | MOC-4 | Water | 20-Jul-01 17:40 | 23-Jul-01 | Same as 01-56153-2 |
| 01-56153-5 | MOC-7 | Water | 21-Jul-01 09:50 | 23-Jul-01 | Same as 01-56153-3 |

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## Case Narrative

| | | | | | |
|---|---|---|---|---|---|
| 01-56153-6 | MOC-D1 | Water | 21-Jul-01 12:20 | 23-Jul-01 | Same as 01-56153-3 |
| 01-56153-7 | FPB93-5 | Water | 21-Jul-01 17:16 | 23-Jul-01 | Purgeable Organics (VOC's) Short List; Alkalinity as CaCO3; Calcium; Cation-Anion Balance; Chloride; Carbonate; Fluoride; Iron, Dissolved; Total Hardness as CaCO3; Bicarbonate; Potassium; Magnesium; Manganese, Dissolved; Sodium; Nitrogen, Nitrate plus Nitrite; Sodium Adsorption Ratio; Sulfate; Strontium, Dissolved; Total Dissolved Solids at 180 C; Volatile Petroleum Hydrocarbons |

On September 5, 2001, Volatile Organics by EPA Method 8260B were added to selected samples of this sample set to identify large unidentified peaks within the VPH analyses. The samples requested for 8260 analysis were ELI Laboratory ID #'s 01-56153-001 and –007. Additional analysis of sample 01-56153-007 could not be performed as no sample was remaining. The majority of the hydrocarbon response in the VPH analyses (aliphatic) of sample –001 was due to two peaks, one at 3.83 minutes and the other at 4.19 minutes. The 8260 analysis of this sample identified Methyl ethyl ketone (MEK) and Tetrahydrofuran (THF) as being the primary volatile constituents. MEK is a target 8260 analyte and was identified and quantitated against the calibration standards. THF was tentatively identified by Mass Spectral Library search and given an estimated quantitation based on its total ion response. The low spectral match quality for THF (provided) is due to the compound coeluting with one of the surrogates of the method. These two compounds are often associated with PVC glue.

Review Date: 9/11/01

Approved: Shari Endy for CA
Shari Endy
QA/QC Officer

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# EPA METHOD 8260B

| | | | |
|---|---|---|---|
| Client: | **HydroSolutions, Inc.** | Date Reported: | 09/07/01 |
| Sample ID: | MOC-8 | Date Sampled: | 07/20/01 11:03 |
| Project Info: | CROWLEY LAW FIRM, BILLINGS, MT | Date Received: | 07/23/01 |
| Lab ID: | 001-01-56153 | Date Analyzed: | 09/07/01 13:58 |
| Matrix: | WATER; pH= < 2 | | |

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 67-64-1 | **Acetone** | **(16)(J)** | 20 |
| 71-43-2 | Benzene | ND | 1.0 |
| 108-86-1 | Bromobenzene | ND | 1.0 |
| 74-97-5 | Bromochloromethane | ND | 1.0 |
| 75-27-4 | **Bromodichloromethane** | **1.7** | 1.0 |
| 75-25-2 | Bromoform | ND | 1.0 |
| 74-83-9 | Bromomethane | ND | 1.0 |
| 104-51-8 | n-Butylbenzene | ND | 1.0 |
| 135-98-8 | sec-Butylbenzene | ND | 1.0 |
| 98-06-6 | tert-Butylbenzene | ND | 1.0 |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 |
| 108-90-7 | Chlorobenzene | ND | 1.0 |
| 75-00-3 | Chloroethane | ND | 1.0 |
| 110-75-8 | 2-Chloroethylvinyl ether | ND | 1.0 |
| 67-66-3 | **Chloroform** | **2.1** | 1.0 |
| 74-87-3 | Chloromethane | ND | 1.0 |
| 95-49-8 | 2-Chlorotoluene | ND | 1.0 |
| 106-43-4 | 4-Chlorotoluene | ND | 1.0 |
| 124-48-1 | **Chlorodibromomethane** | **1.8** | 1.0 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 1.0 |
| 106-93-4 | 1,2-Dibromoethane | ND | 1.0 |
| 74-95-3 | Dibromomethane | ND | 1.0 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 |
| 75-71-8 | Dichlorodifluoromethane | ND | 1.0 |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 |
| 78-87-5 | 1,2-Dichloropropane | ND | 1.0 |
| 142-28-9 | 1,3-Dichloropropane | ND | 1.0 |
| 594-20-7 | 2,2-Dichloropropane | ND | 1.0 |
| 563-58-6 | 1,1-Dichloropropene | ND | 1.0 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1.0 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1.0 |
| 100-41-4 | **Ethylbenzene** | **(0.66)(J)** | 1.0 |
| 87-68-3 | Hexachlorobutadiene | ND | 1.0 |
| 591-78-6 | 2-Hexanone | ND | 20 |
| 1634-04-4 | Methyl-t-butyl ether | ND | 1.0 |
| 108-10-1 | Methyl isobutyl ketone | ND | 20 |
| 75-09-2 | Methylene chloride | ND | 1.0 |
| 78-93-3 | **Methyl ethyl ketone** | **1520(E)** | 20 |
| 91-20-3 | Naphthalene | ND | 1.0 |
| 98-82-8 | Isopropylbenzene | ND | 1.0 |
| 103-65-1 | n-Propylbenzene | ND | 1.0 |
| 99-87-6 | p-Isopropyltoluene | ND | 1.0 |
| 100-42-5 | Styrene | ND | 1.0 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1.0 |

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# EPA METHOD 8260B(Continued)

Client: **HydroSolutions, Inc.** Date Reported: 09/07/01
Sample ID: MOC-8 Lab ID: 001-01-56153

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 |
| 127-18-4 | Tetrachloroethene | ND | 1.0 |
| 108-88-3 | Toluene | ND | 1.0 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 1.0 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 1.0 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 |
| 79-01-6 | Trichloroethene | ND | 1.0 |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1.0 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 1.0 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 1.0 |
| 75-01-4 | Vinyl chloride | ND | 1.0 |
| 108383/106423 | **m+p-Xylenes** | **2.4** | 1.0 |
| 95-47-6 | **o-Xylene** | **(0.83)(J)** | 1.0 |
| 01330-20-7 | **Total Xylenes** | **3.2** | 1.0 |

**ND= Indicates compound was analyzed for but not detected.**
**E= Value exceeds calibration range, however there was insufficient sample for reanalysis.**
**J= Estimated value. Present, but less than the limit of quantitation.**

***Runtime Quality Assurance Report***

| SYSTEM MONITORING COMPOUNDS | CONCENTRATION(µg/L) ADDED | MEASURED | PERCENT RECOVERY | ACCEPTANCE RANGE |
|---|---|---|---|---|
| Dibromofluoromethane | 10 | 11 | 110 | 75--120 |
| 1,2-Dichloroethane d4 | 10 | 7.60 | 76 | 75--120 |
| Toluene d8 | 10 | 11.1 | 111 | 80--120 |
| p-Bromofluorobenzene | 10 | 11 | 110 | 80--120 |

REPORT COMMENTS: 8260B Analysis performed to identify unknown peaks in VPH analyses. Analyses performed outside of method recommended holding time. The two major constituents in this sample were Methyl ethyl ketone and Tetrahydrofuran. Tetrahydrofuran estimated concentration is 50 ug/L.

Analyst: JRR Reviewing Supervisor: [signature] /chem/IONTRAP1.i/vb090701.b/08sep07.d

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File: /chem/IONTRAP1.i/vb090701.b/08sep07.d
Spectrum: Average Spectrum: 7.677 to 7.686 min.
Library: /chem/database/NBS43K.l

| # | Match Quality | Entry Number | CAS Number | Name |
|---|---|---|---|---|
| 1 | 35 | 255 | 109-99-9 | Furan, tetrahydro- (8CI9CI) |
| 2 | 32 | 253 | 106-88-7 | Oxirane, ethyl- (9CI) |
| 3 | 22 | 31 | 75-19-4 | Cyclopropane (DOT)(8CI9CI) |
| 4 | 9 | 615 | 503-64-0 | Isocrotonic acid |
| 5 | 9 | 620 | 1759-53-1 | Cyclopropanecarboxylic acid (8CI9C |
| 6 | 9 | 256 | 116-11-0 | 1-Propene, 2-methoxy- (9CI) |
| 7 | 9 | 1305 | 5417-32-3 | 1,3-Dioxepin, 4,7-dihydro- (8CI9CI |
| 8 | 9 | 260 | 558-30-5 | Oxirane, 2,2-dimethyl- (9CI) |
| 9 | 9 | 26375 | 12295-17-9 | Chromium, bis[.mu.-[(1-.eta.:2,3-. |
| 10 | 9 | 496 | 674-82-8 | 2-Oxetanone, 4-methylene- (8CI9CI) |
| 11 | 7 | 283 | 33581-43-0 | Acetaldehyde, O-methyloxime (8CI9C |
| 12 | 7 | 2374 | 38836-39-4 | 2-Propanamine, N-(1-methylpropylid |
| 13 | 7 | 2327 | 930-83-6 | 3(2H)-Isoxazolone, 4,5-dimethyl- ( |
| 14 | 4 | 236 | 627-48-5 | Cyanic acid, ethyl ester (8CI9CI) |
| 15 | 4 | 263 | 627-40-7 | 1-Propene, 3-methoxy- (9CI) |
| 16 | 4 | 17208 | 13183-14-7 | 1-Propanol, 2,2-dimethyl-, carbona |
| 17 | 4 | 2439 | 1577-22-6 | 5-Hexenoic acid (8CI9CI) |
| 18 | 4 | 14912 | 54552-71-5 | Phosphonic dichloride, (2,2-dimeth |
| 19 | 4 | 22257 | 69745-79-5 | Benzoic acid, 4-[(trifluoroacetyl) |
| 20 | 4 | 1508 | 29921-38-8 | 1,3-Dioxolane, 4-ethyl- (8CI9CI) |

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# Case Narrative

**18-Sep-01**

**HydroSolutions, Inc.**
**P.O. Box 80866**
**Billings, MT 59108**

**PROJECT NAME: CROWLEY LAW FIRM** **LOGIN NUMBER: 01-56144**

The following sample(s) were submitted to our Billings, Montana laboratory for analysis:

| LAB NUMBER | CLIENT SAMPLE ID | MATRIX | SAMPLED | SUBMITTED | ANALYSIS REQUEST |
|---|---|---|---|---|---|
| 01-56144-1 | MOC-1B | Water | 18-Jul-01 19:25 | 20-Jul-01 | Alkalinity as CaCO3; Calcium; Cation-Anion Balance; Chloride; Carbonate; Fluoride; Iron, Dissolved; Total Hardness as CaCO3; Bicarbonate; Potassium; Magnesium; Manganese, Dissolved; Sodium; Nitrogen, Nitrate plus Nitrite; Sodium Adsorption Ratio; Sulfate; Strontium, Dissolved; Total Dissolved Solids at 180 C; Volatile Petroleum Hydrocarbons |
| 01-56144-2 | MOC-3 | Water | 18-Jul-01 17:20 | 20-Jul-01 | Same as 01-56144-1 |
| 01-56144-3 | MOC-6 | Water | 17-Jul-01 18:25 | 20-Jul-01 | Same as 01-56144-1 |
| 01-56144-4 | MOC-9 | Water | 17-Jul-01 13:13 | 20-Jul-01 | Purgeable Organics (VOC's) Short List; Alkalinity as CaCO3; Calcium; Cation-Anion Balance; Chloride; Carbonate; Fluoride; Iron, Dissolved; Total Hardness as CaCO3; Bicarbonate; Potassium; Magnesium; Manganese, Dissolved; Sodium; Nitrogen, Nitrate plus Nitrite; Sodium Adsorption Ratio; Sulfate; Strontium, Dissolved; Total Dissolved Solids at 180 C; Volatile Petroleum Hydrocarbons |
| 01-56144-5 | MOC-10 | Water | 17-Jul-01 16:25 | 20-Jul-01 | Same as 01-56144-1 |
| 01-56144-6 | MOC-12 | Water | 16-Jul-01 16:25 | 20-Jul-01 | Same as 01-56144-1 |
| 01-56144-7 | MOC-14 | Water | 16-Jul-01 20:25 | 20-Jul-01 | Same as 01-56144-1 |

On September 5, 2001, volatile organics by EPA Method 8260B was added to a representative sample of this sample set to identify two unidentified peaks within the VPH analyses. The sample requested for 8260 analysis was ELI Laboratory ID# 01-56144-004. The majority of the hydrocarbon response in the VPH analyses (aliphatic) of sample –004 was due to two peaks, one at 3.85 minutes and the other at 4.22 minutes. The 8260 analysis of this sample identified the larger peak as Methyl ethyl ketone (MEK). Due to the low level of contamination, the second peak was not identified. However, the relative retention times of these two peaks in the VPH analyses is similar to the analyses on the sample ID # 01-56153-001 also from HydroSolutions. In sample 01-56153-001 these peaks were identified by 8260B analysis as MEK and Tetrahydrofuran (THF). Tentatively, the peak at retention time 4.22 minutes is likely THF. These two compounds are often associated with PVC glue.

Review Date: 9/11/01

Approved: Shari Endy

Shari Endy
Quality Assurance Officer

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# EPA METHOD 8260B

| | | | |
|---|---|---|---|
| Client: | **HydroSolutions, Inc.** | Date Reported: | 09/07/01 |
| Sample ID: | MOC-9 | Date Sampled: | 07/17/01 13:13 |
| Project Info: | CROWLEY LAW FIRM | Date Received: | 07/20/01 |
| Lab ID: | 004-01-56144 | Date Analyzed: | 09/07/01 13:23 |
| Matrix: | WATER; pH= < 2 | | |

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 67-64-1 | Acetone | ND | 20 |
| 71-43-2 | Benzene | ND | 1.0 |
| 108-86-1 | Bromobenzene | ND | 1.0 |
| 74-97-5 | Bromochloromethane | ND | 1.0 |
| 75-27-4 | Bromodichloromethane | ND | 1.0 |
| 75-25-2 | Bromoform | ND | 1.0 |
| 74-83-9 | Bromomethane | ND | 1.0 |
| 104-51-8 | n-Butylbenzene | ND | 1.0 |
| 135-98-8 | sec-Butylbenzene | ND | 1.0 |
| 98-06-6 | tert-Butylbenzene | ND | 1.0 |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 |
| 108-90-7 | Chlorobenzene | ND | 1.0 |
| 75-00-3 | Chloroethane | ND | 1.0 |
| 110-75-8 | 2-Chloroethylvinyl ether | ND | 1.0 |
| 67-66-3 | Chloroform | ND | 1.0 |
| 74-87-3 | Chloromethane | ND | 1.0 |
| 95-49-8 | 2-Chlorotoluene | ND | 1.0 |
| 106-43-4 | 4-Chlorotoluene | ND | 1.0 |
| 124-48-1 | Chlorodibromomethane | ND | 1.0 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 1.0 |
| 106-93-4 | 1,2-Dibromoethane | ND | 1.0 |
| 74-95-3 | Dibromomethane | ND | 1.0 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 |
| 75-71-8 | Dichlorodifluoromethane | ND | 1.0 |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 |
| 78-87-5 | 1,2-Dichloropropane | ND | 1.0 |
| 142-28-9 | 1,3-Dichloropropane | ND | 1.0 |
| 594-20-7 | 2,2-Dichloropropane | ND | 1.0 |
| 563-58-6 | 1,1-Dichloropropene | ND | 1.0 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1.0 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1.0 |
| 100-41-4 | Ethylbenzene | ND | 1.0 |
| 87-68-3 | Hexachlorobutadiene | ND | 1.0 |
| 591-78-6 | 2-Hexanone | ND | 20 |
| 1634-04-4 | Methyl-t-butyl ether | ND | 1.0 |
| 108-10-1 | Methyl isobutyl ketone | ND | 20 |
| 75-09-2 | Methylene chloride | ND | 1.0 |
| 78-93-3 | **Methyl ethyl ketone** | **56** | 20 |
| 91-20-3 | Naphthalene | ND | 1.0 |
| 98-82-8 | Isopropylbenzene | ND | 1.0 |
| 103-65-1 | n-Propylbenzene | ND | 1.0 |
| 99-87-6 | p-Isopropyltoluene | ND | 1.0 |
| 100-42-5 | Styrene | ND | 1.0 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1.0 |

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# EPA METHOD 8260B(Continued)

Client: **HydroSolutions, Inc.**
Sample ID: MOC-9

Date Reported: 09/07/01
Lab ID: 004-01-56144

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 |
| 127-18-4 | Tetrachloroethene | ND | 1.0 |
| 108-88-3 | **Toluene** | **(0.85)(J)** | 1.0 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 1.0 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 1.0 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 |
| 79-01-6 | Trichloroethene | ND | 1.0 |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1.0 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 1.0 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 1.0 |
| 75-01-4 | Vinyl chloride | ND | 1.0 |
| 108383/106423 | m+p-Xylenes | ND | 1.0 |
| 95-47-6 | o-Xylene | ND | 1.0 |
| 01330-20-7 | Total Xylenes | ND | 1.0 |

**ND= Indicates compound was analyzed for but not detected.**
**J= Estimated value. Present, but less than the limit of quantitation.**

***Runtime Quality Assurance Report***

| SYSTEM MONITORING COMPOUNDS | CONCENTRATION(µg/L) ADDED | MEASURED | PERCENT RECOVERY | ACCEPTANCE RANGE |
|---|---|---|---|---|
| Dibromofluoromethane | 10 | 11.1 | 111 | 75--120 |
| 1,2-Dichloroethane d4 | 10 | 7.60 | 76 | 75--120 |
| Toluene d8 | 10 | 11 | 110 | 80--120 |
| p-Bromofluorobenzene | 10 | 10.7 | 107 | 80--120 |

REPORT COMMENTS: Analyses performed to identify unknown peaks in VPH analyses. Analyses performed outside of method recommended holding time. Also see HydroSolutions Report ELI Login #001-01-56153.

Analyst: JRR Reviewing Supervisor: [illegible] /chem/ION TRAP1.i/vb090701.b/07sep07.d

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## QUALITY ASSURANCE REPORT FOR EPA METHOD 8260B: METHOD BLANK

Sample ID: Quality Assurance Method Blank
Matrix: WATER
Extract Method: EPA 5030

Date Reported: 09/07/01
Date Analyzed: 09/07/01 10:12

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 67-64-1 | Acetone | ND | 20 |
| 71-43-2 | Benzene | ND | 1.0 |
| 108-86-1 | Bromobenzene | ND | 1.0 |
| 74-97-5 | Bromochloromethane | ND | 1.0 |
| 75-27-4 | Bromodichloromethane | ND | 1.0 |
| 75-25-2 | Bromoform | ND | 1.0 |
| 74-83-9 | Bromomethane | ND | 1.0 |
| 104-51-8 | n-Butylbenzene | ND | 1.0 |
| 135-98-8 | sec-Butylbenzene | ND | 1.0 |
| 98-06-6 | tert-Butylbenzene | ND | 1.0 |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 |
| 108-90-7 | Chlorobenzene | ND | 1.0 |
| 75-00-3 | Chloroethane | ND | 1.0 |
| 110-75-8 | 2-Chloroethylvinyl ether | ND | 1.0 |
| 67-66-3 | Chloroform | ND | 1.0 |
| 74-87-3 | Chloromethane | ND | 1.0 |
| 95-49-8 | 2-Chlorotoluene | ND | 1.0 |
| 106-43-4 | 4-Chlorotoluene | ND | 1.0 |
| 124-48-1 | Chlorodibromomethane | ND | 1.0 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 1.0 |
| 106-93-4 | 1,2-Dibromoethane | ND | 1.0 |
| 74-95-3 | Dibromomethane | ND | 1.0 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 |
| 75-71-8 | Dichlorodifluoromethane | ND | 1.0 |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 |
| 78-87-5 | 1,2-Dichloropropane | ND | 1.0 |
| 142-28-9 | 1,3-Dichloropropane | ND | 1.0 |
| 594-20-7 | 2,2-Dichloropropane | ND | 1.0 |
| 563-58-6 | 1,1-Dichloropropene | ND | 1.0 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1.0 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1.0 |
| 100-41-4 | Ethylbenzene | ND | 1.0 |
| 87-68-3 | Hexachlorobutadiene | ND | 1.0 |
| 591-78-6 | 2-Hexanone | ND | 20 |
| 1634-04-4 | Methyl-t-butyl ether | ND | 1.0 |
| 108-10-1 | Methyl isobutyl ketone | ND | 20 |
| 75-09-2 | Methylene chloride | ND | 1.0 |
| 78-93-3 | Methyl ethyl ketone | ND | 20 |
| 91-20-3 | Naphthalene | ND | 1.0 |
| 98-82-8 | Isopropylbenzene | ND | 1.0 |
| 103-65-1 | n-Propylbenzene | ND | 1.0 |
| 99-87-6 | p-Isopropyltoluene | ND | 1.0 |
| 100-42-5 | Styrene | ND | 1.0 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1.0 |

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## QUALITY ASSURANCE REPORT FOR EPA METHOD 8260B: METHOD BLANK (Continued)

Sample ID: Quality Assurance Method Blank
Matrix: WATER

Date Reported: 09/07/01
Date Analyzed: 09/07/01 10:12

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 |
| 127-18-4 | Tetrachloroethene | ND | 1.0 |
| 108-88-3 | Toluene | ND | 1.0 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 1.0 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 1.0 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 |
| 79-01-6 | Trichloroethene | ND | 1.0 |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1.0 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 1.0 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 1.0 |
| 75-01-4 | Vinyl chloride | ND | 1.0 |
| 108383/106423 | m+p-Xylenes | ND | 1.0 |
| 95-47-6 | o-Xylene | ND | 1.0 |
| 01330-20-7 | Total Xylenes | ND | 1.0 |

ND= Indicates compound was analyzed for but not detected.

*Runtime Quality Assurance Report*

| SYSTEM MONITORING COMPOUNDS | CONCENTRATION(µg/L) ADDED | MEASURED | PERCENT RECOVERY | ACCEPTANCE RANGE |
|---|---|---|---|---|
| Dibromofluoromethane | 10 | 9.90 | 99 | 75--120 |
| 1.2-Dichloroethane d4 | 10 | 7.74 | 77 | 75--120 |
| Toluene d8 | 10 | 11.8 | 118 | 80--120 |
| p-Bromofluorobenzene | 10 | 11.8 | 118 | 80--120 |

REPORT COMMENTS: None

Analyst: ZKR Reviewing Supervisor: [signature] /chem/IONTRAP1.i/vb090701.b/03sep07.d

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## QUALITY ASSURANCE REPORT FOR EPA METHOD 8260B: REFERENCE STANDARD BLANK MATRIX SPIKE

Sample ID: Quality Assurance Blank Matrix Spike
Matrix: WATER
Extract Method: EPA 5030

Date Reported: 09/07/01
Date Analyzed: 08/20/01 17:49

| SPIKE COMPOUNDS | CONCENTRATION(µg/L) ADDED | MEASURED | PERCENT RECOVERY | ACCEPTANCE RANGE |
|---|---|---|---|---|
| Acetone | 50 | 58.3 | 117 | 53–135 |
| Benzene | 5.00 | 5.09 | 102 | 77–122 |
| Bromobenzene | 5.00 | 5.06 | 101 | 80–121 |
| Bromochloromethane | 5.00 | 5.15 | 103 | 71–130 |
| Bromodichloromethane | 5.00 | 5.64 | 113 | 77–124 |
| Bromoform | 5.00 | 5.21 | 104 | 71–128 |
| Bromomethane | 5.00 | 4.48 | 90 | 46–148 |
| n-Butylbenzene | 5.00 | 4.77 | 95 | 76–122 |
| sec-Butylbenzene | 5.00 | 4.80 | 96 | 77–126 |
| tert-Butylbenzene | 5.00 | 4.52 | 90 | 75–128 |
| Carbon tetrachloride | 5.00 | 5.25 | 105 | 71–128 |
| Chlorobenzene | 5.00 | 5.17 | 103 | 81–121 |
| Chloroethane | 5.00 | 5.21 | 104 | 66–132 |
| 2-Chloroethylvinyl ether | 5.00 | 5.26 | 105 | 49–147 |
| Chloroform | 5.00 | 5.27 | 105 | 75–123 |
| Chloromethane | 5.00 | 5.94 | 119 | 47–140 |
| 2-Chlorotoluene | 5.00 | 4.86 | 97 | 82–126 |
| 4-Chlorotoluene | 5.00 | 4.96 | 99 | 81–126 |
| 1,2-Dibromo-3-chloropropane | 5.00 | 4.75 | 95 | 68–134 |
| 1,2-Dibromoethane | 5.00 | 5.91 | 118 | 77–126 |
| Dibromomethane | 5.00 | 5.04 | 101 | 78–125 |
| 1,2-Dichlorobenzene | 5.00 | 4.68 | 94 | 77–128 |
| 1,3-Dichlorobenzene | 5.00 | 5.18 | 104 | 80–123 |
| 1,4-Dichlorobenzene | 5.00 | 4.84 | 97 | 80–123 |
| Dichlorodifluoromethane | 5.00 | 5.87 | 117 | 44–134 |
| 1,1-Dichloroethane | 5.00 | 5.25 | 105 | 77–124 |
| 1,2-Dichloroethane | 5.00 | 5.29 | 106 | 69–126 |
| 1,1-Dichloroethene | 5.00 | 5.55 | 111 | 77–125 |
| cis-1,2-Dichloroethene | 5.00 | 5.14 | 103 | 73–125 |
| trans-1,2-Dichloroethene | 5.00 | 5.15 | 103 | 79–125 |
| 1,2-Dichloropropane | 5.00 | 5.10 | 102 | 71–126 |
| 1,3-Dichloropropane | 5.00 | 5.00 | 100 | 77–126 |
| 2,2-Dichloropropane | 5.00 | 5.08 | 102 | 70–141 |
| 1,1-Dichloropropene | 5.00 | 5.28 | 106 | 75–121 |
| cis-1,3-Dichloropropene | 5.00 | 5.29 | 106 | 77–142 |
| trans-1,3-Dichloropropene | 5.00 | 5.44 | 109 | 70–128 |
| Hexachlorobutadiene | 5.00 | 5.00 | 100 | 74–128 |
| 2-Hexanone | 50 | 60.8 | 122 | 66–131 |
| Methyl isobutyl ketone | 50 | 55.6 | 111 | 67–129 |
| Methylene chloride | 5.00 | 5.08 | 102 | 75–127 |
| Methyl ethyl ketone | 50 | 60.6 | 121 | 57–128 |
| Naphthalene | 5.00 | 4.75 | 95 | 53–147 |
| Isopropylbenzene | 5.00 | 4.28 | 86 | 77–129 |
| n-Propylbenzene | 5.00 | 4.83 | 97 | 77–126 |
| p-Isopropyltoluene | 5.00 | 5.00 | 100 | 74–123 |
| Styrene | 5.00 | 5.20 | 104 | 77–118 |
| 1,1,1,2-Tetrachloroethane | 5.00 | 5.14 | 103 | 77–124 |
| 1,1,2,2-Tetrachloroethane | 5.00 | 5.21 | 104 | 76–130 |
| Tetrachloroethene | 5.00 | 5.28 | 106 | 74–125 |
| Toluene | 5.00 | 5.50 | 110 | 78–125 |
| 1,2,3-Trichlorobenzene | 5.00 | 5.31 | 106 | 54–153 |
| 1,2,4-Trichlorobenzene | 5.00 | 5.41 | 108 | 65–135 |
| 1,1,1-Trichloroethane | 5.00 | 5.59 | 112 | 73–126 |
| 1,1,2-Trichloroethane | 5.00 | 5.12 | 102 | 76–129 |
| Trichloroethene | 5.00 | 5.68 | 114 | 78–125 |
| Trichlorofluoromethane | 5.00 | 4.99 | 100 | 52–132 |
| 1,2,3-Trichloropropane | 5.00 | 5.42 | 108 | 77–134 |
| 1,3,5-Trimethylbenzene | 5.00 | 4.81 | 96 | 77–125 |
| 1,2,4-Trimethylbenzene | 5.00 | 4.88 | 98 | 78–121 |
| Vinyl chloride | 5.00 | 6.31 | 126 | 66–132 |
| m+p-Xylenes | 10 | 10.4 | 104 | 78–132 |
| o-Xylene | 5.00 | 5.18 | 104 | 78–127 |

*Runtime Quality Assurance Report*

| SYSTEM MONITORING COMPOUNDS | CONCENTRATION(µg/L) ADDED | MEASURED | PERCENT RECOVERY | ACCEPTANCE RANGE |
|---|---|---|---|---|
| Dibromofluoromethane | 10 | 9.78 | 98 | 75–120 |
| 1,2-Dichloroethane d4 | 10 | 9.17 | 92 | 75–120 |
| Toluene d8 | 10 | 9.97 | 100 | 80–120 |
| p-Bromofluorobenzene | 10 | 10.1 | 101 | 80–120 |

REPORT COMMENTS: None

Analyst: ____ Reviewing Supervisor: ____ /chem/IONTRAP1.i/vb082001.b/16aug20.d

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/chem/IONTRAP1.i/vb090701.b/08sep07.d/08sep07.dat
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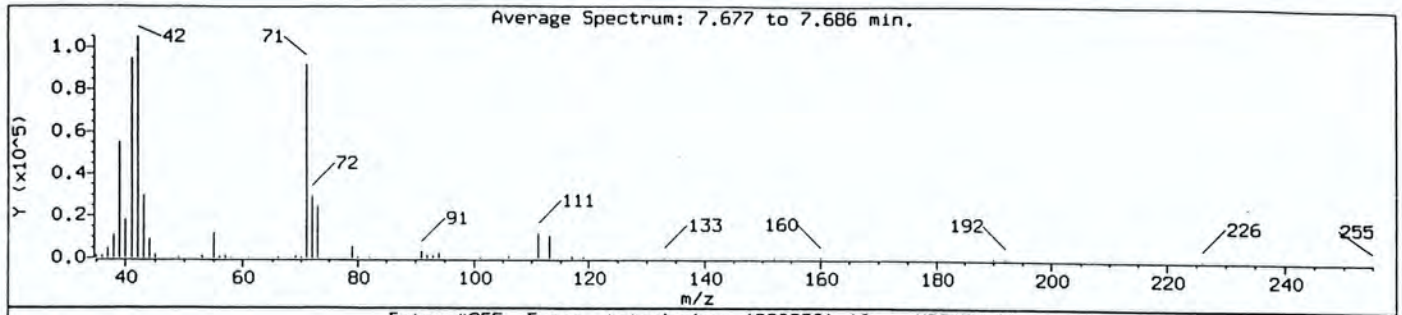
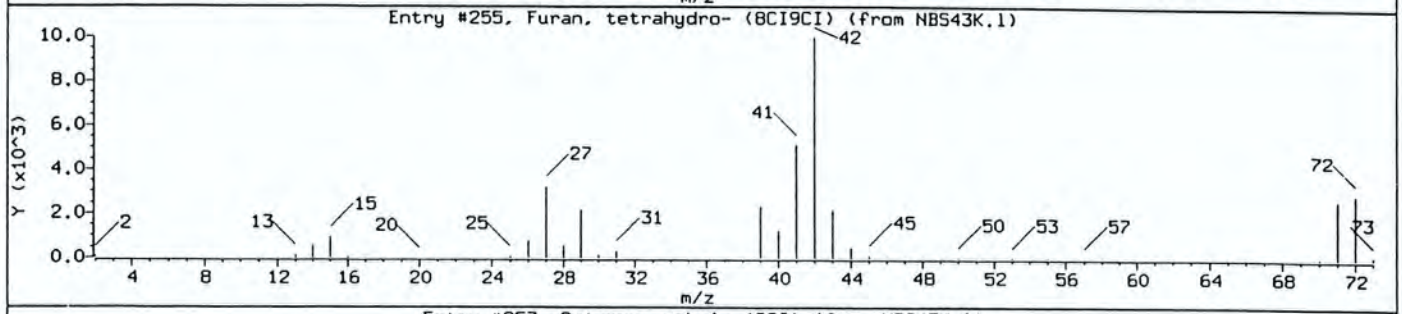
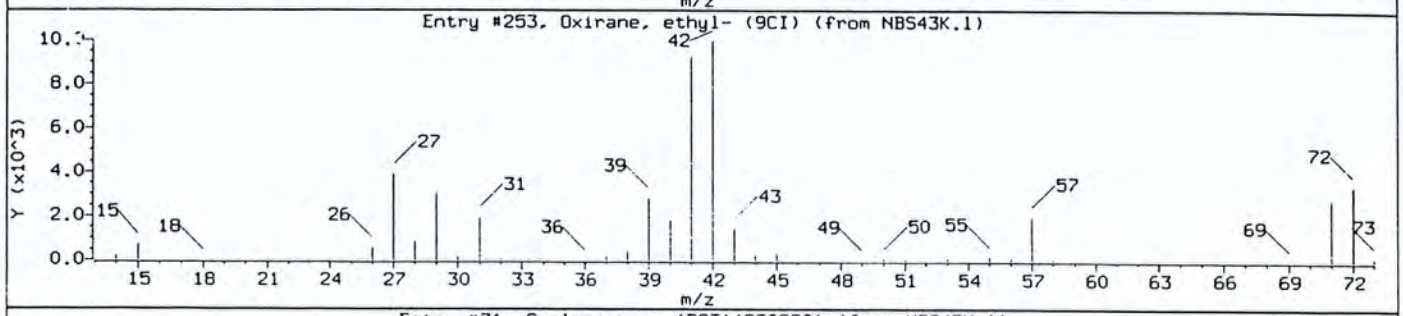
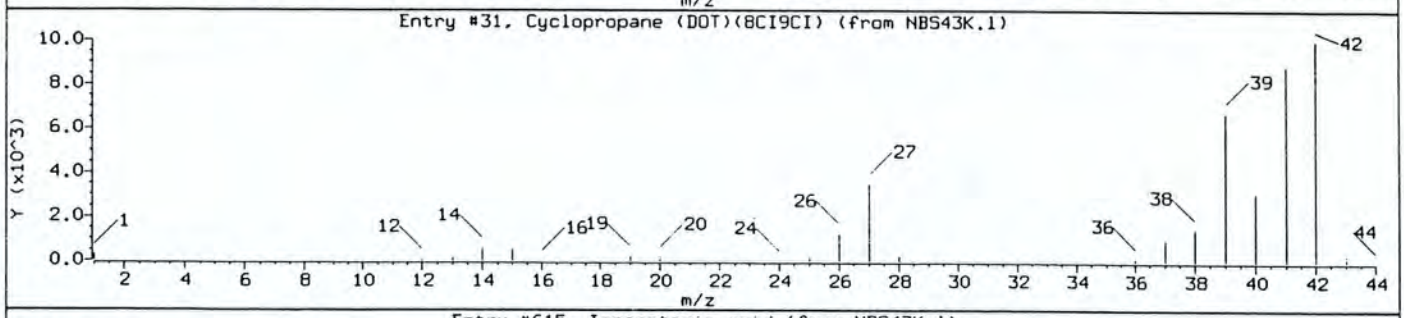
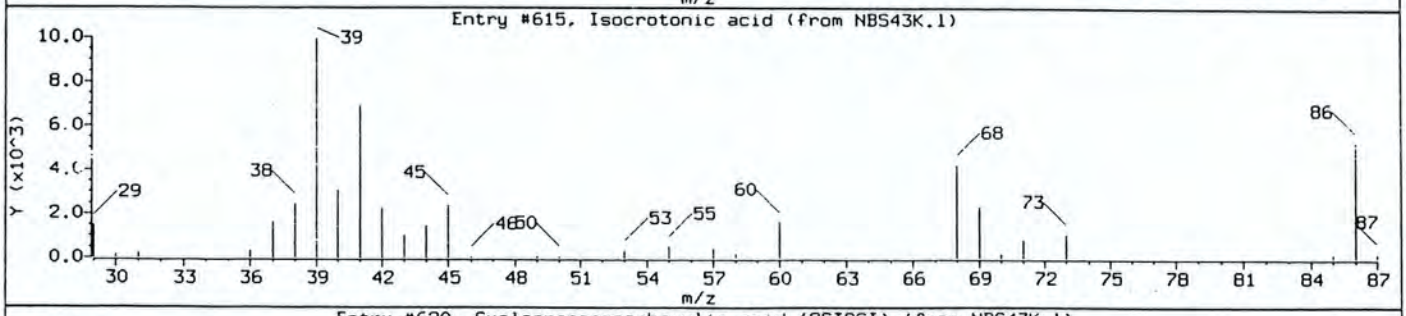
Instrument: IONTRAP1.i
Client Sample ID:

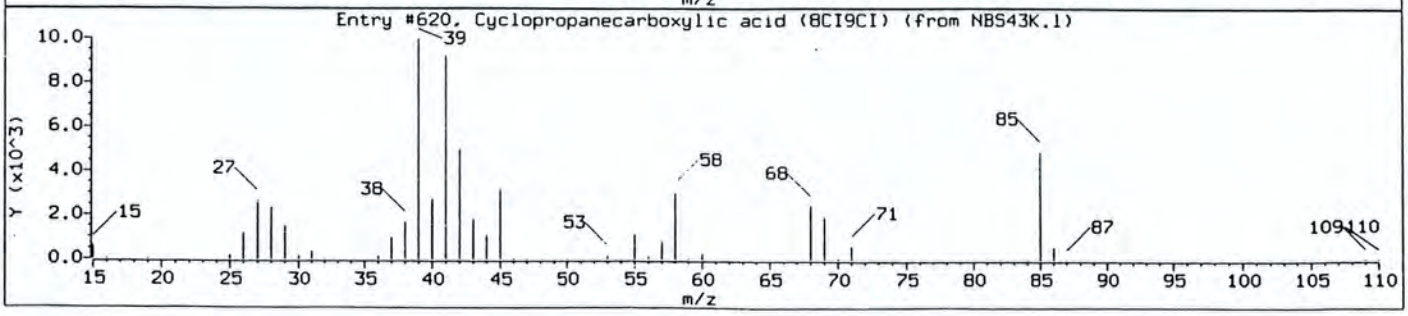


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## QUALITY ASSURANCE REPORT FOR EPA METHOD 8260B: METHOD BLANK

Sample ID: Quality Assurance Method Blank
Matrix: WATER
Extract Method: EPA 5030

Date Reported: 09/07/01
Date Analyzed: 09/07/01 10:12

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 67-64-1 | Acetone | ND | 20 |
| 71-43-2 | Benzene | ND | 1.0 |
| 108-86-1 | Bromobenzene | ND | 1.0 |
| 74-97-5 | Bromochloromethane | ND | 1.0 |
| 75-27-4 | Bromodichloromethane | ND | 1.0 |
| 75-25-2 | Bromoform | ND | 1.0 |
| 74-83-9 | Bromomethane | ND | 1.0 |
| 104-51-8 | n-Butylbenzene | ND | 1.0 |
| 135-98-8 | sec-Butylbenzene | ND | 1.0 |
| 98-06-6 | tert-Butylbenzene | ND | 1.0 |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 |
| 108-90-7 | Chlorobenzene | ND | 1.0 |
| 75-00-3 | Chloroethane | ND | 1.0 |
| 110-75-8 | 2-Chloroethylvinyl ether | ND | 1.0 |
| 67-66-3 | Chloroform | ND | 1.0 |
| 74-87-3 | Chloromethane | ND | 1.0 |
| 95-49-8 | 2-Chlorotoluene | ND | 1.0 |
| 106-43-4 | 4-Chlorotoluene | ND | 1.0 |
| 124-48-1 | Chlorodibromomethane | ND | 1.0 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 1.0 |
| 106-93-4 | 1,2-Dibromoethane | ND | 1.0 |
| 74-95-3 | Dibromomethane | ND | 1.0 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 |
| 75-71-8 | Dichlorodifluoromethane | ND | 1.0 |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 |
| 78-87-5 | 1,2-Dichloropropane | ND | 1.0 |
| 142-28-9 | 1,3-Dichloropropane | ND | 1.0 |
| 594-20-7 | 2,2-Dichloropropane | ND | 1.0 |
| 563-58-6 | 1,1-Dichloropropene | ND | 1.0 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1.0 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1.0 |
| 100-41-4 | Ethylbenzene | ND | 1.0 |
| 87-68-3 | Hexachlorobutadiene | ND | 1.0 |
| 591-78-6 | 2-Hexanone | ND | 20 |
| 1634-04-4 | Methyl-t-butyl ether | ND | 1.0 |
| 108-10-1 | Methyl isobutyl ketone | ND | 20 |
| 75-09-2 | Methylene chloride | ND | 1.0 |
| 78-93-3 | Methyl ethyl ketone | ND | 20 |
| 91-20-3 | Naphthalene | ND | 1.0 |
| 98-82-8 | Isopropylbenzene | ND | 1.0 |
| 103-65-1 | n-Propylbenzene | ND | 1.0 |
| 99-87-6 | p-Isopropyltoluene | ND | 1.0 |
| 100-42-5 | Styrene | ND | 1.0 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1.0 |

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## QUALITY ASSURANCE REPORT FOR EPA METHOD 8260B: METHOD BLANK (Continued)

Sample ID: Quality Assurance Method Blank
Matrix: WATER

Date Reported: 09/07/01
Date Analyzed: 09/07/01 10:12

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 |
| 127-18-4 | Tetrachloroethene | ND | 1.0 |
| 108-88-3 | Toluene | ND | 1.0 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 1.0 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 1.0 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 |
| 79-01-6 | Trichloroethene | ND | 1.0 |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1.0 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 1.0 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 1.0 |
| 75-01-4 | Vinyl chloride | ND | 1.0 |
| 108383/106423 | m+p-Xylenes | ND | 1.0 |
| 95-47-6 | o-Xylene | ND | 1.0 |
| 01330-20-7 | Total Xylenes | ND | 1.0 |

ND= Indicates compound was analyzed for but not detected.

### Runtime Quality Assurance Report

| SYSTEM MONITORING COMPOUNDS | CONCENTRATION(µg/L) ADDED | MEASURED | PERCENT RECOVERY | ACCEPTANCE RANGE |
|---|---|---|---|---|
| Dibromofluoromethane | 10 | 9.90 | 99 | 75--120 |
| 1,2-Dichloroethane d4 | 10 | 7.74 | 77 | 75--120 |
| Toluene d8 | 10 | 11.8 | 118 | 80--120 |
| p-Bromofluorobenzene | 10 | 11.8 | 118 | 80--120 |

REPORT COMMENTS: None

Analyst: JRR Reviewing Supervisor: /chem/IONTRAP1.i/vb090701.b/03sep07.d

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## QUALITY ASSURANCE REPORT FOR EPA METHOD 8260B: REFERENCE STANDARD BLANK MATRIX SPIKE

Sample ID: Quality Assurance Blank Matrix Spike
Matrix: WATER
Extract Method: EPA 5030

Date Reported: 09/07/01
Date Analyzed: 08/20/01 17:49

| SPIKE COMPOUNDS | CONCENTRATION(µg/L) ADDED | MEASURED | PERCENT RECOVERY | ACCEPTANCE RANGE |
|---|---|---|---|---|
| Acetone | 50 | 58.3 | 117 | 53–135 |
| Benzene | 5.00 | 5.09 | 102 | 77–122 |
| Bromobenzene | 5.00 | 5.06 | 101 | 80–121 |
| Bromochloromethane | 5.00 | 5.15 | 103 | 71–130 |
| Bromodichloromethane | 5.00 | 5.64 | 113 | 77–124 |
| Bromoform | 5.00 | 5.21 | 104 | 71–128 |
| Bromomethane | 5.00 | 4.48 | 90 | 46–148 |
| n-Butylbenzene | 5.00 | 4.77 | 95 | 76–122 |
| sec-Butylbenzene | 5.00 | 4.80 | 96 | 77–126 |
| tert-Butylbenzene | 5.00 | 4.52 | 90 | 75–128 |
| Carbon tetrachloride | 5.00 | 5.25 | 105 | 71–128 |
| Chlorobenzene | 5.00 | 5.17 | 103 | 81–121 |
| Chloroethane | 5.00 | 5.21 | 104 | 66–132 |
| 2-Chloroethylvinyl ether | 5.00 | 5.26 | 105 | 49–147 |
| Chloroform | 5.00 | 5.27 | 105 | 75–123 |
| Chloromethane | 5.00 | 5.94 | 119 | 47–140 |
| 2-Chlorotoluene | 5.00 | 4.86 | 97 | 82–126 |
| 4-Chlorotoluene | 5.00 | 4.96 | 99 | 81–126 |
| 1,2-Dibromo-3-chloropropane | 5.00 | 4.75 | 95 | 68–134 |
| 1,2-Dibromoethane | 5.00 | 5.91 | 118 | 77–126 |
| Dibromomethane | 5.00 | 5.04 | 101 | 78–125 |
| 1,2-Dichlorobenzene | 5.00 | 4.68 | 94 | 77–128 |
| 1,3-Dichlorobenzene | 5.00 | 5.18 | 104 | 80–123 |
| 1,4-Dichlorobenzene | 5.00 | 4.84 | 97 | 80–123 |
| Dichlorodifluoromethane | 5.00 | 5.87 | 117 | 44–134 |
| 1,1-Dichloroethane | 5.00 | 5.25 | 105 | 77–124 |
| 1,2-Dichloroethane | 5.00 | 5.29 | 106 | 69–126 |
| 1,1-Dichloroethene | 5.00 | 5.55 | 111 | 77–125 |
| cis-1,2-Dichloroethene | 5.00 | 5.14 | 103 | 73–125 |
| trans-1,2-Dichloroethene | 5.00 | 5.15 | 103 | 79–125 |
| 1,2-Dichloropropane | 5.00 | 5.10 | 102 | 71–126 |
| 1,3-Dichloropropane | 5.00 | 5.00 | 100 | 77–126 |
| 2,2-Dichloropropane | 5.00 | 5.08 | 102 | 70–141 |
| 1,1-Dichloropropene | 5.00 | 5.28 | 106 | 75–121 |
| cis-1,3-Dichloropropene | 5.00 | 5.29 | 106 | 77–142 |
| trans-1,3-Dichloropropene | 5.00 | 5.44 | 109 | 70–128 |
| Hexachlorobutadiene | 5.00 | 5.00 | 100 | 74–128 |
| 2-Hexanone | 50 | 60.8 | 122 | 66–131 |
| Methyl isobutyl ketone | 50 | 55.6 | 111 | 67–129 |
| Methylene chloride | 5.00 | 5.08 | 102 | 75–127 |
| Methyl ethyl ketone | 50 | 60.6 | 121 | 57–128 |
| Naphthalene | 5.00 | 4.75 | 95 | 53–147 |
| Isopropylbenzene | 5.00 | 4.28 | 86 | 77–129 |
| n-Propylbenzene | 5.00 | 4.83 | 97 | 77–126 |
| p-Isopropyltoluene | 5.00 | 5.00 | 100 | 74–123 |
| Styrene | 5.00 | 5.20 | 104 | 77–118 |
| 1,1,1,2-Tetrachloroethane | 5.00 | 5.14 | 103 | 77–124 |
| 1,1,2,2-Tetrachloroethane | 5.00 | 5.21 | 104 | 76–130 |
| Tetrachloroethene | 5.00 | 5.28 | 106 | 74–125 |
| Toluene | 5.00 | 5.50 | 110 | 78–125 |
| 1,2,3-Trichlorobenzene | 5.00 | 5.31 | 106 | 54–153 |
| 1,2,4-Trichlorobenzene | 5.00 | 5.41 | 108 | 65–135 |
| 1,1,1-Trichloroethane | 5.00 | 5.59 | 112 | 73–126 |
| 1,1,2-Trichloroethane | 5.00 | 5.12 | 102 | 76–129 |
| Trichloroethene | 5.00 | 5.68 | 114 | 78–125 |
| Trichlorofluoromethane | 5.00 | 4.99 | 100 | 52–132 |
| 1,2,3-Trichloropropane | 5.00 | 5.42 | 108 | 77–134 |
| 1,3,5-Trimethylbenzene | 5.00 | 4.81 | 96 | 77–125 |
| 1,2,4-Trimethylbenzene | 5.00 | 4.88 | 98 | 78–121 |
| Vinyl chloride | 5.00 | 6.31 | 126 | 66–132 |
| m+p-Xylenes | 10 | 10.4 | 104 | 78–132 |
| o-Xylene | 5.00 | 5.18 | 104 | 78–127 |

*Runtime Quality Assurance Report*

| SYSTEM MONITORING COMPOUNDS | CONCENTRATION(µg/L) ADDED | MEASURED | PERCENT RECOVERY | ACCEPTANCE RANGE |
|---|---|---|---|---|
| Dibromofluoromethane | 10 | 9.78 | 98 | 75–120 |
| 1,2-Dichloroethane d4 | 10 | 9.17 | 92 | 75–120 |
| Toluene d8 | 10 | 9.97 | 100 | 80–120 |
| p-Bromofluorobenzene | 10 | 10.1 | 101 | 80–120 |

REPORT COMMENTS: None

Analyst: JRA Reviewing Supervisor: [signature] /chem/IONTRAP1.i/vb082001.b/16aug20.d

# WATER SAMPLING & MONITORING RECORD

**SITE ID:** [redacted] MOC - 13

**HydroSolutions Inc, Billings, MT**

| | | | |
|---|---|---|---|
| Date: 11/2/01 | Arrival Time: | Purge Time: 10 :00 - 14:30 = : min | Sampling Time: 1430 |
| Owner/ Operator: Murphy Oil Corp. | | Address: | State: MT |
| Location Description: Spot; , Sect. 10 , T 28 N S, R 51 E Describe: | | | |
| Water Source: (Well) Stream Spring Pond | | Other: | |
| Sampler's Name: J. Shaffer, M. Nitz | | Weather: Chilly, clear, little breeze | |
| Water Source Purpose (Use): Monitoring well | | TD: 55 .35 ft. | Out Dia.: . ft. / Well Log ? (Y) N |
| Inside Casing Material: PVC | | | In Dia.: .167 ft. / Well Locked ? (Y) N |
| S.W.L. 37 . 08 ft. below MP. | Casing: (Stickup) Flush | MP Stickup: 2 . 82 ft. above Ground Level | Well Pad: (Y) N |
| Measuring Point (MP): TOSC | | | Elev. ft / Aquifer: Qw |

| Meter Type (Mauuf.): | Model: | Calibrated: | Method: | Meter Type (Manuf.): | Model: | Calibrated: | Method: | Flow Rate: .8 gpm |
|---|---|---|---|---|---|---|---|---|
| pH: Hanna | 9025C | | | SC: YSI | 85 | | | bucket gauge |
| ORP/Eh: Hanna | 9023 | | | DO: YSI | 85 | | | |
| Water Level Probe: Solinst | | | | Other Method: | | | | |

Bore Volume (R-in, TD & SWL-ft): 0.163 $R^2$*(TD - SWL) = 11.91 Gallons 35.7 gal. Purge Method: Pump

| 24-Hr. Time: | Gallons | Minutes | Rate (gpm) | SC (mS µS) | Temp. °C (YSI) | DO (mg/l) | pH @ Temp.°C | Eh (mv) @ Temp.°C |
|---|---|---|---|---|---|---|---|---|
| 1415 | 204 | 255 | 0.8 | 37.43 | 15.4 | 0.10 | 7.59 @ 15.2 °C | -395.8 @ 15.1 °C |
| 1425 | | | 0.8 | 37.46 | 15.4 | 0.05 | 7.65 @ 15.1 °C | -249.3 @ 15.1 °C |
| 1432 | | | 0.8 | 37.64 | 15.5 | 0.03 | 7.68 @ 15.2°C | -209.2 @ 15.2°C |
| | | | | | | | @ °C | @ °C |
| | | | | | | | @ °C | @ °C |

Description of Water (color, odor, sediment, clarity, sheen, etc.): Dark green (almost opaque). Oily smell. No sed. (not that could be seen, anyway). Odor still present @ sample time

| | | |
|---|---|---|
| Water Temperature: °Celsius | DO mg/l | Other Parameters & Results: |
| Alkalinity: | Salanity: ppt | |
| Field SC: µmhos/cm @ °C (Field Temperature) | | |
| Corrected SC: µmhos/cm @ 25 °C | | |
| pH: s. u. @ °C | Eh: mv @ °C | |

Water Quality Samples: (Y) N

Sampling Method: Pump all but VPH. Use PVC bailer for VPH

Sample Type: (Grab) Composite

| Sample Containers (No.: Size & Type): | Filtering: | Preservative: | Handling: | Testing Parameters: |
|---|---|---|---|---|
| 4 : 40 ml, glass | No / No | HCl / HCl | chill / " | VPH / 8260 Long List |
| 2 : 1000 ml, glass | No / No | $H_2SO_4$ / $H_2SO_4$ | " / " | TPH-DRO + carbon scan / " |
| 1 : 500 / 2 : 250 ml, plastic | No / No / Yes | None / $H_2SO_4$ / $HNO_3$ | " / " | Na, Ca, $HCO_3$, Hardness etc / Nitrate, nitrite / Diss Fe, Mn, Se |

| Decontamination | Inorganic | Describe: |
|---|---|---|
| | (Organic) | soap & water, ~~spr~~ scrub, spray w/ distilled. |

NOTES: After 4 hrs pumping, water clear, moderate "sour crude" odor

Does Reverse Side Contains More Details? Yes (No)

*Form Revised 10/24/01*

# WATER SAMPLING & MONITORING RECORD

**SITE ID:** [redacted] MOC-16

**HydroSolutions Inc, Billings, MT**

| | | | |
|---|---|---|---|
| Date: 11/2/01 | Arrival Time: 0845 | Purge Time: [redacted]:50 - 15:40 = :40 min | Sampling Time: 1545 |
| Owner/ Operator: Murphy Oil Corp. | | Address: | State: MT |
| Location Description: Spot; ____, Sect. 10, T 28 N S, R 51 E [redacted] | | Describe: N 48° 11.803', W 105° 6.755' | |
| Water Source: (Well) Stream Spring Pond | | Other: | |
| Sampler's Name: J. Sheffer, M. Nitz | | Weather: Chilly, sunny, few high clouds, little breeze | |
| Water Source Purpose (Use): Monitoring Well | | TD: 52.5 ft. | Out Dia.: . ft. / Well Log ? (Y) N |
| Inside Casing Material: PVC | | | In Dia.: .167 ft. / Well Locked ? Y (N) |
| S.W.L. 30.26 ft. below MP. | Casing: (Stickup) Flush | MP Stickup: 3.0 ft. above Ground Level | Well Pad: (Y) N |
| Measuring Point (MP): TOSC | | | Elev. 2070 ft / Aquifer: Qw |

| Meter Type (Manuf.): | Model: | Calibrated: | Method: | Meter Type (Manuf.): | Model: | Calibrated: | Method: | Flow Rate: .75 gpm |
|---|---|---|---|---|---|---|---|---|
| pH: HI 9025C | 9025C | | | SC: YSI | 85 | — | | |
| ORP/Eh: HI | 9023 | | | DO: YSI | 85 | | | |
| Water Level Probe: Solinst | | — | — | Other Method: | | | | |

Bore Volume (R-in, TD & SWL-ft): 0.163 $R^2$(TD - SWL) = 14.5 Gallons 43.5 gal | Purge Method: Pump / compressor developed

| 24-Hr. Time: | Gallons | Minutes | Rate (gpm) | SC (mS/µS) | YSI Temp. °C | DO (mg/l) | pH @ Temp.°C | Eh (mv) @ Temp.°C |
|---|---|---|---|---|---|---|---|---|
| 1520 | 15 | 20 | .75 | 43.36 | 9.8 | 2.59 | 7.03 @ 9.5 °C | -103.9 @ 9.5 °C |
| 1525 | | 25 | .75 | 44.09 | 9.9 | 1.54 | 6.97 @ 9.6 °C | -104.6 @ 9.6 °C |
| 1530 | | 30 | .75 | 42.50 | 9.8 | 2.10 | 7.04 @ 9.5 °C | -104.4 @ 9.5 °C |
| 1535 | | 35 | .75 | 43.65 | 9.8 | 2.08 | 7.04 @ 9.5 °C | -104.5 @ 9.5 °C |
| | | | | | | | @ °C | @ °C |

Description of Water (color, odor, sediment, clarity, sheen, etc.): Brown - gray at start of whole pumping. [illegible] no odor [illegible] all clear at 25 minutes

| | | |
|---|---|---|
| Water Temperature: 9.8 °Celsius | DO 2.08 mg/l | Other Parameters & Results: |
| Alkalinity: — — | Salanity: — ppt | |
| Field SC: — — µmhos/cm @ ___ °C (Field Temperature) | | |
| Corrected SC: 4365 ___ µmhos/cm @ 25 °C | | |
| pH: 7.04 s. u. @ 9.5 °C | Eh: -104.5 mv @ 9.5 °C | |

Water Quality Samples: (Y) N | Sampling Method: pumped all but VPH which was bailed w/ PVC bailer | Sample Type: (Grab) Composite

| Sample Containers (No.: Size & Type): | Filtering: | Preservative: | Handling: | Testing Parameters: |
|---|---|---|---|---|
| 4 : 1000 ml, glass | no | $H_2SO_4$ | Chill | TPH - DRO |
| 4 : 500 ml, plastic | no | None | " | commons TDS - Chloride |
| 4 : 250 ml, plastic | yes yes no no | $HNO_3$ $H_2SO_4$ | " | Diss Fe, Mn, Sr Nitrate + Nitrite |
| 8 40 ml glass VOA's | no | HCl | " | VPH, & 8260 Long |
| Decontamination: Inorganic / Organic | Describe: | | | |

NOTES: Bailer purged 3 gal. - lots of sediment. Whole purge at 1515 still sediment, Duplicate samples taken

Does Reverse Side Contains More Details? (Yes) No

Form Revised 10/24/01

# WATER SAMPLING & MONITORING RECORD

**SITE ID:** [redacted] MOC-18R

**HydroSolutions Inc, Billings, MT**

| | | | |
|---|---|---|---|
| **Date:** 11/3/01 | **Arrival Time:** 0905 | **Purge Time:** 09 :05 - 11 :10 = __ :125 min | **Sampling Time:** 1145 |
| **Owner/ Operator:** Murphy Oil Corp | | **Address:** | **State:** MT |
| **Location Description: Spot;** ____, **Sect.** 10, **T** 28 **N S, R** 51 **E** [redacted] | | **Describe:** N 48° 11.964' W 105° 06.592' | |
| **Water Source:** (Well) Stream Spring Pond | | **Other:** | |
| **Sampler's Name:** M. Nitz, J. Shaffer | | **Weather:** ~~Sat~~ Cool breezy (West), high clouds, Cloudy to the West | |
| **Water Source Purpose (Use):** Monit. Well | | **TD:** 48 .64 ft. | **Out Dia.:** . ft. / **Well Log ?** (Y) N |
| **Inside Casing Material:** PVC | | | **In Dia.:** . ft. / **Well Locked ?** Y (N) |
| **S.W.L.** 33 . 30 **ft. below MP.** | **Casing:** (Stickup) Flush | **MP Stickup:** 2 . 10 **ft. above Ground Level** | **Well Pad:** (Y) N |
| **Measuring Point (MP):** TOSC | | | **Elev.** 2088 ft / **Aquifer:** Qw |

| Meter Type (Manuf.): | Model: | Calibrated: | Method: | Meter Type (Manuf.): | Model: | Calibrated: | Method: | Flow Rate: 0.75 gpm |
|---|---|---|---|---|---|---|---|---|
| pH: Hanna | 9025C | 11/2 | | SC: YSI | 85 | — | | Bucket |
| ORP/Eh: Hanna | 9022 | 11/2 | | DO: YSI | 85 | — | | |
| Water Level Probe: Solinst | | | | Other Method: | | | | |

**Bore Volume** (R-in, TD & SWL-ft): 0.163 $R^2$*(TD - SWL) = 9.6 **Gallons** 28.8 **Purge Method:** compressor development

| 24-Hr. Time: | Gallons | Minutes | Rate (gpm) | SC (mS) µS) | Temp. °C | DO (mg/l) | pH @ Temp.°C | Eh (mv) @ Temp.°C |
|---|---|---|---|---|---|---|---|---|
| 1130 | 11.25 | 15 | .75 | 46.29 | 9.8 | 5.65 | 7.29 @ 9.4 °C | -83.9 @ 9.5 °C |
| 1135 | 15 | 20 | .75 | 44.47 | 9.8 | 5.32 | 7.29 @ 9.5 °C | -82.7 @ 9.5 °C |
| 1140 | 18.75 | 25 | .75 | 43.97 | 9.8 | 4.98 | 7.29 @ 9.5 °C | -83.6 @ 9.5 °C |
| | | | | | | | @ °C | @ °C |
| | | | | | | | @ °C | @ °C |

**Description of Water** (color, odor, sediment, clarity, sheen, etc.): Brown water @ beginning of pumping clearing slightly @ 10 min. No oder. Clear [illegible] @ 15 mins. Clear [illegible] @ 20 mins.

| | | |
|---|---|---|
| **Water Temperature:** 9.8 °Celsius | **DO** 4.98 mg/l | **Other Parameters & Results:** |
| **Alkalinity:** — — | **Salanity:** — ppt | |
| **Field SC:** — — µmhos/cm @ ___ °C (Field Temperature) | | |
| **Corrected SC:** 4397 ___ µmhos/cm @ 25 °C | | |
| **pH:** 7.29 s. u. @ 9.5 °C | **Eh:** -83.6 mv @ 9.5 °C | |

| | | |
|---|---|---|
| **Water Quality Samples:** (Y) N | **Sampling Method:** Pump all but VPH & 8260 PVC Bailer | **Sample Type:** (Grab) Composite |

| Sample Containers (No.: Size & Type): | Filtering: | Preservative: | Handling: | Testing Parameters: |
|---|---|---|---|---|
| 2 : 500 ml, plastic | No | None | Chill | common's Na, Ca, HCO3, Hardness, etc |
| 2 : 1000 ml, glass | No | H2SO4 | " | TPH-DRO |
| 4 : 40 ml, VOA glass | NO NO | HCl | " | VPH 8260 Long List |
| 2 50 ml plastic | NO/YES | H2SO4/HNO3 | " | Total/Diss Fe, Mn, Sr |

**Decontamination** **Inorganic** (Organic) **Describe:** soap & water, rinse, spray w/ distilled

**NOTES:** Began pumping at 1115.

Does Reverse Side Contains More Details? Yes No

*Form Revised 10/24/01*

# WATER SAMPLING & MONITORING RECORD

**SITE ID:** [redacted]- MOC-14

**HydroSolutions Inc, Billings, MT**

| | | | |
|---|---|---|---|
| Date: 11/2/01 | Arrival Time: 1035 | Purge Time: 11:45-13:05 = :80 min | Sampling Time: 1313 |
| Owner/ Operator: Murphy Oil Corp. | | Address: | State: MT |
| Location Description: Spot; _____, Sect. 10, T 28 N S, R 51 E W | | Describe: | |
| Water Source: (Well) Stream Spring Pond | | Other: | |
| Sampler's Name: M. Nitz, J. Shaffer | | Weather: Chilly, breeze picking up. Few high clouds | |
| Water Source Purpose (Use): Monit. Well | | TD: 55.68 ft. | Out Dia.: ___ ft. / Well Log ? (Y) N |
| Inside Casing Material: ~~PVC Top Steel Csg~~ PVC | | | In Dia.: 2" ft. / Well Locked ? (Y) N |
| S.W.L. 35.51 ft. below MP. | Casing: (Stickup) Flush | MP Stickup: 2.16 ft. above Ground Level | Well Pad: (Y) N |
| Measuring Point (MP): TOSC | | | Elev. _____ ft / Aquifer: Qw |

| Meter Type (Manuf.): | Model: | Calibrated: | Method: | Meter Type (Manuf.): | Model: | Calibrated: | Method: | Flow Rate: 1 gpm |
|---|---|---|---|---|---|---|---|---|
| pH: Hanna | 9025 | 11/2/01 | | SC: YSI | 85 | — | | |
| ORP/Eh: Hanna | 9023 | 11/2/01 | | DO: YSI | 85 | — | | |
| Water Level Probe: | Solinst | — | — | Other Method: | | | | |

Bore Volume (R-in, TD & SWL-ft): 0.163 $R^2$*(TD - SWL) = 13.09 Gallons 39 gal | Purge Method: Pump

| 24-Hr. Time: | Gallons | Minutes | Rate (gpm) | SC (mS/µS) YSI | Temp. °C | DO (mg/l) | pH @ Temp.°C | Eh (mv) @ Temp.°C |
|---|---|---|---|---|---|---|---|---|
| 1200 | 15 | 15 | 1 gpm | 56.7 | 11.8 | 0.98 | 6.92 @ 11.5 °C | -102.9 @ °C |
| 1250 | 65 | 65 | 1 gpm | 57.5 | 11.7 | 0.05 | 6.95 @ 11.6 °C | -105.5 @ 11.5 °C |
| 1305 | 80 | 80 | 1 gpm | 57.7 | 11.8 | 0.05 | 6.98 @ 11.5 °C | -106.0 @ 11.5 °C |
| | | | | | | | @ °C | @ °C |
| | | | | | | | @ °C | @ °C |

Description of Water (color, odor, sediment, clarity, sheen, etc.): Clear, no odor, some sed @ beginning.

| | | |
|---|---|---|
| Water Temperature: 11.8 °Celsius | DO 0.05 mg/l | Other Parameters & Results: |
| Alkalinity: — — | Salanity: — ppt | |
| Field SC: ~~57.7~~ ~~mS~~ µmhos/cm @ 11.8 °C (Field Temperature) | | |
| Corrected SC: 5770 µmhos/cm @ 25 °C | | |
| pH: 6.98 s. u. @ 11.6 °C | Eh: -106.0 mv @ 11.5 °C | |

| | | |
|---|---|---|
| Water Quality Samples: (Y) N | Sampling Method: Pumped all but VPH which was bailed w/ PVC bailer | Sample Type: (Grab) Composite |

| Sample Containers (No.: Size & Type): | Filtering: | Preservative: | Handling: | Testing Parameters: |
|---|---|---|---|---|
| 4 : 40 ml, glass | no | HCl | chill | VPH |
| | no | HCl | chill | 8260 Long |
| 2 : 1000 ml, glass | no | $H_2SO_4$ | chill | TPH-DRO > w/carbon scan |
| | no | $H_2SO_4$ | chill | TPH-DRO |
| 2 : 250 ml, plastic | no | $H_2SO_4$ | chill | Nitrate, Nitrite |
| 1 : 500 ml, plastic | no | None | chill | Ca, Na, Hardness, etc. |
| | yes | $HNO_3$ | chill | Diss. Fe, Mn, Se |

| Decontamination | Inorganic | Describe: Soap & water wash, rinse, distilled spray. |
|---|---|---|
| | (Organic) | |

NOTES:

Does Reverse Side Contains More Details? Yes No

*Form Revised 10/24/01*

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# Case Narrative

29-Nov-01

Tom Osborne
HydroSolutions, Inc.
P.O. Box 80866
Billings, MT 59108

PROJECT NAME: CROWLEY LAW FIRM

LOGIN NUMBER: 01-59779

The following sample(s) were submitted to our Billings, Montana laboratory for analysis:

| LAB NUMBER | CLIENT SAMPLE ID | MATRIX | SAMPLED | SUBMITTED | ANALYSIS REQUEST |
|---|---|---|---|---|---|
| 01-59779-1 | MOC-13 | Water | 02-Nov-01 14:30 | 05-Nov-01 | Purgeable Organics (VOC's) Long List; Chloride; DRO with Carbon Scan; Iron, Dissolved; Manganese, Dissolved; Strontium, Dissolved; Total Dissolved Solids at 180 C; Volatile Petroleum Hydrocarbons |
| 01-59779-2 | MOC-14 | Water | 02-Nov-01 13:13 | 05-Nov-01 | Same as 01-59779-1 |
| 01-59779-3 | MOC-16 | Water | 02-Nov-01 15:45 | 05-Nov-01 | Purgeable Organics (VOC's) Long List; Alkalinity as CaCO3; Calcium; Chloride; Carbonate; DRO with Carbon Scan; Fluoride; Iron, Dissolved; Total Hardness as CaCO3; Bicarbonate; Potassium; Magnesium; Manganese, Dissolved; Sodium; Nitrogen, Nitrate plus Nitrite; Sodium Adsorption Ratio; Sulfate; Strontium, Dissolved; Total Dissolved Solids at 180 C; Volatile Petroleum Hydrocarbons |
| 01-59779-4 | MOC-18 | Water | 03-Nov-01 11:45 | 05-Nov-01 | Same as 01-59779-3 |
| 01-59779-5 | TRIP BLANK | Water | N/A | 05-Nov-01 | Purgeable Organics (VOC's) Long List |

Comments: VPH and 8260 analyses results do not agree for the amount of Benzene found in Sample 01-59779-2. For volatile analysis, the sample was provided in four replicate vials labeled at the time of sample login as Vial A, Vial B, Vial C, and Vial D. Vials A and B were analyzed by EPA method 8260B with both 8260B analyses having similar results. Vials C and D were analyzed by the VPH method and were also consistent with each other. The VPH analyses results for benzene however, were more than a factor of ten higher than the 8260 results. Vial D was split for an additional 8260B analysis and the accuracy of the VPH results on this vial was confirmed. Differences between the VPH and 8260B results are likely due to the sampling process in collecting the replicate vials. Confirmatory duplicate analyses for VPH and 8260 B were performed outside of method recommended holding time.

Caroline A. Valkenburg
11-28-01

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## LABORATORY ANALYSIS REPORT

| | | | | |
|---|---|---|---|---|
| **HydroSolutions, Inc.** | **Project ID:** | **CROWLEY LAW FIRM** | | |
| **Tom Osborne** | **Sample ID:** | **MOC-13** | | |
| **P.O. Box 80866** | **Laboratory ID:** | **01-59779-1** | | |
| **Billings, MT 59108** | **Sample Matrix:** | **Water** | | |
| | **Sample Date:** | **02-Nov-01 1430** | | |
| | **Received at lab:** | **05-Nov-01** | **Reported:** | **14-Nov-01** |

| | Results | Units | Qual | Reporting Limit | Regulatory Limit | Method | Analyzed | |
|---|---|---|---|---|---|---|---|---|
| Chloride | 13500 | mg/l | | 1 | | EPA 300.0 | 06-Nov-01 2042 | LDV |
| Solids, Total Dissolved at 180 C | 21500 | mg/l | | 10 | | SM 2540C | 08-Nov-01 1424 | AK/LDV |
| Iron, Dissolved | 1.2 | mg/l | | 0.03 | | EPA 200.7 | 06-Nov-01 2355 | RLH |
| Manganese, Dissolved | 0.58 | mg/l | | 0.01 | | EPA 200.7 | 06-Nov-01 2355 | RLH |
| Strontium, Dissolved | 17 | mg/l | | 0.1 | | EPA 200.7 | 06-Nov-01 2355 | RLH |

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## LABORATORY ANALYSIS REPORT

| | | | | |
|---|---|---|---|---|
| **HydroSolutions, Inc.** | **Project ID:** | **CROWLEY LAW FIRM** | | |
| **Tom Osborne** | **Sample ID:** | **MOC-14** | | |
| **P.O. Box 80866** | **Laboratory ID:** | **01-59779-2** | | |
| **Billings, MT 59108** | **Sample Matrix:** | **Water** | | |
| | **Sample Date:** | **02-Nov-01 1313** | | |
| | **Received at lab:** | **05-Nov-01** | **Reported:** | **14-Nov-01** |

| | Results | Units | Qual | Reporting Limit | Regulatory Limit | Method | Analyzed | |
|---|---|---|---|---|---|---|---|---|
| Chloride | 24000 | mg/l | | 1 | | EPA 300.0 | 06-Nov-01 2114 | LDV |
| Solids, Total Dissolved at 180 C | 36200 | mg/l | | 10 | | SM 2540C | 08-Nov-01 1429 | AK/LDV |
| Iron, Dissolved | 3.0 | mg/l | | 0.03 | | EPA 200.7 | 06-Nov-01 2359 | RLH |
| Manganese, Dissolved | 4.74 | mg/l | | 0.01 | | EPA 200.7 | 06-Nov-01 2359 | RLH |
| Strontium, Dissolved | 25.8 | mg/l | | 0.1 | | EPA 200.7 | 06-Nov-01 2359 | RLH |

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## LABORATORY ANALYSIS REPORT

| | | | | |
|---|---|---|---|---|
| **HydroSolutions, Inc.** | **Project ID:** | **CROWLEY LAW FIRM** | | |
| **Tom Osborne** | **Sample ID:** | **MOC-16** | | |
| **P.O. Box 80866** | **Laboratory ID:** | **01-59779-3** | | |
| **Billings, MT 59108** | **Sample Matrix:** | **Water** | | |
| | **Sample Date:** | **02-Nov-01 1545** | | |
| | **Received at lab:** | **05-Nov-01** | **Reported:** | **14-Nov-01** |

| | Results | Units | Qual | Reporting Limit | Regulatory Limit | Method | Analyzed | |
|---|---|---|---|---|---|---|---|---|
| Calcium | 647 | mg/l | | 1 | | EPA 200.7 | 07-Nov-01 0010 | RLH |
| Magnesium | 357 | mg/l | | 1 | | EPA 200.7 | 07-Nov-01 0010 | RLH |
| Potassium | 130 | mg/l | | 1 | | EPA 200.7 | 07-Nov-01 0010 | RLH |
| Sodium | 9650 | mg/l | | 1 | | EPA 200.7 | 07-Nov-01 0010 | RLH |
| Hardness, Total as CaCO3 | 3080 | mg/l | | 1 | | Calculated | | |
| Chloride | 15500 | mg/l | | 1 | | EPA 300.0 | 06-Nov-01 2135 | LDV |
| Sulfate | 918 | mg/l | | 1 | | EPA 300.0 | 06-Nov-01 2135 | LDV |
| Alkalinity as CaCO3 | 434 | mg/l | | 1 | | SM2320B | 07-Nov-01 1010 | AK/LDV |
| Bicarbonate | 529 | mg/l | | 1 | | SM2320B | 07-Nov-01 1010 | AK/LDV |
| Carbonate | <1 | mg/l | | 1 | | SM2320B | 07-Nov-01 1010 | AK/LDV |
| Solids, Total Dissolved at 180 C | 27100 | mg/l | | 10 | | SM 2540C | 08-Nov-01 1420 | AK/LDV |
| Sodium Adsorption Ratio | 75.6 | | | | | Calculated | | |
| Nitrogen, Nitrate plus Nitrite | 4.14 | mg/l | | 0.05 | | EPA 353.2 | 06-Nov-01 1442 | BS |
| Fluoride | 0.33 | mg/l | | 0.1 | | SM 4500FC mod | 05-Nov-01 1630 | DLR |
| Iron, Dissolved | <0.25 | mg/l | (1) | 0.25 | | EPA 200.7 | 07-Nov-01 0010 | RLH |
| Manganese, Dissolved | 0.08 | mg/l | | 0.01 | | EPA 200.7 | 07-Nov-01 0010 | RLH |
| Strontium, Dissolved | 16 | mg/l | | 0.1 | | EPA 200.7 | 07-Nov-01 0010 | RLH |

(1) Detection limit raised due to matrix interference.

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## LABORATORY ANALYSIS REPORT

| | | | | |
|---|---|---|---|---|
| **HydroSolutions, Inc.** | **Project ID:** | **CROWLEY LAW FIRM** | | |
| **Tom Osborne** | **Sample ID:** | **MOC-18** R | | |
| **P.O. Box 80866** | **Laboratory ID:** | **01-59779-4** | | |
| **Billings, MT 59108** | **Sample Matrix:** | **Water** | | |
| | **Sample Date:** | **03-Nov-01 1145** | | |
| | **Received at lab:** | **05-Nov-01** | **Reported:** | **14-Nov-01** |

| | Results | Units | Qual | Reporting Limit | Regulatory Limit | Method | Analyzed | |
|---|---|---|---|---|---|---|---|---|
| Calcium | 610 | mg/l | | 1 | | EPA 200.7 | 07-Nov-01 0013 | RLH |
| Magnesium | 305 | mg/l | | 1 | | EPA 200.7 | 07-Nov-01 0013 | RLH |
| Potassium | 130 | mg/l | | 1 | | EPA 200.7 | 07-Nov-01 0013 | RLH |
| Sodium | 9190 | mg/l | | 1 | | EPA 200.7 | 07-Nov-01 0013 | RLH |
| Hardness, Total as CaCO3 | 2780 | mg/l | | 1 | | Calculated | | |
| Chloride | 16500 | mg/l | | 1 | | EPA 300.0 | 06-Nov-01 2156 | LDV |
| Sulfate | 1320 | mg/l | | 1 | | EPA 300.0 | 13-Nov-01 1424 | LDV |
| Alkalinity as CaCO3 | 352 | mg/l | | 1 | | SM2320B | 07-Nov-01 1015 | AK/LDV |
| Bicarbonate | 429 | mg/l | | 1 | | SM2320B | 07-Nov-01 1015 | AK/LDV |
| Carbonate | <1 | mg/l | | 1 | | SM2320B | 07-Nov-01 1015 | AK/LDV |
| Solids, Total Dissolved at 180 C | 26400 | mg/l | | 10 | | SM 2540C | 08-Nov-01 1421 | AK/LDV |
| Sodium Adsorption Ratio | 75.9 | | | | | Calculated | | |
| Nitrogen, Nitrate plus Nitrite | 13.0 | mg/l | | 0.05 | | EPA 353.2 | 06-Nov-01 1455 | BS |
| Fluoride | 0.39 | mg/l | | 0.1 | | SM 4500FC mod | 05-Nov-01 1640 | DLR |
| Iron, Dissolved | <0.25 | mg/l | (1) | 0.25 | | EPA 200.7 | 07-Nov-01 0013 | RLH |
| Manganese, Dissolved | 0.29 | mg/l | | 0.01 | | EPA 200.7 | 07-Nov-01 0013 | RLH |
| Strontium, Dissolved | 15 | mg/l | | 0.1 | | EPA 200.7 | 07-Nov-01 0013 | RLH |

(1) Detection limit raised due to matrix interference.

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Lab Nos. 01-59779-1-4

## QUALITY ASSURANCE DATA PACKAGE

This report is a summary of the results of the quality assurance tests performed with the sample analyses. They are performed to determine if the methodology is in control and to monitor the laboratory's ability to produce accurate and precise results. The date the quality assurance sample was analyzed is consistent with Energy Laboratories' Quality Assurance Plan.

| Constituents | Duplicate Analysis - - - mg/l (ppm) - - - Original | Duplicate | Spiked Analysis % Recovery | Blank Analysis mg/l (ppm) | Calibration Sample Analysis mg/l (ppm) | True Value, Acceptable +/- 10% mg/l (ppm) |
|---|---|---|---|---|---|---|
| Calcium | 59 | 59 | 97 | <1 | 50 | 50 |
| Magnesium | 24 | 24 | 102 | <1 | 50 | 50 |
| Potassium | 4 | 5 | 113 | <1 | 54 | 50 |
| Sodium | 61 | 62 | 94 | <1 | 50 | 50 |
| Chloride | 24000 | 23300 | 94 | <1 | 25 | 25 |
| Sulfate | 987 | 977 | 107 | <1 | 105 | 100 |
| Alkalinity as CaCO3 | 514 | 490 | 105 | <1 | 101 | 100 |
| Solids, Total Dissolved at 180 C | 3240 | 3400 | 103 | <10 | NA | NA |
| Nitrogen, Nitrate plus Nitrite | 1.05 | 1.05 | 99 | <0.05 | 5.37 | 5.42 |
| Fluoride | 2.72 | 2.72 | 102 | <0.1 | 3.52 | 3.76 |
| Iron, Dissolved | 0.06 | 0.06 | 104 | <0.03 | 5.13 | 5 |
| Manganese, Dissolved | <0.01 | <0.01 | 95 | <0.01 | 4.65 | 5 |
| Strontium, Dissolved | 0.6 | 0.6 | 97 | <0.1 | 4.8 | 5 |

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# EPA METHOD 8260B

| | | | |
|---|---|---|---|
| Client: | **HydroSolutions, Inc.** | Date Reported: | 11/19/01 |
| Sample ID: | MOC-13 | Date Sampled: | 11/02/01 14:30 |
| Project Info: | CROWLEY LAW FIRM | Date Received: | 11/05/01 |
| Lab ID: | 001-01-59779 | Date Analyzed: | 11/16/01 17:35 |
| Matrix: | WATER; pH= < 2 | | |

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 67-64-1 | Acetone | ND | 20 |
| 107-02-8 | Acrolein | ND | 20 |
| 107-13-1 | Acrylonitrile | ND | 20 |
| **71-43-2** | **Benzene** | **2.5** | 1.0 |
| 108-86-1 | Bromobenzene | ND | 1.0 |
| 74-97-5 | Bromochloromethane | ND | 1.0 |
| 75-27-4 | Bromodichloromethane | ND | 1.0 |
| 75-25-2 | Bromoform | ND | 1.0 |
| 74-83-9 | Bromomethane | ND | 1.0 |
| 104-51-8 | n-Butylbenzene | ND | 1.0 |
| **135-98-8** | **sec-Butylbenzene** | **(0.77)(J)** | 1.0 |
| 98-06-6 | tert-Butylbenzene | ND | 1.0 |
| 75-15-0 | Carbon disulfide | ND | 1.0 |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 |
| 108-90-7 | Chlorobenzene | ND | 1.0 |
| 124-48-1 | Chlorodibromomethane | ND | 1.0 |
| 75-00-3 | Chloroethane | ND | 1.0 |
| 110-75-8 | 2-Chloroethylvinyl ether | ND | 1.0 |
| 67-66-3 | Chloroform | ND | 1.0 |
| 74-87-3 | Chloromethane | ND | 1.0 |
| 95-49-8 | 2-Chlorotoluene | ND | 1.0 |
| 106-43-4 | 4-Chlorotoluene | ND | 1.0 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 1.0 |
| 106-93-4 | 1,2-Dibromoethane | ND | 1.0 |
| 74-95-3 | Dibromomethane | ND | 1.0 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 |
| 75-71-8 | Dichlorodifluoromethane | ND | 1.0 |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 |
| 78-87-5 | 1,2-Dichloropropane | ND | 1.0 |
| 142-28-9 | 1,3-Dichloropropane | ND | 1.0 |
| 594-20-7 | 2,2-Dichloropropane | ND | 1.0 |
| 563-58-6 | 1,1-Dichloropropene | ND | 1.0 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1.0 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1.0 |
| **100-41-4** | **Ethylbenzene** | **(0.69)(J)** | 1.0 |
| 87-68-3 | Hexachlorobutadiene | ND | 1.0 |
| 591-78-6 | 2-Hexanone | ND | 20 |
| 74-88-4 | Iodomethane | ND | 1.0 |
| **98-82-8** | **Isopropylbenzene** | **(0.45)(J)** | 1.0 |
| 99-87-6 | p-Isopropyltoluene | ND | 1.0 |
| 1634-04-4 | Methyl-t-butyl ether | ND | 1.0 |
| 78-93-3 | Methyl ethyl ketone | ND | 20 |
| 108-10-1 | Methyl isobutyl ketone | ND | 20 |
| 75-09-2 | Methylene chloride | ND | 1.0 |

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# EPA METHOD 8260B(Continued)

Client: **HydroSolutions, Inc.** Date Reported: 11/19/01
Sample ID: MOC-13 Lab ID: 001-01-59779

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 91-20-3 | **Naphthalene** | **1.4** | 1.0 |
| 103-65-1 | **n-Propylbenzene** | **(0.75)(J)** | 1.0 |
| 100-42-5 | Styrene | ND | 1.0 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1.0 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 |
| 127-18-4 | Tetrachloroethene | ND | 1.0 |
| 108-88-3 | Toluene | ND | 1.0 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 1.0 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 1.0 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 |
| 79-01-6 | **Trichloroethene** | **(0.40)(J)** | 1.0 |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1.0 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 1.0 |
| 95-63-6 | **1,2,4-Trimethylbenzene** | **(0.50)(J)** | 1.0 |
| 108-05-4 | Vinyl acetate | ND | 1.0 |
| 75-01-4 | Vinyl chloride | ND | 1.0 |
| 108383/106423 | **m+p-Xylenes** | **(0.18)(J)** | 1.0 |
| 95-47-6 | **o-Xylene** | **(0.31)(J)** | 1.0 |

**ND= Indicates compound was analyzed for but not detected.**
**J= Estimated value. Present, but less than the limit of quantitation.**

***Runtime Quality Assurance Report***

| SYSTEM MONITORING COMPOUNDS | CONCENTRATION(µg/L) ADDED | MEASURED | PERCENT RECOVERY | ACCEPTANCE RANGE |
|---|---|---|---|---|
| Dibromofluoromethane | 10 | 9.81 | 98 | 74--121 |
| 1,2-Dichloroethane d4 | 10 | 11.6 | 116 | 72--116 |
| Toluene d8 | 10 | 10.2 | 102 | 85--115 |
| p-Bromofluorobenzene | 10 | 11.1 | 111 | 87--124 |

REPORT COMMENTS: None

Analyst: Reviewing Supervisor: /chem/5971A.i/va111601.b/nov161201012.d

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# EPA METHOD 8260B

Client: **HydroSolutions, Inc.**
Sample ID: MOC-14
Project Info: CROWLEY LAW FIRM
Lab ID: 002-01-59779
Matrix: WATER; pH= < 2

Date Reported: 11/19/01
Date Sampled: 11/02/01 13:13
Date Received: 11/05/01
Date Analyzed: 11/15/01 17:26

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 67-64-1 | Acetone | ND | 20 |
| 107-02-8 | Acrolein | ND | 20 |
| 107-13-1 | Acrylonitrile | ND | 20 |
| 71-43-2 | **Benzene** | **4.4** | 1.0 |
| 108-86-1 | Bromobenzene | ND | 1.0 |
| 74-97-5 | Bromochloromethane | ND | 1.0 |
| 75-27-4 | Bromodichloromethane | ND | 1.0 |
| 75-25-2 | Bromoform | ND | 1.0 |
| 74-83-9 | Bromomethane | ND | 1.0 |
| 104-51-8 | n-Butylbenzene | ND | 1.0 |
| 135-98-8 | sec-Butylbenzene | ND | 1.0 |
| 98-06-6 | tert-Butylbenzene | ND | 1.0 |
| 75-15-0 | Carbon disulfide | ND | 1.0 |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 |
| 108-90-7 | Chlorobenzene | ND | 1.0 |
| 124-48-1 | Chlorodibromomethane | ND | 1.0 |
| 75-00-3 | Chloroethane | ND | 1.0 |
| 110-75-8 | 2-Chloroethylvinyl ether | ND | 1.0 |
| 67-66-3 | Chloroform | ND | 1.0 |
| 74-87-3 | Chloromethane | ND | 1.0 |
| 95-49-8 | 2-Chlorotoluene | ND | 1.0 |
| 106-43-4 | 4-Chlorotoluene | ND | 1.0 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 1.0 |
| 106-93-4 | 1,2-Dibromoethane | ND | 1.0 |
| 74-95-3 | Dibromomethane | ND | 1.0 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 |
| 75-71-8 | Dichlorodifluoromethane | ND | 1.0 |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 |
| 78-87-5 | 1,2-Dichloropropane | ND | 1.0 |
| 142-28-9 | 1,3-Dichloropropane | ND | 1.0 |
| 594-20-7 | 2,2-Dichloropropane | ND | 1.0 |
| 563-58-6 | 1,1-Dichloropropene | ND | 1.0 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1.0 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1.0 |
| 100-41-4 | Ethylbenzene | ND | 1.0 |
| 87-68-3 | Hexachlorobutadiene | ND | 1.0 |
| 591-78-6 | 2-Hexanone | ND | 20 |
| 74-88-4 | Iodomethane | ND | 1.0 |
| 98-82-8 | Isopropylbenzene | ND | 1.0 |
| 99-87-6 | p-Isopropyltoluene | ND | 1.0 |
| 1634-04-4 | Methyl-t-butyl ether | ND | 1.0 |
| 78-93-3 | Methyl ethyl ketone | ND | 20 |
| 108-10-1 | Methyl isobutyl ketone | ND | 20 |
| 75-09-2 | **Methylene chloride** | **(0.28)(J)** | 1.0 |

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## EPA METHOD 8260B(Continued)

| | | | |
|---|---|---|---|
| Client: | **HydroSolutions, Inc.** | Date Reported: | 11/19/01 |
| Sample ID: | MOC-14 | Lab ID: | 002-01-59779 |

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 91-20-3 | Naphthalene | ND | 1.0 |
| 103-65-1 | n-Propylbenzene | ND | 1.0 |
| 100-42-5 | Styrene | ND | 1.0 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1.0 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 |
| 127-18-4 | Tetrachloroethene | ND | 1.0 |
| 108-88-3 | **Toluene** | **(0.75)(J)** | 1.0 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 1.0 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 1.0 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 |
| 79-01-6 | **Trichloroethene** | **(0.27)(J)** | 1.0 |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1.0 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 1.0 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 1.0 |
| 108-05-4 | Vinyl acetate | ND | 1.0 |
| 75-01-4 | Vinyl chloride | ND | 1.0 |
| 108383/106423 | m+p-Xylenes | ND | 1.0 |
| 95-47-6 | o-Xylene | ND | 1.0 |

**ND= Indicates compound was analyzed for but not detected.**

**J= Estimated value. Present, but less than the limit of quantitation.**

***Runtime Quality Assurance Report***

| SYSTEM MONITORING COMPOUNDS | CONCENTRATION(µg/L) ADDED | MEASURED | PERCENT RECOVERY | ACCEPTANCE RANGE |
|---|---|---|---|---|
| Dibromofluoromethane | 10 | 10.1 | 101 | 74--121 |
| 1,2-Dichloroethane d4 | 10 | 10 | 100 | 72--116 |
| Toluene d8 | 10 | 9.31 | 93 | 85--115 |
| p-Bromofluorobenzene | 10 | 9.29 | 93 | 87--124 |

REPORT COMMENTS: None

Analyst: 6 Reviewing Supervisor: [illegible] /chem/5971A.i/va111501.b/nov151501015.d

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# EPA METHOD 8260B

| | | | |
|---|---|---|---|
| Client: | **HydroSolutions, Inc.** | Date Reported: | 11/28/01 |
| Sample ID: | MOC-14 Duplicate | Date Sampled: | 11/02/01 13:13 |
| Project Info: | CROWLEY LAW FIRM | Date Received: | 11/05/01 |
| Lab ID: | 002-01-59779 Duplicate | Date Analyzed: | 11/21/01 15:58 |
| Matrix: | WATER; pH= < 2 | | |

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| **71-43-2** | **Benzene** | **4.4** | 1.0 |
| 108-86-1 | Bromobenzene | ND | 1.0 |
| 74-97-5 | Bromochloromethane | ND | 1.0 |
| 75-27-4 | Bromodichloromethane | ND | 1.0 |
| 75-25-2 | Bromoform | ND | 1.0 |
| 74-83-9 | Bromomethane | ND | 1.0 |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 |
| 108-90-7 | Chlorobenzene | ND | 1.0 |
| 124-48-1 | Chlorodibromomethane | ND | 1.0 |
| 75-00-3 | Chloroethane | ND | 1.0 |
| 110-75-8 | 2-Chloroethylvinyl ether | ND | 1.0 |
| 67-66-3 | Chloroform | ND | 1.0 |
| 74-87-3 | Chloromethane | ND | 1.0 |
| 95-49-8 | 2-Chlorotoluene | ND | 1.0 |
| 106-43-4 | 4-Chlorotoluene | ND | 1.0 |
| 106-93-4 | 1,2-Dibromoethane | ND | 1.0 |
| 74-95-3 | Dibromomethane | ND | 1.0 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 |
| 75-71-8 | Dichlorodifluoromethane | ND | 1.0 |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 |
| 78-87-5 | 1,2-Dichloropropane | ND | 1.0 |
| 142-28-9 | 1,3-Dichloropropane | ND | 1.0 |
| 594-20-7 | 2,2-Dichloropropane | ND | 1.0 |
| 563-58-6 | 1,1-Dichloropropene | ND | 1.0 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1.0 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1.0 |
| 100-41-4 | Ethylbenzene | ND | 1.0 |
| 1634-04-4 | Methyl-t-butyl ether | ND | 1.0 |
| 78-93-3 | Methyl ethyl ketone | ND | 20 |
| **75-09-2** | **Methylene chloride** | **(0.30)(J)** | 1.0 |
| 100-42-5 | Styrene | ND | 1.0 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1.0 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 |
| 127-18-4 | Tetrachloroethene | ND | 1.0 |
| **108-88-3** | **Toluene** | **(0.76)(J)** | 1.0 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 |
| **79-01-6** | **Trichloroethene** | **(0.27)(J)** | 1.0 |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1.0 |
| 75-01-4 | Vinyl chloride | ND | 1.0 |
| 108383/106423 | m+p-Xylenes | ND | 1.0 |
| 95-47-6 | o-Xylene | ND | 1.0 |

**ND= Indicates compound was analyzed for but not detected.**
**J= Estimated value. Present, but less than the limit of quantitation.**

***Runtime Quality Assurance Report***

| SYSTEM MONITORING COMPOUNDS | CONCENTRATION(µg/L) ADDED | MEASURED | PERCENT RECOVERY | ACCEPTANCE RANGE |
|---|---|---|---|---|
| Dibromofluoromethane | 10 | 10.4 | 104 | 74–121 |
| 1,2-Dichloroethane d4 | 10 | 9.83 | 98 | 72–116 |
| Toluene d8 | 10 | 9.59 | 96 | 85–115 |
| p-Bromofluorobenzene | 10 | 9.68 | 97 | 87–124 |

REPORT COMMENTS: Duplicate analyzed past recommended holding time.

Analyst:_____ Reviewing Supervisor:_____ /chem/5971A.i/va112101.b/hov211001010.d

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# EPA METHOD 8260B

| | | | |
|---|---|---|---|
| Client: | **HydroSolutions, Inc.** | Date Reported: | 11/19/01 |
| Sample ID: | MOC-16 | Date Sampled: | 11/02/01 15:45 |
| Project Info: | CROWLEY LAW FIRM | Date Received: | 11/05/01 |
| Lab ID: | 003-01-59779 | Date Analyzed: | 11/15/01 18:01 |
| Matrix: | WATER; pH= 4 | | |

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 67-64-1 | Acetone | ND | 20 |
| 107-02-8 | Acrolein | ND | 20 |
| 107-13-1 | Acrylonitrile | ND | 20 |
| **71-43-2** | **Benzene** | **20(D)** | 5.0 |
| 108-86-1 | Bromobenzene | ND | 1.0 |
| 74-97-5 | Bromochloromethane | ND | 1.0 |
| 75-27-4 | Bromodichloromethane | ND | 1.0 |
| 75-25-2 | Bromoform | ND | 1.0 |
| 74-83-9 | Bromomethane | ND | 1.0 |
| 104-51-8 | n-Butylbenzene | ND | 1.0 |
| 135-98-8 | sec-Butylbenzene | ND | 1.0 |
| 98-06-6 | tert-Butylbenzene | ND | 1.0 |
| 75-15-0 | Carbon disulfide | ND | 1.0 |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 |
| 108-90-7 | Chlorobenzene | ND | 1.0 |
| 124-48-1 | Chlorodibromomethane | ND | 1.0 |
| 75-00-3 | Chloroethane | ND | 1.0 |
| 110-75-8 | 2-Chloroethylvinyl ether | ND | 1.0 |
| 67-66-3 | Chloroform | ND | 1.0 |
| 74-87-3 | Chloromethane | ND | 1.0 |
| 95-49-8 | 2-Chlorotoluene | ND | 1.0 |
| 106-43-4 | 4-Chlorotoluene | ND | 1.0 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 1.0 |
| 106-93-4 | 1,2-Dibromoethane | ND | 1.0 |
| 74-95-3 | Dibromomethane | ND | 1.0 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 |
| 75-71-8 | Dichlorodifluoromethane | ND | 1.0 |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 |
| 78-87-5 | 1,2-Dichloropropane | ND | 1.0 |
| 142-28-9 | 1,3-Dichloropropane | ND | 1.0 |
| 594-20-7 | 2,2-Dichloropropane | ND | 1.0 |
| 563-58-6 | 1,1-Dichloropropene | ND | 1.0 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1.0 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1.0 |
| 100-41-4 | Ethylbenzene | ND | 1.0 |
| 87-68-3 | Hexachlorobutadiene | ND | 1.0 |
| 591-78-6 | 2-Hexanone | ND | 20 |
| 74-88-4 | Iodomethane | ND | 1.0 |
| 98-82-8 | Isopropylbenzene | ND | 1.0 |
| 99-87-6 | p-Isopropyltoluene | ND | 1.0 |
| 1634-04-4 | Methyl-t-butyl ether | ND | 1.0 |
| 78-93-3 | Methyl ethyl ketone | ND | 20 |
| 108-10-1 | Methyl isobutyl ketone | ND | 20 |
| **75-09-2** | **Methylene chloride** | **4.0** | 1.0 |

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# EPA METHOD 8260B(Continued)

Client: **HydroSolutions, Inc.** Date Reported: 11/19/01
Sample ID: MOC-16 Lab ID: 003-01-59779

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 91-20-3 | Naphthalene | ND | 1.0 |
| 103-65-1 | n-Propylbenzene | ND | 1.0 |
| 100-42-5 | Styrene | ND | 1.0 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1.0 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 |
| 127-18-4 | Tetrachloroethene | ND | 1.0 |
| 108-88-3 | **Toluene** | **(0.38)(J)** | 1.0 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 1.0 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 1.0 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 |
| 79-01-6 | **Trichloroethene** | **(0.20)(J)** | 1.0 |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1.0 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 1.0 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 1.0 |
| 108-05-4 | Vinyl acetate | ND | 1.0 |
| 75-01-4 | Vinyl chloride | ND | 1.0 |
| 108383/106423 | m+p-Xylenes | ND | 1.0 |
| 95-47-6 | o-Xylene | ND | 1.0 |

**Note: The sample was not properly acidified to a pH <2. The sample pH as received was 4.**
**ND= Indicates compound was analyzed for but not detected.**
**D= Value was derived from a 5 times dilution.**
**J= Estimated value. Present, but less than the limit of quantitation.**

***Runtime Quality Assurance Report***

| SYSTEM MONITORING COMPOUNDS | CONCENTRATION(µg/L) ADDED | MEASURED | PERCENT RECOVERY | ACCEPTANCE RANGE |
|---|---|---|---|---|
| Dibromofluoromethane | 10 | 9.87 | 99 | 74--121 |
| 1,2-Dichloroethane d4 | 10 | 10.6 | 106 | 72--116 |
| Toluene d8 | 10 | 9.40 | 94 | 85--115 |
| p-Bromofluorobenzene | 10 | 9.26 | 93 | 87--124 |

REPORT COMMENTS: None

Analyst: Reviewing Supervisor: /chem/5971A.i/va111501.b/nov151601016.d

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# EPA METHOD 8260B

| | | | |
|---|---|---|---|
| Client: | **HydroSolutions, Inc.** | Date Reported: | 11/19/01 |
| Sample ID: | MOC-18 | Date Sampled: | 11/03/01 11:45 |
| Project Info: | CROWLEY LAW FIRM | Date Received: | 11/05/01 |
| Lab ID: | 004-01-59779 | Date Analyzed: | 11/15/01 18:36 |
| Matrix: | WATER; pH= < 2 | | |

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 67-64-1 | Acetone | ND | 20 |
| 107-02-8 | Acrolein | ND | 20 |
| 107-13-1 | Acrylonitrile | ND | 20 |
| **71-43-2** | **Benzene** | **(0.64)(J)** | 1.0 |
| 108-86-1 | Bromobenzene | ND | 1.0 |
| 74-97-5 | Bromochloromethane | ND | 1.0 |
| 75-27-4 | Bromodichloromethane | ND | 1.0 |
| 75-25-2 | Bromoform | ND | 1.0 |
| 74-83-9 | Bromomethane | ND | 1.0 |
| 104-51-8 | n-Butylbenzene | ND | 1.0 |
| 135-98-8 | sec-Butylbenzene | ND | 1.0 |
| 98-06-6 | tert-Butylbenzene | ND | 1.0 |
| 75-15-0 | Carbon disulfide | ND | 1.0 |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 |
| 108-90-7 | Chlorobenzene | ND | 1.0 |
| 124-48-1 | Chlorodibromomethane | ND | 1.0 |
| 75-00-3 | Chloroethane | ND | 1.0 |
| 110-75-8 | 2-Chloroethylvinyl ether | ND | 1.0 |
| 67-66-3 | Chloroform | ND | 1.0 |
| 74-87-3 | Chloromethane | ND | 1.0 |
| 95-49-8 | 2-Chlorotoluene | ND | 1.0 |
| 106-43-4 | 4-Chlorotoluene | ND | 1.0 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 1.0 |
| 106-93-4 | 1,2-Dibromoethane | ND | 1.0 |
| 74-95-3 | Dibromomethane | ND | 1.0 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 |
| 75-71-8 | Dichlorodifluoromethane | ND | 1.0 |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 |
| 78-87-5 | 1,2-Dichloropropane | ND | 1.0 |
| 142-28-9 | 1,3-Dichloropropane | ND | 1.0 |
| 594-20-7 | 2,2-Dichloropropane | ND | 1.0 |
| 563-58-6 | 1,1-Dichloropropene | ND | 1.0 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1.0 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1.0 |
| 100-41-4 | Ethylbenzene | ND | 1.0 |
| 87-68-3 | Hexachlorobutadiene | ND | 1.0 |
| 591-78-6 | 2-Hexanone | ND | 20 |
| 74-88-4 | Iodomethane | ND | 1.0 |
| 98-82-8 | Isopropylbenzene | ND | 1.0 |
| 99-87-6 | p-Isopropyltoluene | ND | 1.0 |
| 1634-04-4 | Methyl-t-butyl ether | ND | 1.0 |
| 78-93-3 | Methyl ethyl ketone | ND | 20 |
| 108-10-1 | Methyl isobutyl ketone | ND | 20 |
| **75-09-2** | **Methylene chloride** | **(0.29)(J)** | 1.0 |

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# EPA METHOD 8260B(Continued)

Client: **HydroSolutions, Inc.** Date Reported: 11/19/01
Sample ID: MOC-18 Lab ID: 004-01-59779

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 91-20-3 | Naphthalene | ND | 1.0 |
| 103-65-1 | n-Propylbenzene | ND | 1.0 |
| 100-42-5 | Styrene | ND | 1.0 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1.0 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 |
| 127-18-4 | Tetrachloroethene | ND | 1.0 |
| 108-88-3 | Toluene | ND | 1.0 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 1.0 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 1.0 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 |
| 79-01-6 | Trichloroethene | ND | 1.0 |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1.0 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 1.0 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 1.0 |
| 108-05-4 | Vinyl acetate | ND | 1.0 |
| 75-01-4 | Vinyl chloride | ND | 1.0 |
| 108383/106423 | m+p-Xylenes | ND | 1.0 |
| 95-47-6 | o-Xylene | ND | 1.0 |

**ND= Indicates compound was analyzed for but not detected.**
**J= Estimated value. Present, but less than the limit of quantitation.**

***Runtime Quality Assurance Report***

| SYSTEM MONITORING COMPOUNDS | CONCENTRATION(µg/L) ADDED | MEASURED | PERCENT RECOVERY | ACCEPTANCE RANGE |
|---|---|---|---|---|
| Dibromofluoromethane | 10 | 9.72 | 97 | 74–121 |
| 1,2-Dichloroethane d4 | 10 | 10.4 | 104 | 72–116 |
| Toluene d8 | 10 | 9.51 | 95 | 85--115 |
| p-Bromofluorobenzene | 10 | 9.40 | 94 | 87–124 |

REPORT COMMENTS: None

Analyst: Reviewing Supervisor: /chem/5971A.i/va111501.b/nov151701017.d

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# EPA METHOD 8260B

| | | | |
|---|---|---|---|
| Client: | **HydroSolutions, Inc.** | Date Reported: | 11/28/01 |
| Sample ID: | TRIP BLANK | Date Sampled: | |
| Project Info: | CROWLEY LAW FIRM | Date Received: | 11/05/01 |
| Lab ID: | 005-01-59779 | Date Analyzed: | 11/26/01 15:51 |
| Matrix: | WATER; pH= < 2 | | |

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 67-64-1 | Acetone | ND | 20 |
| 107-02-8 | Acrolein | ND | 20 |
| 107-13-1 | Acrylonitrile | ND | 20 |
| 71-43-2 | Benzene | ND | 1.0 |
| 108-86-1 | Bromobenzene | ND | 1.0 |
| 74-97-5 | Bromochloromethane | ND | 1.0 |
| **75-27-4** | **Bromodichloromethane** | **(0.36)(J)** | 1.0 |
| 75-25-2 | Bromoform | ND | 1.0 |
| 74-83-9 | Bromomethane | ND | 1.0 |
| 104-51-8 | n-Butylbenzene | ND | 1.0 |
| 135-98-8 | sec-Butylbenzene | ND | 1.0 |
| 98-06-6 | tert-Butylbenzene | ND | 1.0 |
| 75-15-0 | Carbon disulfide | ND | 1.0 |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 |
| 108-90-7 | Chlorobenzene | ND | 1.0 |
| 124-48-1 | Chlorodibromomethane | ND | 1.0 |
| 75-00-3 | Chloroethane | ND | 1.0 |
| 110-75-8 | 2-Chloroethylvinyl ether | ND | 1.0 |
| **67-66-3** | **Chloroform** | **1.0** | 1.0 |
| 74-87-3 | Chloromethane | ND | 1.0 |
| 95-49-8 | 2-Chlorotoluene | ND | 1.0 |
| 106-43-4 | 4-Chlorotoluene | ND | 1.0 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 1.0 |
| 106-93-4 | 1,2-Dibromoethane | ND | 1.0 |
| 74-95-3 | Dibromomethane | ND | 1.0 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 |
| 75-71-8 | Dichlorodifluoromethane | ND | 1.0 |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 |
| 78-87-5 | 1,2-Dichloropropane | ND | 1.0 |
| 142-28-9 | 1,3-Dichloropropane | ND | 1.0 |
| 594-20-7 | 2,2-Dichloropropane | ND | 1.0 |
| 563-58-6 | 1,1-Dichloropropene | ND | 1.0 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1.0 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1.0 |
| 100-41-4 | Ethylbenzene | ND | 1.0 |
| 87-68-3 | Hexachlorobutadiene | ND | 1.0 |
| 591-78-6 | 2-Hexanone | ND | 20 |
| 74-88-4 | Iodomethane | ND | 1.0 |
| 98-82-8 | Isopropylbenzene | ND | 1.0 |
| 99-87-6 | p-Isopropyltoluene | ND | 1.0 |
| 1634-04-4 | Methyl-t-butyl ether | ND | 1.0 |
| 78-93-3 | Methyl ethyl ketone | ND | 20 |
| 108-10-1 | Methyl isobutyl ketone | ND | 20 |
| 75-09-2 | Methylene chloride | ND | 1.0 |

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## EPA METHOD 8260B(Continued)

Client: **HydroSolutions, Inc.** Date Reported: 11/28/01
Sample ID: TRIP BLANK Lab ID: 005-01-59779

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 91-20-3 | Naphthalene | ND | 1.0 |
| 103-65-1 | n-Propylbenzene | ND | 1.0 |
| 100-42-5 | Styrene | ND | 1.0 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1.0 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 |
| 127-18-4 | Tetrachloroethene | ND | 1.0 |
| 108-88-3 | Toluene | ND | 1.0 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 1.0 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 1.0 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 |
| 79-01-6 | Trichloroethene | ND | 1.0 |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1.0 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 1.0 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 1.0 |
| 108-05-4 | Vinyl acetate | ND | 1.0 |
| 75-01-4 | Vinyl chloride | ND | 1.0 |
| 108383/106423 | m+p-Xylenes | ND | 1.0 |
| 95-47-6 | o-Xylene | ND | 1.0 |

**ND= Indicates compound was analyzed for but not detected.**
**J= Estimated value. Present, but less than the limit of quantitation.**

***Runtime Quality Assurance Report***

| SYSTEM MONITORING COMPOUNDS | CONCENTRATION(µg/L) ADDED | MEASURED | PERCENT RECOVERY | ACCEPTANCE RANGE |
|---|---|---|---|---|
| Dibromofluoromethane | 10 | 9.80 | 98 | 74--121 |
| 1,2-Dichloroethane d4 | 10 | 10.3 | 103 | 72--116 |
| Toluene d8 | 10 | 9.29 | 93 | 85--115 |
| p-Bromofluorobenzene | 10 | 9.60 | 96 | 87--124 |

REPORT COMMENTS: None

Analyst: Reviewing Supervisor: /chem/5971A.i/va112601.b/nov260701007.d

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## QUALITY ASSURANCE REPORT FOR EPA METHOD 8260B: METHOD BLANK

Sample ID: Quality Assurance Method Blank
Matrix: WATER
Extract Method: EPA 5030

Date Reported: 11/19/01
Date Analyzed: 11/15/01 11:29

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 67-64-1 | Acetone | ND | 20 |
| 107-02-8 | Acrolein | ND | 20 |
| 107-13-1 | Acrylonitrile | ND | 20 |
| 71-43-2 | Benzene | ND | 1.0 |
| 108-86-1 | Bromobenzene | ND | 1.0 |
| 74-97-5 | Bromochloromethane | ND | 1.0 |
| 75-27-4 | Bromodichloromethane | ND | 1.0 |
| 75-25-2 | Bromoform | ND | 1.0 |
| 74-83-9 | Bromomethane | ND | 1.0 |
| 104-51-8 | n-Butylbenzene | ND | 1.0 |
| 135-98-8 | sec-Butylbenzene | ND | 1.0 |
| 98-06-6 | tert-Butylbenzene | ND | 1.0 |
| 75-15-0 | Carbon disulfide | ND | 1.0 |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 |
| 108-90-7 | Chlorobenzene | ND | 1.0 |
| 124-48-1 | Chlorodibromomethane | ND | 1.0 |
| 75-00-3 | Chloroethane | ND | 1.0 |
| 110-75-8 | 2-Chloroethylvinyl ether | ND | 1.0 |
| 67-66-3 | Chloroform | ND | 1.0 |
| 74-87-3 | Chloromethane | ND | 1.0 |
| 95-49-8 | 2-Chlorotoluene | ND | 1.0 |
| 106-43-4 | 4-Chlorotoluene | ND | 1.0 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 1.0 |
| 106-93-4 | 1,2-Dibromoethane | ND | 1.0 |
| 74-95-3 | Dibromomethane | ND | 1.0 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 |
| 75-71-8 | Dichlorodifluoromethane | ND | 1.0 |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 |
| 78-87-5 | 1,2-Dichloropropane | ND | 1.0 |
| 142-28-9 | 1,3-Dichloropropane | ND | 1.0 |
| 594-20-7 | 2,2-Dichloropropane | ND | 1.0 |
| 563-58-6 | 1,1-Dichloropropene | ND | 1.0 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1.0 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1.0 |
| 100-41-4 | Ethylbenzene | ND | 1.0 |
| 87-68-3 | Hexachlorobutadiene | ND | 1.0 |
| 591-78-6 | 2-Hexanone | ND | 20 |
| 74-88-4 | Iodomethane | ND | 1.0 |
| 98-82-8 | Isopropylbenzene | ND | 1.0 |
| 99-87-6 | p-Isopropyltoluene | ND | 1.0 |
| 1634-04-4 | Methyl-t-butyl ether | ND | 1.0 |
| 78-93-3 | Methyl ethyl ketone | ND | 20 |
| 108-10-1 | Methyl isobutyl ketone | ND | 20 |
| 75-09-2 | Methylene chloride | ND | 1.0 |

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## QUALITY ASSURANCE REPORT FOR EPA METHOD 8260B: METHOD BLANK (Continued)

Sample ID: Quality Assurance Method Blank
Matrix: WATER

Date Reported: 11/19/01
Date Analyzed: 11/15/01 11:29

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 91-20-3 | Naphthalene | ND | 1.0 |
| 103-65-1 | n-Propylbenzene | ND | 1.0 |
| 100-42-5 | Styrene | ND | 1.0 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1.0 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 |
| 127-18-4 | Tetrachloroethene | ND | 1.0 |
| 108-88-3 | Toluene | ND | 1.0 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 1.0 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 1.0 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 |
| 79-01-6 | Trichloroethene | ND | 1.0 |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1.0 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 1.0 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 1.0 |
| 108-05-4 | Vinyl acetate | ND | 1.0 |
| 75-01-4 | Vinyl chloride | ND | 1.0 |
| 108383/106423 | m+p-Xylenes | ND | 1.0 |
| 95-47-6 | o-Xylene | ND | 1.0 |

**ND= Indicates compound was analyzed for but not detected.**

***Runtime Quality Assurance Report***

| SYSTEM MONITORING COMPOUNDS | CONCENTRATION(µg/L) ADDED | MEASURED | PERCENT RECOVERY | ACCEPTANCE RANGE |
|---|---|---|---|---|
| Dibromofluoromethane | 10 | 10.2 | 102 | 74--121 |
| 1,2-Dichloroethane d4 | 10 | 10 | 100 | 72--116 |
| Toluene d8 | 10 | 9.70 | 97 | 85--115 |
| p-Bromofluorobenzene | 10 | 9.42 | 94 | 87--124 |

REPORT COMMENTS: None

Analyst: Reviewing Supervisor: /chem/5971A.i/va111501.b/nov150501005.d

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## QUALITY ASSURANCE REPORT FOR EPA METHOD 8260B: METHOD BLANK

Sample ID: Quality Assurance Method Blank
Matrix: WATER
Extract Method: EPA 5030

Date Reported: 11/19/01
Date Analyzed: 11/16/01 16:55

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 67-64-1 | Acetone | ND | 20 |
| 107-02-8 | Acrolein | ND | 20 |
| 107-13-1 | Acrylonitrile | ND | 20 |
| 71-43-2 | Benzene | ND | 1.0 |
| 108-86-1 | Bromobenzene | ND | 1.0 |
| 74-97-5 | Bromochloromethane | ND | 1.0 |
| 75-27-4 | Bromodichloromethane | ND | 1.0 |
| 75-25-2 | Bromoform | ND | 1.0 |
| 74-83-9 | Bromomethane | ND | 1.0 |
| 104-51-8 | n-Butylbenzene | ND | 1.0 |
| 135-98-8 | sec-Butylbenzene | ND | 1.0 |
| 98-06-6 | tert-Butylbenzene | ND | 1.0 |
| 75-15-0 | Carbon disulfide | ND | 1.0 |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 |
| 108-90-7 | Chlorobenzene | ND | 1.0 |
| 124-48-1 | Chlorodibromomethane | ND | 1.0 |
| 75-00-3 | Chloroethane | ND | 1.0 |
| 110-75-8 | 2-Chloroethylvinyl ether | ND | 1.0 |
| 67-66-3 | Chloroform | ND | 1.0 |
| 74-87-3 | Chloromethane | ND | 1.0 |
| 95-49-8 | 2-Chlorotoluene | ND | 1.0 |
| 106-43-4 | 4-Chlorotoluene | ND | 1.0 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 1.0 |
| 106-93-4 | 1,2-Dibromoethane | ND | 1.0 |
| 74-95-3 | Dibromomethane | ND | 1.0 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 |
| 75-71-8 | Dichlorodifluoromethane | ND | 1.0 |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 |
| 78-87-5 | 1,2-Dichloropropane | ND | 1.0 |
| 142-28-9 | 1,3-Dichloropropane | ND | 1.0 |
| 594-20-7 | 2,2-Dichloropropane | ND | 1.0 |
| 563-58-6 | 1,1-Dichloropropene | ND | 1.0 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1.0 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1.0 |
| 100-41-4 | Ethylbenzene | ND | 1.0 |
| 87-68-3 | Hexachlorobutadiene | ND | 1.0 |
| 591-78-6 | 2-Hexanone | ND | 20 |
| 74-88-4 | Iodomethane | ND | 1.0 |
| 98-82-8 | Isopropylbenzene | ND | 1.0 |
| 99-87-6 | p-Isopropyltoluene | ND | 1.0 |
| 1634-04-4 | Methyl-t-butyl ether | ND | 1.0 |
| 78-93-3 | Methyl ethyl ketone | ND | 20 |
| 108-10-1 | Methyl isobutyl ketone | ND | 20 |
| 75-09-2 | Methylene chloride | ND | 1.0 |

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## QUALITY ASSURANCE REPORT FOR EPA METHOD 8260B: METHOD BLANK (Continued)

Sample ID: Quality Assurance Method Blank
Matrix: WATER

Date Reported: 11/19/01
Date Analyzed: 11/16/01 16:55

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 91-20-3 | Naphthalene | ND | 1.0 |
| 103-65-1 | n-Propylbenzene | ND | 1.0 |
| 100-42-5 | Styrene | ND | 1.0 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1.0 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 |
| 127-18-4 | Tetrachloroethene | ND | 1.0 |
| 108-88-3 | Toluene | ND | 1.0 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 1.0 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 1.0 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 |
| 79-01-6 | Trichloroethene | ND | 1.0 |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1.0 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 1.0 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 1.0 |
| 108-05-4 | Vinyl acetate | ND | 1.0 |
| 75-01-4 | Vinyl chloride | ND | 1.0 |
| 108383/106423 | m+p-Xylenes | ND | 1.0 |
| 95-47-6 | o-Xylene | ND | 1.0 |

ND= Indicates compound was analyzed for but not detected.

*Runtime Quality Assurance Report*

| SYSTEM MONITORING COMPOUNDS | CONCENTRATION(µg/L) ADDED | MEASURED | PERCENT RECOVERY | ACCEPTANCE RANGE |
|---|---|---|---|---|
| Dibromofluoromethane | 10 | 10.3 | 103 | 74--121 |
| 1,2-Dichloroethane d4 | 10 | 9.88 | 99 | 72--116 |
| Toluene d8 | 10 | 9.63 | 96 | 85--115 |
| p-Bromofluorobenzene | 10 | 9.27 | 93 | 87--124 |

REPORT COMMENTS: None

Analyst: G Reviewing Supervisor: /chem/5971A.i/va111601.b/nov161101011.d

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## QUALITY ASSURANCE REPORT FOR EPA METHOD 8260B: METHOD BLANK

Sample ID: Quality Assurance Method Blank
Matrix: WATER
Extract Method: EPA 5030

Date Reported: 11/28/01
Date Analyzed: 11/21/01 13:01

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 71-43-2 | Benzene | ND | 1.0 |
| 108-86-1 | Bromobenzene | ND | 1.0 |
| 74-97-5 | Bromochloromethane | ND | 1.0 |
| 75-27-4 | Bromodichloromethane | ND | 1.0 |
| 75-25-2 | Bromoform | ND | 1.0 |
| 74-83-9 | Bromomethane | ND | 1.0 |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 |
| 108-90-7 | Chlorobenzene | ND | 1.0 |
| 124-48-1 | Chlorodibromomethane | ND | 1.0 |
| 75-00-3 | Chloroethane | ND | 1.0 |
| 110-75-8 | 2-Chloroethylvinyl ether | ND | 1.0 |
| 67-66-3 | Chloroform | ND | 1.0 |
| 74-87-3 | Chloromethane | ND | 1.0 |
| 95-49-8 | 2-Chlorotoluene | ND | 1.0 |
| 106-43-4 | 4-Chlorotoluene | ND | 1.0 |
| 106-93-4 | 1,2-Dibromoethane | ND | 1.0 |
| 74-95-3 | Dibromomethane | ND | 1.0 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 |
| 75-71-8 | Dichlorodifluoromethane | ND | 1.0 |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 |
| 78-87-5 | 1,2-Dichloropropane | ND | 1.0 |
| 142-28-9 | 1,3-Dichloropropane | ND | 1.0 |
| 594-20-7 | 2,2-Dichloropropane | ND | 1.0 |
| 563-58-6 | 1,1-Dichloropropene | ND | 1.0 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1.0 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1.0 |
| 100-41-4 | Ethylbenzene | ND | 1.0 |
| 1634-04-4 | Methyl-t-butyl ether | ND | 1.0 |
| 78-93-3 | Methyl ethyl ketone | ND | 20 |
| 75-09-2 | Methylene chloride | ND | 1.0 |
| 100-42-5 | Styrene | ND | 1.0 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1.0 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 |
| 127-18-4 | Tetrachloroethene | ND | 1.0 |
| 108-88-3 | Toluene | ND | 1.0 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 |
| 79-01-6 | Trichloroethene | ND | 1.0 |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1.0 |
| 75-01-4 | Vinyl chloride | ND | 1.0 |
| 108383/106423 | m+p-Xylenes | ND | 1.0 |
| 95-47-6 | o-Xylene | ND | 1.0 |

**ND= Indicates compound was analyzed for but not detected.**

***Runtime Quality Assurance Report***

| SYSTEM MONITORING COMPOUNDS | CONCENTRATION(µg/L) ADDED | MEASURED | PERCENT RECOVERY | ACCEPTANCE RANGE |
|---|---|---|---|---|
| Dibromofluoromethane | 10 | 10 | 100 | 74--121 |
| 1,2-Dichloroethane d4 | 10 | 9.99 | 100 | 72--116 |
| Toluene d8 | 10 | 9.55 | 96 | 85--115 |
| p-Bromofluorobenzene | 10 | 9.62 | 96 | 87--124 |

REPORT COMMENTS: None

Analyst: Reviewing Supervisor: /chem/5971A.i/va112101.b/hov210501005b.d

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## QUALITY ASSURANCE REPORT FOR EPA METHOD 8260B: METHOD BLANK

Sample ID: Quality Assurance Method Blank
Matrix: WATER
Extract Method: EPA 5030

Date Reported: 11/28/01
Date Analyzed: 11/26/01 14:22

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 67-64-1 | Acetone | ND | 20 |
| 107-02-8 | Acrolein | ND | 20 |
| 107-13-1 | Acrylonitrile | ND | 20 |
| 71-43-2 | Benzene | ND | 1.0 |
| 108-86-1 | Bromobenzene | ND | 1.0 |
| 74-97-5 | Bromochloromethane | ND | 1.0 |
| 75-27-4 | Bromodichloromethane | ND | 1.0 |
| 75-25-2 | Bromoform | ND | 1.0 |
| 74-83-9 | Bromomethane | ND | 1.0 |
| 104-51-8 | n-Butylbenzene | ND | 1.0 |
| 135-98-8 | sec-Butylbenzene | ND | 1.0 |
| 98-06-6 | tert-Butylbenzene | ND | 1.0 |
| 75-15-0 | Carbon disulfide | ND | 1.0 |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 |
| 108-90-7 | Chlorobenzene | ND | 1.0 |
| 124-48-1 | Chlorodibromomethane | ND | 1.0 |
| 75-00-3 | Chloroethane | ND | 1.0 |
| 110-75-8 | 2-Chloroethylvinyl ether | ND | 1.0 |
| 67-66-3 | Chloroform | ND | 1.0 |
| 74-87-3 | Chloromethane | ND | 1.0 |
| 95-49-8 | 2-Chlorotoluene | ND | 1.0 |
| 106-43-4 | 4-Chlorotoluene | ND | 1.0 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 1.0 |
| 106-93-4 | 1,2-Dibromoethane | ND | 1.0 |
| 74-95-3 | Dibromomethane | ND | 1.0 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 |
| 75-71-8 | Dichlorodifluoromethane | ND | 1.0 |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 |
| 78-87-5 | 1,2-Dichloropropane | ND | 1.0 |
| 142-28-9 | 1,3-Dichloropropane | ND | 1.0 |
| 594-20-7 | 2,2-Dichloropropane | ND | 1.0 |
| 563-58-6 | 1,1-Dichloropropene | ND | 1.0 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1.0 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1.0 |
| 100-41-4 | Ethylbenzene | ND | 1.0 |
| 87-68-3 | Hexachlorobutadiene | ND | 1.0 |
| 591-78-6 | 2-Hexanone | ND | 20 |
| 74-88-4 | Iodomethane | ND | 1.0 |
| 98-82-8 | Isopropylbenzene | ND | 1.0 |
| 99-87-6 | p-Isopropyltoluene | ND | 1.0 |
| 1634-04-4 | Methyl-t-butyl ether | ND | 1.0 |
| 78-93-3 | Methyl ethyl ketone | ND | 20 |
| 108-10-1 | Methyl isobutyl ketone | ND | 20 |
| 75-09-2 | Methylene chloride | ND | 1.0 |

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## QUALITY ASSURANCE REPORT FOR EPA METHOD 8260B: METHOD BLANK (Continued)

Sample ID: Quality Assurance Method Blank
Matrix: WATER

Date Reported: 11/28/01
Date Analyzed: 11/26/01 14:22

| C.A.S. # | TARGET COMPOUNDS | CONCENTRATION (µg/L) | LIMIT OF QUANTITATION(µg/L) |
|---|---|---|---|
| 91-20-3 | Naphthalene | ND | 1.0 |
| 103-65-1 | n-Propylbenzene | ND | 1.0 |
| 100-42-5 | Styrene | ND | 1.0 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1.0 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 |
| 127-18-4 | Tetrachloroethene | ND | 1.0 |
| 108-88-3 | Toluene | ND | 1.0 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 1.0 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 1.0 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 |
| 79-01-6 | Trichloroethene | ND | 1.0 |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1.0 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 1.0 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 1.0 |
| 108-05-4 | Vinyl acetate | ND | 1.0 |
| 75-01-4 | Vinyl chloride | ND | 1.0 |
| 108383/106423 | m+p-Xylenes | ND | 1.0 |
| 95-47-6 | o-Xylene | ND | 1.0 |

ND= Indicates compound was analyzed for but not detected.

*Runtime Quality Assurance Report*

| SYSTEM MONITORING COMPOUNDS | CONCENTRATION(µg/L) ADDED | MEASURED | PERCENT RECOVERY | ACCEPTANCE RANGE |
|---|---|---|---|---|
| Dibromofluoromethane | 10 | 9.95 | 99 | 74--121 |
| 1,2-Dichloroethane d4 | 10 | 9.33 | 93 | 72--116 |
| Toluene d8 | 10 | 9.70 | 97 | 85--115 |
| p-Bromofluorobenzene | 10 | 9.82 | 98 | 87--124 |

REPORT COMMENTS: None

Analyst: Reviewing Supervisor: /chem/5971A.i/va112601.b/nov260501005.d

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## QUALITY ASSURANCE REPORT FOR EPA METHOD 8260B: REFERENCE STANDARD BLANK MATRIX SPIKE

Sample ID: Quality Assurance Blank Matrix Spike
Matrix: WATER
Extract Method: EPA 5030

Date Reported: 11/19/01
Date Analyzed: 11/15/01 10:20

| SPIKE COMPOUNDS | CONCENTRATION(µg/L) ADDED | MEASURED | PERCENT RECOVERY | ACCEPTANCE RANGE |
|---|---|---|---|---|
| Acetone | 50 | 51.8 | 104 | 53–135 |
| Acrolein | 50 | 40.7 | 81 | 13–150 |
| Acrylonitrile | 50 | 48.3 | 97 | 60–132 |
| Benzene | 5.00 | 4.32 | 86 | 77–122 |
| Bromobenzene | 5.00 | 4.67 | 93 | 80–121 |
| Bromochloromethane | 5.00 | 4.60 | 92 | 71–130 |
| Bromodichloromethane | 5.00 | 4.88 | 98 | 77–124 |
| Bromoform | 5.00 | 4.64 | 93 | 71–128 |
| Bromomethane | 5.00 | 4.38 | 88 | 46–148 |
| n-Butylbenzene | 5.00 | 4.84 | 97 | 76–122 |
| sec-Butylbenzene | 5.00 | 4.68 | 94 | 77–126 |
| tert-Butylbenzene | 5.00 | 4.83 | 97 | 75–128 |
| Carbon disulfide | 5.00 | 4.13 | 83 | 52–163 |
| Carbon tetrachloride | 5.00 | 5.40 | 108 | 71–128 |
| Chlorobenzene | 5.00 | 4.99 | 100 | 81–121 |
| Chlorodibromomethane | 5.00 | 5.04 | 101 | 77–122 |
| Chloroethane | 5.00 | 4.56 | 91 | 66–132 |
| 2-Chloroethylvinyl ether | 5.00 | 4.61 | 92 | 49–147 |
| Chloroform | 5.00 | 4.74 | 95 | 75–123 |
| Chloromethane | 5.00 | 4.20 | 84 | 47–140 |
| 2-Chlorotoluene | 5.00 | 4.53 | 91 | 82–126 |
| 4-Chlorotoluene | 5.00 | 4.69 | 94 | 81–126 |
| 1,2-Dibromo-3-chloropropane | 5.00 | 4.89 | 98 | 68–134 |
| 1,2-Dibromoethane | 5.00 | 4.72 | 94 | 77–126 |
| Dibromomethane | 5.00 | 4.77 | 95 | 78–125 |
| 1,2-Dichlorobenzene | 5.00 | 4.88 | 98 | 77–128 |
| 1,3-Dichlorobenzene | 5.00 | 4.82 | 96 | 80–123 |
| 1,4-Dichlorobenzene | 5.00 | 4.75 | 95 | 80–123 |
| Dichlorodifluoromethane | 5.00 | 4.46 | 89 | 44–134 |
| 1,1-Dichloroethane | 5.00 | 4.52 | 90 | 77–124 |
| 1,2-Dichloroethane | 5.00 | 4.80 | 96 | 69–126 |
| 1,1-Dichloroethene | 5.00 | 4.81 | 96 | 77–125 |
| cis-1,2-Dichloroethene | 5.00 | 4.55 | 91 | 73–125 |
| trans-1,2-Dichloroethene | 5.00 | 4.63 | 93 | 79–125 |
| 1,2-Dichloropropane | 5.00 | 4.37 | 87 | 71–126 |
| 1,3-Dichloropropane | 5.00 | 4.69 | 94 | 77–126 |
| 2,2-Dichloropropane | 5.00 | 5.45 | 109 | 70–141 |
| 1,1-Dichloropropene | 5.00 | 4.59 | 92 | 75–121 |
| cis-1,3-Dichloropropene | 5.00 | 4.70 | 94 | 77–142 |
| trans-1,3-Dichloropropene | 5.00 | 5.19 | 104 | 70–128 |
| Ethylbenzene | 5.00 | 4.80 | 96 | 80–123 |
| Hexachlorobutadiene | 5.00 | 5.64 | 113 | 74–128 |
| 2-Hexanone | 50 | 48 | 96 | 66–131 |
| Iodomethane | 5.00 | 5.04 | 101 | 80–151 |
| Isopropylbenzene | 5.00 | 4.76 | 95 | 77–129 |
| p-Isopropyltoluene | 5.00 | 4.94 | 99 | 74–123 |
| Methyl-t-butyl ether | 5.00 | 4.47 | 89 | 69–134 |
| Methyl ethyl ketone | 50 | 36.6 | 73 | 57–128 |
| Methyl isobutyl ketone | 50 | 48.2 | 96 | 67–129 |
| Methylene chloride | 5.00 | 4.85 | 97 | 75–127 |
| Naphthalene | 5.00 | 5.04 | 101 | 53–147 |
| n-Propylbenzene | 5.00 | 4.63 | 93 | 77–126 |
| Styrene | 5.00 | 4.63 | 93 | 77–118 |
| 1,1,1,2-Tetrachloroethane | 5.00 | 5.08 | 102 | 77–124 |
| 1,1,2,2-Tetrachloroethane | 5.00 | 4.44 | 89 | 76–130 |
| Tetrachloroethene | 5.00 | 5.06 | 101 | 74–125 |
| Toluene | 5.00 | 4.68 | 94 | 78–125 |
| 1,2,3-Trichlorobenzene | 5.00 | 4.80 | 96 | 54–153 |
| 1,2,4-Trichlorobenzene | 5.00 | 5.17 | 103 | 65–135 |
| 1,1,1-Trichloroethane | 5.00 | 4.96 | 99 | 73–126 |
| 1,1,2-Trichloroethane | 5.00 | 4.59 | 92 | 76–129 |
| Trichloroethene | 5.00 | 4.95 | 99 | 78–125 |
| Trichlorofluoromethane | 5.00 | 5.23 | 105 | 52–132 |
| 1,2,3-Trichloropropane | 5.00 | 4.62 | 92 | 77–134 |
| 1,3,5-Trimethylbenzene | 5.00 | 4.67 | 93 | 77–125 |
| 1,2,4-Trimethylbenzene | 5.00 | 4.50 | 90 | 78–121 |
| Vinyl acetate | 5.00 | 6.80 | 136 | 43–159 |
| Vinyl chloride | 5.00 | 4.54 | 91 | 66–132 |
| m+p-Xylenes | 10 | 9.55 | 96 | 78–126 |
| o-Xylene | 5.00 | 4.83 | 97 | 78–127 |

*Runtime Quality Assurance Report*

| SYSTEM MONITORING COMPOUNDS | CONCENTRATION(µg/L) ADDED | MEASURED | PERCENT RECOVERY | ACCEPTANCE RANGE |
|---|---|---|---|---|
| Dibromofluoromethane | 10 | 10.5 | 105 | 74–121 |
| 1,2-Dichloroethane d4 | 10 | 9.85 | 98 | 72–116 |
| Toluene d8 | 10 | 9.98 | 100 | 85–115 |
| p-Bromofluorobenzene | 10 | 9.48 | 95 | 87–124 |

REPORT COMMENTS: None

Analyst: ____ Reviewing Supervisor: ____ /chem/5971A.i/va111501.b/hov150301003.d

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**Client:** HydroSolutions, Inc.

**Login No.:** 01-59779
**Date:** 08-Nov-01

## DIESEL RANGE ORGANICS LABORATORY ANALYSIS REPORT

CROWLEY LAW FIRM

Received:05-Nov-01

| Lab No./Sample Information | Diesel Range Organics | Diesel Range Organics as Diesel | Total Extractable Hydrocarbons | Units | Q | Date/Time Analyzed | Date Extracted | Surrogate %Rec. |
|---|---|---|---|---|---|---|---|---|
| 001-01-59779 | < 0.50 | < 0.50 | < 0.50 | mg/L(ppm) | | 07-Nov-01 20:57 | 06-Nov-01 | 59 |
| MOC-13 | | | | | | | | |
| 02-Nov-01 14:30 | | | | | | Batch I.D.:DROW011106A | | Analyst:pf |
| 002-01-59779 | < 0.50 | < 0.50 | < 0.50 | mg/L(ppm) | | 07-Nov-01 23:21 | 06-Nov-01 | 88 |
| MOC-14 | | | | | | | | |
| 02-Nov-01 13:13 | | | | | | Batch I.D.:DROW011106A | | Analyst:pf |
| 003-01-59779 | < 0.50 | < 0.50 | < 0.50 | mg/L(ppm) | | 08-Nov-01 00:09 | 06-Nov-01 | 80 |
| MOC-16 | | | | | | | | |
| 02-Nov-01 15:45 | | | | | | Batch I.D.:DROW011106A | | Analyst:pf |
| 004-01-59779 | < 0.50 | < 0.50 | < 0.50 | mg/L(ppm) | | 08-Nov-01 00:57 | 06-Nov-01 | 83 |
| MOC-18 | | | | | | | | |
| 03-Nov-01 11:45 | | | | | | Batch I.D.:DROW011106A | | Analyst:pf |

**Qualifiers(Q) and Notes**

NOTE1: Diesel Range Organics are defined as all hydrocarbons eluting between C10 and C28.

NOTE2: Diesel Range Organics as Diesel Fuel are defined by the analyst as that portion of the chromatogram between C10 and C28 that resembles diesel fuel.

NOTE3: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time. This value is equivalent to EPA 8015M as Diesel.

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# DIESEL RANGE ORGANICS CONTINUING CALIBRATION REPORT

This continuing calibration report applies to the following analysis runs:
001-01-59779,002-01-59779,003-01-59779,004-01-59779

---

Sample Name: cc2 EPH Aliphatics Cont Cal FID23907 RC2 :1106DROF.cc2
Area File: G:\ORG\FIS\1106DROF.26A
Date & Time Collected: Nov 7, 2001 15:03:08
Method File: G:\ORG\FIS\DROFB.MET
Calibration File: G:\ORG\FIS\DRO1012B.CAL

| COMPOUND | ACTUAL(UG/ML) | MEASURED(UG/ML) | %RECOVERY | %RECOVERY LIMITS |
|---|---|---|---|---|
| n-Decane | 200 | 219 | 110 | 75-125 |
| n-Dodecane | 200 | 218 | 109 | 75-125 |
| n-Tetradecane | 200 | 217 | 109 | 75-125 |
| n-Hexadecane | 200 | 212 | 106 | 75-125 |
| n-Octadecane | 200 | 213 | 107 | 75-125 |
| n-Eicosane | 200 | 211 | 106 | 75-125 |
| n-Docosane | 200 | 201 | 100 | 75-125 |
| n-Tetracosane | 200 | 210 | 105 | 75-125 |
| n-Hexacosane | 200 | 214 | 107 | 75-125 |
| n-Octacosane | 200 | 217 | 109 | 75-125 |
| TOTAL DRO | 2000 | 2134 | 107 | 75-125 |
| * o-Terphenyl | 200 | 216 | 108 | 75-125 |
| *1-Chloro-octade | 200 | 212 | 106 | 75-125 |

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**Batch:** DROW011106A
**Date:** 08-Nov-01

## DIESEL RANGE ORGANICS BATCH QUALITY ASSURANCE REPORT

| QC Sample I.D. | Diesel Range Organics | Diesel Range Organics as Diesel | Total Extractable Hydrocarbons | Units | Q | Date/Time Analyzed | Date Extracted | Surrogate %Rec. |
|---|---|---|---|---|---|---|---|---|
| Method Blank1 | < 10 | < 10 | < 10 | µg/g(ppm) | | 07-Nov-01 18:29 | 06-Nov-01 | 92 |

## LABORATORY CONTROL SAMPLE REPORT

Date Analyzed: 07-Nov-01 19:19:00
Date Extracted: 06-Nov-01

| CONSTITUENT | SPIKE ADDED µg/g(ppm) | MS CONC. µg/g(ppm) | MS % Rec. | QC Limits % Rec. | Surrogate %Rec. |
|---|---|---|---|---|---|
| #2 Diesel Fuel | 500 | 357 | 71 | 60 to 140 | 81 |

## LABORATORY CONTROL SAMPLE REPORT

Date Analyzed: 07-Nov-01 20:08:00
Date Extracted: 06-Nov-01

| CONSTITUENT | Spike Added µg/g(ppm) | MS Conc. µg/g(ppm) | MS % Rec. | QC Limits % Rec. | Surrogate %Rec. |
|---|---|---|---|---|---|
| #2 Diesel Fuel | 500 | 334 | 67 | 60 to 140 | 76 |

## MATRIX SPIKE/MATRIX SPIKE DUPLICATE REPORT

### MATRIX SPIKE

Laboratory Number: 001-01-59779
Date Analyzed: 08-Nov-01 13:41:00
Date Extracted: 06-Nov-01

| CONSTITUENT | Spike Added mg/L(ppm) | Sample Conc. mg/L(ppm) | MS Conc. mg/L(ppm) | MS % Rec. | QC Limits %Rec. | Surrogate %Rec. |
|---|---|---|---|---|---|---|
| #2 Diesel Fuel | 30 | < 0.50 | 22 | 73 | 60 to 140 | 85 |

### MATRIX SPIKE DUPLICATE

Laboratory Number: 001-01-59779
Date Analyzed: 07-Nov-01 22:33:00
Date Extracted: 06-Nov-01

| CONSTITUENT | Spike Added mg/L(ppm) | MSD Conc. mg/L(ppm) | MSD %Rec. | RPD | QC Limit RPD | QC Limit %Rec. | Surrogate %Rec. |
|---|---|---|---|---|---|---|---|
| #2 Diesel Fuel | 30 | 25 | 83 | 13 | 20 | 60 to 140 | 144 |

**Analyst:** pf

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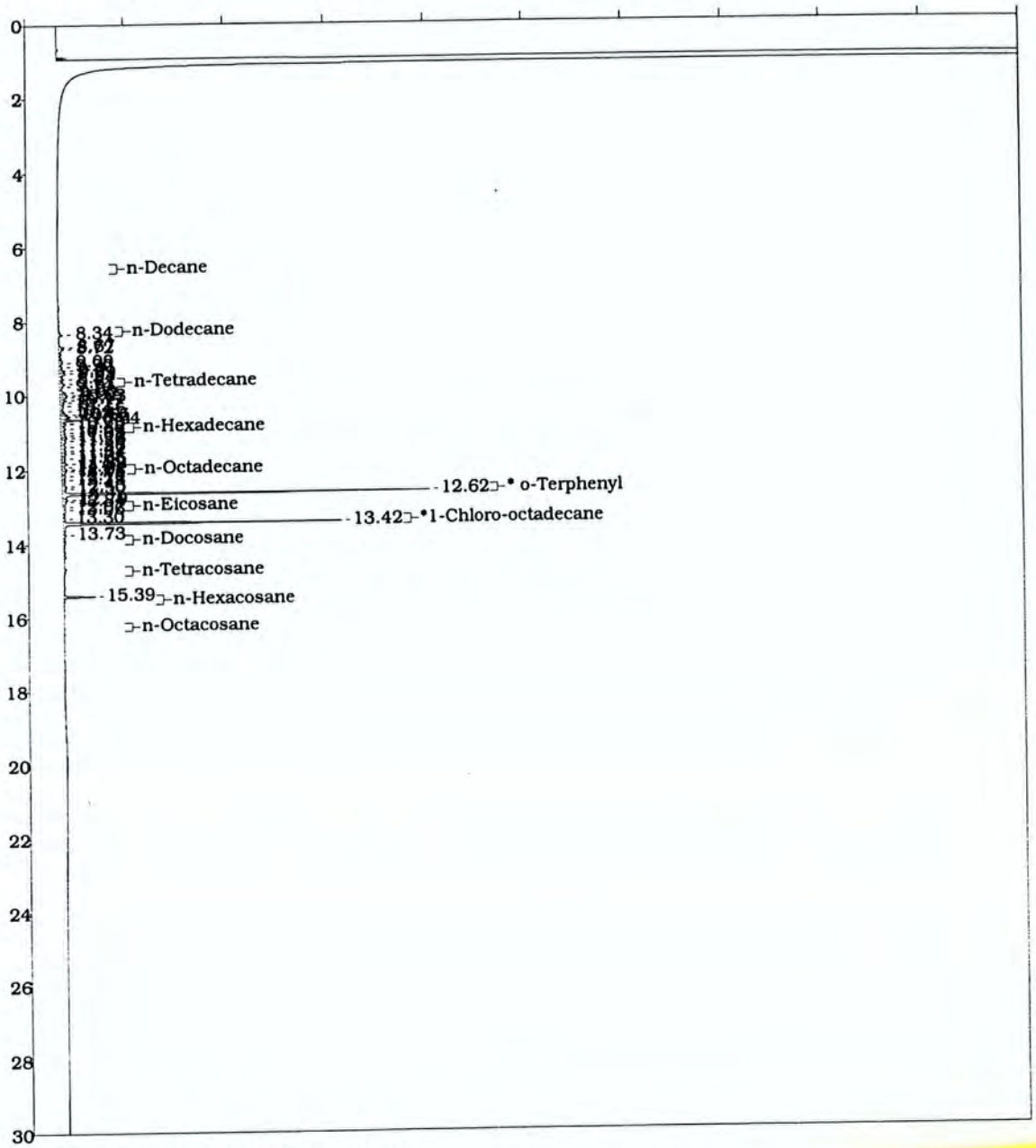
File=G:\ORG\FIS\1106DROF.33R Date printed=11-07-2001 Time= 20:57:32
Sample Name=001-01-59779 ;01-59779 Water :1106DROF.cc2
0.0 to 30.0 min. Low Y=-3.0 High Y=100.0 mv Span=103.0




DIESEL RANGE ORGANICS CHROMATOGRAM
Sample Name: 001-01-59779 ;01-59779 Water :1106DROF.cc2
Area File: G:\ORG\FIS\1106DROF.33A
Date & Time Collected: Nov 7, 2001 20:57:25
Method File: G:\ORG\FIS\DROFB.MET
Calibration File: G:\ORG\FIS\DRO1012B.CAL
Sample Weight: 1000 Dilution: 1 S.A.: 1
Peaks subtracted from Total:

| Compound Name | RT | Area | Amount | %Recovery |
|---|---|---|---|---|
| * o-Terphenyl | 12.6 | 71,073 | 0.1 | 62 |
| *1-Chloro-octade | 13.4 | 58,053 | 0.1 | 65 |

DRO Area 118,274 DRO AMOUNT 0.22
TEH Area 124,406 TEH AMOUNT 0.24

MOC-13

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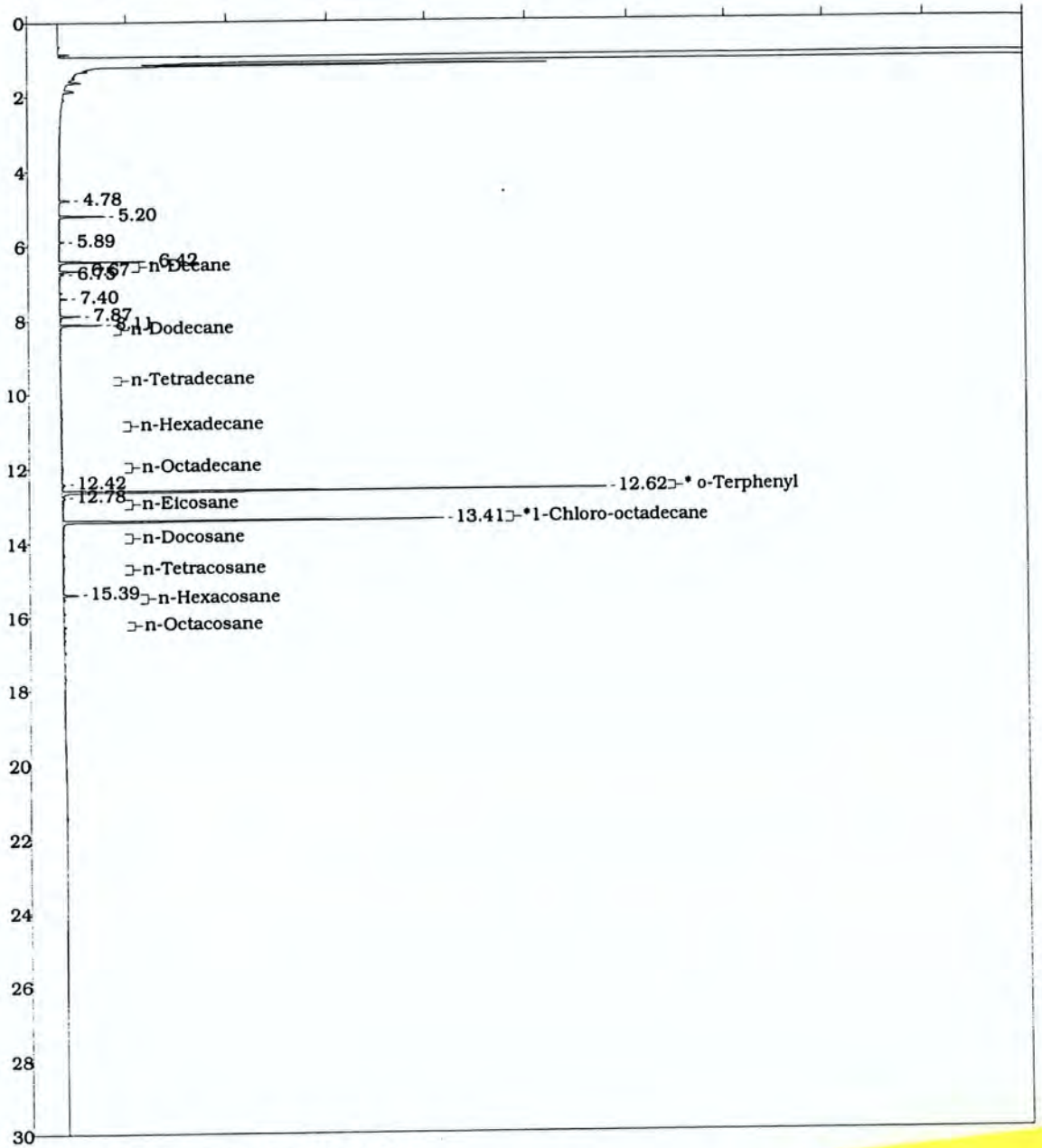
File=G:\ORG\FIS\1106DROF.36R Date printed=11-07-2001 Time= 23:23:17

Sample Name=002-01-59779 ;01-59779 Water :1106DROF.cc2

0.0 to 30.0 min. Low Y=-3.0 High Y=100.0 mv Span=103.0




DIESEL RANGE ORGANICS CHROMATOGRAM
Sample Name: 002-01-59779 ;01-59779 Water :1106DROF.cc2
Area File: G:\ORG\FIS\1106DROF.36A
Date & Time Collected: Nov 7, 2001 23:21:47
Method File: G:\ORG\FIS\DROFB.MET
Calibration File: G:\ORG\FIS\DRO1012B.CAL
Sample Weight: 1000 Dilution: 1 S.A.: 1
Peaks subtracted from Total:

| Compound Name | RT | Area | Amount | %Recovery |
|---|---|---|---|---|
| * o-Terphenyl | 12.6 | 101,799 | 0.2 | 88 |
| *1-Chloro-octade | 13.4 | 76,685 | 0.2 | 86 |
| DRO Area | 47,611 | DRO AMOUNT | | 0.09 |
| TEH Area | 86,053 | TEH AMOUNT | | 0.16 |

MOC-14

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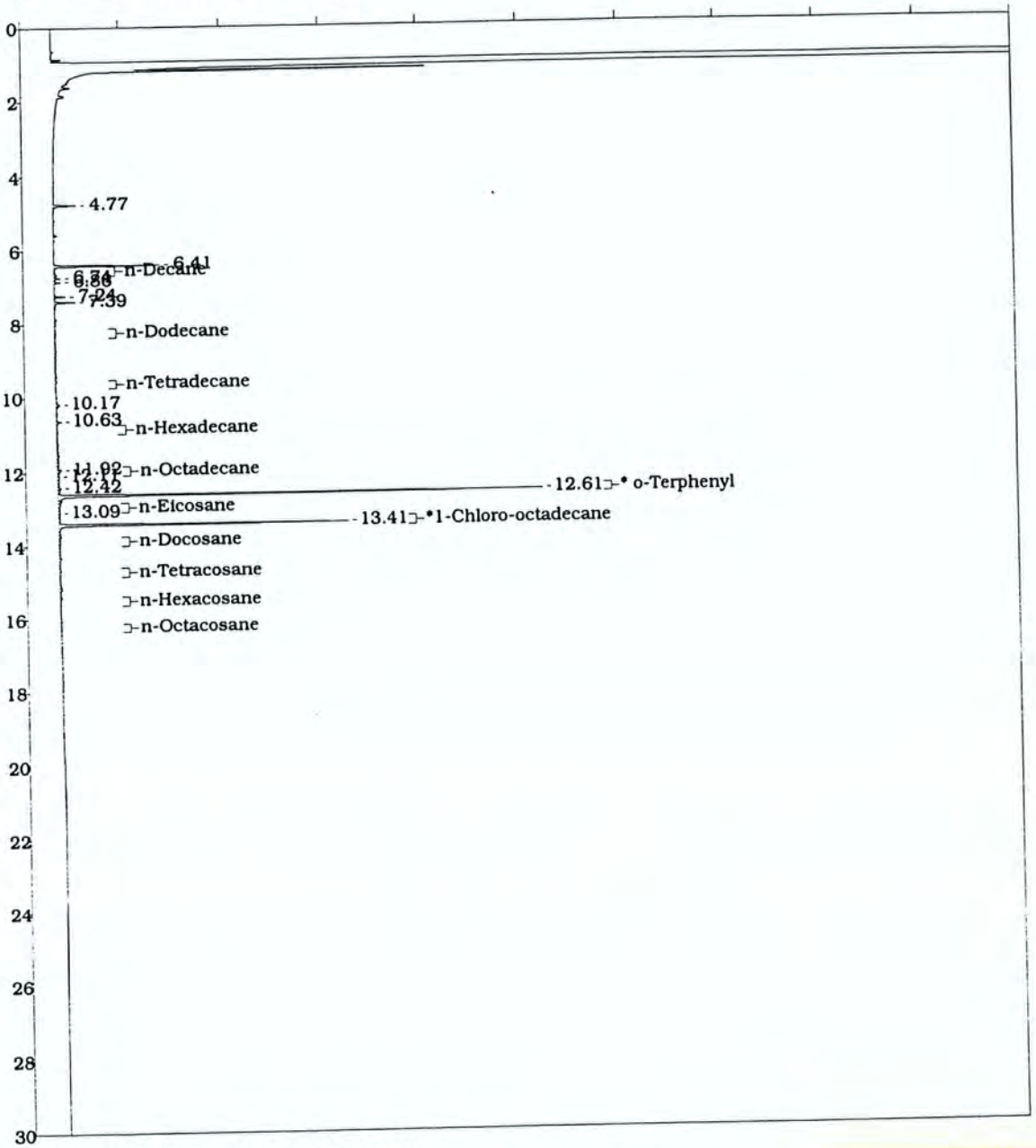
File=G:\ORG\FIS\1106DROF.37R Date printed=11-08-2001 Time= 00:09:36
Sample Name=003-01-59779 ;01-59779 Water :1106DROF.cc2
0.0 to 30.0 min. Low Y=-3.0 High Y=100.0 mv Span=103.0




DIESEL RANGE ORGANICS CHROMATOGRAM
Sample Name: 003-01-59779 ;01-59779 Water :1106DROF.cc2
Area File: G:\ORG\FIS\1106DROF.37A
Date & Time Collected: Nov 8, 2001 00:09:30
Method File: G:\ORG\FIS\DROFB.MET
Calibration File: G:\ORG\FIS\DRO1012B.CAL
Sample Weight: 1000 Dilution: 1 S.A.: 1
Peaks subtracted from Total:

| Compound Name | RT | Area | Amount | %Recovery |
|---|---|---|---|---|
| * o-Terphenyl | 12.6 | 92,730 | 0.2 | 80 |
| *1-Chloro-octade | 13.4 | 59,072 | 0.1 | 66 |
| DRO Area | 49,936 | DRO AMOUNT | | 0.09 |
| TEH Area | 82,623 | TEH AMOUNT | | 0.16 |

MOC-16

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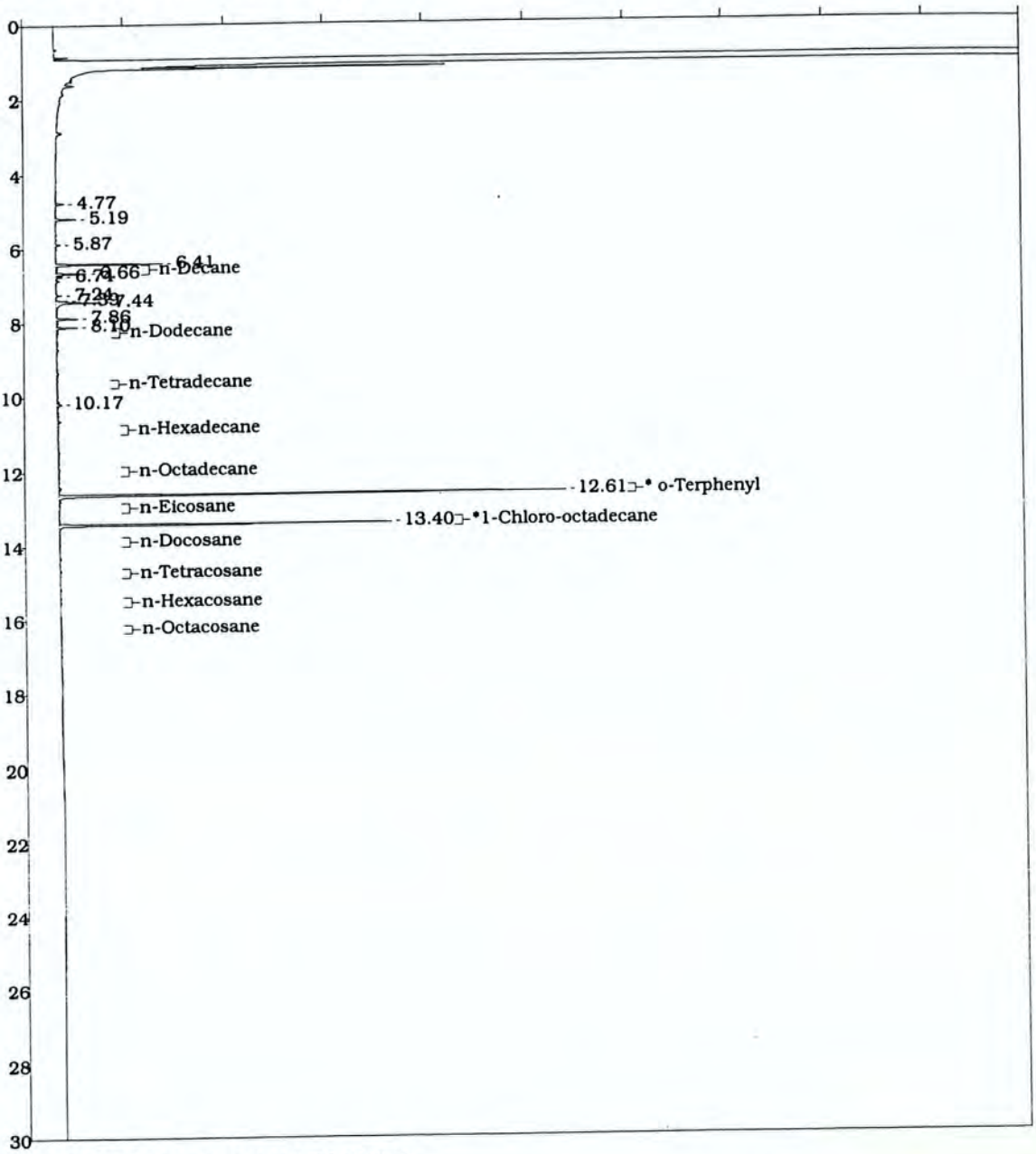
File=G:\ORG\FIS\1106DROF.38R Date printed=11-08-2001 Time= 00:57:08
Sample Name=004-01-59779 ;01-59779 Water :1106DROF.cc2
0.0 to 30.0 min. Low Y=-3.0 High Y=100.0 mv Span=103.0




DIESEL RANGE ORGANICS CHROMATOGRAM
Sample Name: 004-01-59779 ;01-59779 Water :1106DROF.cc2
Area File: G:\ORG\FIS\1106DROF.38A
Date & Time Collected: Nov 8, 2001 00:57:04
Method File: G:\ORG\FIS\DROFB.MET
Calibration File: G:\ORG\FIS\DRO1012B.CAL
Sample Weight: 1000 Dilution: 1 S.A.: 1
Peaks subtracted from Total:

| Compound Name | RT | Area | Amount | %Recovery |
|---|---|---|---|---|
| * o-Terphenyl | 12.6 | 96,251 | 0.2 | 83 |
| *1-Chloro-octade | 13.4 | 66,670 | 0.1 | 75 |
| DRO Area | 54,358 | DRO AMOUNT | | 0.10 |
| TEH Area | 87,808 | TEH AMOUNT | | 0.17 |

MOC-18

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**Client:** HydroSolutions, Inc.

**Login No.:** 001-01-59779
**Date:** 09-Nov-01

## VOLATILE PETROLEUM HYDROCARBONS (VPH) LABORATORY ANALYSIS REPORT

Project ID: CROWLEY LAW FIRM
Client ID: MOC-13
Sampled:02-Nov-01 14:30
Received:05-Nov-01

### Aromatic VPH Constituents

| CONSTITUENT | Result | Units | Qualifier | Reporting Limit | QC/Regulatory Limit | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methyl t-butylether | < 2.0 | µg/L(ppb) | 1 | 2.0 | 30 | 08-Nov-01 18:38 | bw |
| Benzene | 2.1 | µg/L(ppb) | | 1.0 | 5 | 08-Nov-01 18:38 | bw |
| Toluene | < 1.0 | µg/L(ppb) | 1 | 1.0 | 1000 | 08-Nov-01 18:38 | bw |
| Ethylbenzene | < 1.0 | µg/L(ppb) | 1 | 1.0 | 700 | 08-Nov-01 18:38 | bw |
| m+p-Xylenes | < 1.0 | µg/L(ppb) | 1 | 1.0 | | 08-Nov-01 18:38 | bw |
| o-Xylene | < 1.0 | µg/L(ppb) | 1 | 1.0 | | 08-Nov-01 18:38 | bw |
| Total Xylenes | < 1.0 | µg/L(ppb) | 1 | 1.0 | 10000 | 08-Nov-01 18:38 | bw |
| Naphthalene | < 10 | µg/L(ppb) | 1 | 2.0 | 28 | 08-Nov-01 18:38 | bw |
| **$C_9$ to $C_{10}$ Aromatics** | **153** | **µg/L(ppb)** | | **40** | **100** | 08-Nov-01 18:38 | bw |
| VPH Aromatics Surrogate | 87 | % Rec. | | | 70-130 | 08-Nov-01 18:38 | bw |

### Aliphatic VPH Constituents

| CONSTITUENT | | | | | | | |
|---|---|---|---|---|---|---|---|
| $C_5$ to $C_8$ Aliphatics[a] | < 40 | µg/L(ppb) | | 40 | 350 | 08-Nov-01 18:38 | bw |
| $C_9$ to $C_{12}$ Aliphatics[b] | 211 | µg/L(ppb) | | 40 | 1000 | 08-Nov-01 18:38 | bw |
| VPH Aliphatics Surrogate | 86 | % Rec. | | | 70-130 | 08-Nov-01 18:38 | bw |
| Total Purgeable Hydrocarbons[c] | 1810 | µg/L(ppb) | | 40 | | 08-Nov-01 18:38 | bw |
| pH | < 2 | s.u. | | | <2 | | |

**Notes and Qualifiers**

[a]Aromatic constituents Benzene, Toluene, Ethylbenzene and m+p-Xylenes were subtracted from this value.

[b]Aromatic constituents o-Xylene and $C_9$ to $C_{10}$ aromatics were subtracted from this value.

[c]This value is equivalent to the GRO Method Total Purgeable Hydrocarbon value.

(1)The reporting limit was increased due to sample matrix interference.

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**Client:** HydroSolutions, Inc.

**Login No.:** 002-01-59779
**Date:** 29-Nov-01

## VOLATILE PETROLEUM HYDROCARBONS (VPH) LABORATORY ANALYSIS REPORT

Project ID: CROWLEY LAW FIRM
Client ID: MOC-14
Sampled:02-Nov-01 13:13
Received:05-Nov-01

### Aromatic VPH Constituents

| CONSTITUENT | Result | Units | Qualifier | Reporting Limit | QC/Regulatory Limit | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methyl t-butylether | < 1.0 | µg/L(ppb) | | 1.0 | 30 | 07-Nov-01 18:30 | bw |
| **Benzene** | **64** | **µg/L(ppb)** | | **0.50** | **5** | 07-Nov-01 18:30 | bw |
| Toluene | < 0.50 | µg/L(ppb) | | 0.50 | 1000 | 07-Nov-01 18:30 | bw |
| Ethylbenzene | < 0.50 | µg/L(ppb) | | 0.50 | 700 | 07-Nov-01 18:30 | bw |
| m+p-Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | | 07-Nov-01 18:30 | bw |
| o-Xylene | < 0.50 | µg/L(ppb) | | 0.50 | | 07-Nov-01 18:30 | bw |
| Total Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | 10000 | 07-Nov-01 18:30 | bw |
| Naphthalene | < 1.0 | µg/L(ppb) | | 1.0 | 28 | 07-Nov-01 18:30 | bw |
| $C_9$ to $C_{10}$ Aromatics | < 20 | µg/L(ppb) | | 20 | 100 | 07-Nov-01 18:30 | bw |
| VPH Aromatics Surrogate | 100 | % Rec. | | | 70-130 | 07-Nov-01 18:30 | bw |

### Aliphatic VPH Constituents

| CONSTITUENT | | | | | | | |
|---|---|---|---|---|---|---|---|
| $C_5$ to $C_8$ Aliphatics[a] | 48 | µg/L(ppb) | | 20 | 350 | 07-Nov-01 18:30 | bw |
| $C_9$ to $C_{12}$ Aliphatics[b] | < 20 | µg/L(ppb) | | 20 | 1000 | 07-Nov-01 18:30 | bw |
| VPH Aliphatics Surrogate | 92 | % Rec. | | | 70-130 | 07-Nov-01 18:30 | bw |
| Total Purgeable Hydrocarbons[c] | 85 | µg/L(ppb) | | 20 | | 07-Nov-01 18:30 | bw |
| pH | 3 | s.u. | | | <2 | | |

**Notes and Qualifiers**

[a]Aromatic constituents Benzene, Toluene, Ethylbenzene and m+p-Xylenes were subtracted from this value.

[b]Aromatic constituents o-Xylene and $C_9$ to $C_{10}$ aromatics were subtracted from this value.

[c]This value is equivalent to the GRO Method Total Purgeable Hydrocarbon value.

(Note): Analysis results are for vial labeled at time of Login as Vial C.

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**Client:** HydroSolutions, Inc.

**Login No.:** 002-01-59779
**Date:** 29-Nov-01

## VOLATILE PETROLEUM HYDROCARBONS (VPH) LABORATORY ANALYSIS REPORT

Project ID: CROWLEY LAW FIRM
Client ID: MOC-14
Sampled:02-Nov-01 13:13
Received:05-Nov-01

### Aromatic VPH Constituents

| CONSTITUENT | Result | Units | Qualifier | Reporting Limit | QC/Regulatory Limit | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methyl t-butylether | < 1.0 | µg/L(ppb) | | 1.0 | 30 | 28-Nov-01 15:09 | bw |
| **Benzene** | **63** | **µg/L(ppb)** | | **0.50** | **5** | 28-Nov-01 15:09 | bw |
| Toluene | 0.58 | µg/L(ppb) | | 0.50 | 1000 | 28-Nov-01 15:09 | bw |
| Ethylbenzene | < 0.50 | µg/L(ppb) | | 0.50 | 700 | 28-Nov-01 15:09 | bw |
| m+p-Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | | 28-Nov-01 15:09 | bw |
| o-Xylene | < 0.50 | µg/L(ppb) | | 0.50 | | 28-Nov-01 15:09 | bw |
| Total Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | 10000 | 28-Nov-01 15:09 | bw |
| Naphthalene | < 1.0 | µg/L(ppb) | | 1.0 | 28 | 28-Nov-01 15:09 | bw |
| $C_9$ to $C_{10}$ Aromatics | < 20 | µg/L(ppb) | | 20 | 100 | 28-Nov-01 15:09 | bw |
| VPH Aromatics Surrogate | 99 | % Rec. | | | 70-130 | 28-Nov-01 15:09 | bw |

### Aliphatic VPH Constituents

| CONSTITUENT | | | | | | | |
|---|---|---|---|---|---|---|---|
| $C_5$ to $C_8$ Aliphatics[a] | 43 | µg/L(ppb) | | 20 | 350 | 28-Nov-01 15:09 | bw |
| $C_9$ to $C_{12}$ Aliphatics[b] | < 20 | µg/L(ppb) | | 20 | 1000 | 28-Nov-01 15:09 | bw |
| VPH Aliphatics Surrogate | 86 | % Rec. | | | 70-130 | 28-Nov-01 15:09 | bw |
| Total Purgeable Hydrocarbons[c] | 96 | µg/L(ppb) | | 20 | | 28-Nov-01 15:09 | bw |
| pH | < 2 | s.u. | | | <2 | | |

**Notes and Qualifiers**

[a]Aromatic constituents Benzene, Toluene, Ethylbenzene and m+p-Xylenes were subtracted from this value.

[b]Aromatic constituents o-Xylene and $C_9$ to $C_{10}$ aromatics were subtracted from this value.

[c]This value is equivalent to the GRO Method Total Purgeable Hydrocarbon value.

(NOTE): This sample analysis is a second vial (vial D) run for confirmation on Benzene (vial C). Vial D was also split for analysis by EPA Method 8260B and the results were similar.

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**Client:** HydroSolutions, Inc.

**Login No.:** 003-01-59779
**Date:** 09-Nov-01

## VOLATILE PETROLEUM HYDROCARBONS (VPH) LABORATORY ANALYSIS REPORT

Project ID: CROWLEY LAW FIRM

Client ID: MOC-16

Sampled:02-Nov-01 15:45

Received:05-Nov-01

### Aromatic VPH Constituents

| CONSTITUENT | Result | Units | Qualifier | Reporting Limit | QC/Regulatory Limit | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methyl t-butylether | < 1.0 | µg/L(ppb) | | 1.0 | 30 | 07-Nov-01 19:38 | bw |
| **Benzene** | **27** | **µg/L(ppb)** | | **0.50** | **5** | 07-Nov-01 19:38 | bw |
| Toluene | 0.57 | µg/L(ppb) | | 0.50 | 1000 | 07-Nov-01 19:38 | bw |
| Ethylbenzene | < 0.50 | µg/L(ppb) | | 0.50 | 700 | 07-Nov-01 19:38 | bw |
| m + p-Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | | 07-Nov-01 19:38 | bw |
| o-Xylene | < 0.50 | µg/L(ppb) | | 0.50 | | 07-Nov-01 19:38 | bw |
| Total Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | 10000 | 07-Nov-01 19:38 | bw |
| Naphthalene | < 1.0 | µg/L(ppb) | | 1.0 | 28 | 07-Nov-01 19:38 | bw |
| $C_9$ to $C_{10}$ Aromatics | < 20 | µg/L(ppb) | | 20 | 100 | 07-Nov-01 19:38 | bw |
| VPH Aromatics Surrogate | 107 | % Rec. | | | 70-130 | 07-Nov-01 19:38 | bw |

### Aliphatic VPH Constituents

| CONSTITUENT | | | | | | | |
|---|---|---|---|---|---|---|---|
| $C_5$ to $C_8$ Aliphatics[a] | 17 | µg/L(ppb) | | 20 | 350 | 07-Nov-01 19:38 | bw |
| $C_9$ to $C_{12}$ Aliphatics[b] | < 20 | µg/L(ppb) | | 20 | 1000 | 07-Nov-01 19:38 | bw |
| VPH Aliphatics Surrogate | 90 | % Rec. | | | 70-130 | 07-Nov-01 19:38 | bw |
| Total Purgeable Hydrocarbons[c] | 35 | µg/L(ppb) | | 20 | | 07-Nov-01 19:38 | bw |
| pH | < 2 | s.u. | | | <2 | | |

**Notes and Qualifiers**

[a]Aromatic constituents Benzene, Toluene, Ethylbenzene and m + p-Xylenes were subtracted from this value.

[b]Aromatic constituents o-Xylene and $C_9$ to $C_{10}$ aromatics were subtracted from this value.

[c]This value is equivalent to the GRO Method Total Purgeable Hydrocarbon value.

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**Client:** HydroSolutions, Inc.

**Login No.:** 004-01-59779
**Date:** 09-Nov-01

## VOLATILE PETROLEUM HYDROCARBONS (VPH) LABORATORY ANALYSIS REPORT

Project ID: CROWLEY LAW FIRM

Client ID: MOC-18

Sampled:03-Nov-01 11:45

Received:05-Nov-01

### Aromatic VPH Constituents

| CONSTITUENT | Result | Units | Qualifier | Reporting Limit | QC/Regulatory Limit | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methyl t-butylether | < 1.0 | µg/L(ppb) | | 1.0 | 30 | 07-Nov-01 20:46 | bw |
| Benzene | 1.0 | µg/L(ppb) | | 0.50 | 5 | 07-Nov-01 20:46 | bw |
| Toluene | < 0.50 | µg/L(ppb) | | 0.50 | 1000 | 07-Nov-01 20:46 | bw |
| Ethylbenzene | < 0.50 | µg/L(ppb) | | 0.50 | 700 | 07-Nov-01 20:46 | bw |
| m+p-Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | | 07-Nov-01 20:46 | bw |
| o-Xylene | < 0.50 | µg/L(ppb) | | 0.50 | | 07-Nov-01 20:46 | bw |
| Total Xylenes | < 0.50 | µg/L(ppb) | | 0.50 | 10000 | 07-Nov-01 20:46 | bw |
| Naphthalene | < 1.0 | µg/L(ppb) | | 1.0 | 28 | 07-Nov-01 20:46 | bw |
| $C_9$ to $C_{10}$ Aromatics | < 20 | µg/L(ppb) | | 20 | 100 | 07-Nov-01 20:46 | bw |
| VPH Aromatics Surrogate | 105 | % Rec. | | | 70-130 | 07-Nov-01 20:46 | bw |

### Aliphatic VPH Constituents

| CONSTITUENT | | | | | | | |
|---|---|---|---|---|---|---|---|
| $C_5$ to $C_8$ Aliphatics[a] | < 20 | µg/L(ppb) | | 20 | 350 | 07-Nov-01 20:46 | bw |
| $C_9$ to $C_{12}$ Aliphatics[b] | < 20 | µg/L(ppb) | | 20 | 1000 | 07-Nov-01 20:46 | bw |
| VPH Aliphatics Surrogate | 92 | % Rec. | | | 70-130 | 07-Nov-01 20:46 | bw |
| Total Purgeable Hydrocarbons[c] | < 20 | µg/L(ppb) | | 20 | | 07-Nov-01 20:46 | bw |
| pH | < 2 | s.u. | | | <2 | | |

**Notes and Qualifiers**

[a]Aromatic constituents Benzene, Toluene, Ethylbenzene and m+p-Xylenes were subtracted from this value.

[b]Aromatic constituents o-Xylene and $C_9$ to $C_{10}$ aromatics were subtracted from this value.

[c]This value is equivalent to the GRO Method Total Purgeable Hydrocarbon value.

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# ALIPHATIC VPH CONTINUING CALIBRATION REPORT

This continuing calibration report applies to the following analysis runs:
002-01-59779

---

Sample Name: cc1 GRO Continuing Cal :G11281V1 Fiv8404
Area File: G:\ORG\VAR\1128VARB.03A
Date & Time Collected: Nov 28, 2001 11:05:44
Method File: G:\ORG\VAR\4201M11B.MET
Calibration File: G:\ORG\VAR\4201MASB.CAL

| COMPOUND | ACTUAL | MEASURED | %RECOVERY | %RECOVERY LIMITS |
|---|---|---|---|---|
| n-Pentane | 200 | 170 | 85 | 75-125 |
| 2-Methylpentane | 300 | 277 | 92 | 75-125 |
| 224-Trimethylpentane | 300 | 301 | 100 | 75-125 |
| n-Nonane | 200 | 203 | 101 | 75-125 |
| TOTAL RESPONSE | 1000 | 951 | 95 | 75-125 |
| **Trifluorotoluene | 250 | 227 | 91 | 75-125 |

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# ALIPHATIC VPH CONTINUING CALIBRATION REPORT

This continuing calibration report applies to the following analysis runs:
001-01-59779

---

Sample Name: cc3 GRO Continuing Cal :G11071V3 Fiv8212
Area File: G:\ORG\VAR\1107VARB.33A
Date & Time Collected: Nov 8, 2001 12:05:09
Method File: G:\ORG\VAR\3601MA6B.MET
Calibration File: G:\ORG\VAR\3601MASB.CAL

| COMPOUND | ACTUAL | MEASURED | %RECOVERY | %RECOVERY LIMITS |
|---|---|---|---|---|
| n-Pentane | 200 | 173 | 87 | 75-125 |
| 2-Methylpentane | 300 | 274 | 91 | 75-125 |
| 224-Trimethylpentane | 300 | 283 | 94 | 75-125 |
| n-Nonane | 200 | 204 | 102 | 75-125 |
| TOTAL RESPONSE | 1000 | 935 | 93 | 75-125 |
| **Trifluorotoluene | 250 | 218 | 87 | 75-125 |

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# ALIPHATIC VPH CONTINUING CALIBRATION REPORT

This continuing calibration report applies to the following analysis runs:
002-01-59779,003-01-59779,004-01-59779

---

Sample Name: cc1 GRO Continuing Cal :G11071P1 Fiv8210
Area File: G:\ORG\PE1\1107PE1B.06A
Date & Time Collected: Nov 7, 2001 12:47:18
Method File: G:\ORG\PE1\5701MAPB.MET
Calibration File: G:\ORG\PE1\5601MAPB.CAL

| COMPOUND | ACTUAL | MEASURED | %RECOVERY | %RECOVERY LIMITS |
|---|---|---|---|---|
| n-Pentane | 200 | 156 | 78 | 75-125 |
| 2-Methylpentane | 300 | 266 | 89 | 75-125 |
| 224-Trimethylpentane | 300 | 286 | 95 | 75-125 |
| n-Nonane | 200 | 221 | 110 | 75-125 |
| TOTAL RESPONSE | 1000 | 929 | 93 | 75-125 |
| **Trifluorotoluene | 250 | 238 | 95 | 75-125 |

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# AROMATIC VPH CONTINUING CALIBRATION REPORT

This continuing calibration report applies to the following analysis runs:
001-01-59779

---

Sample Name: cc3 GRO Continuing Cal :G11071V3 Fiv8212
Area File: G:\ORG\VAR\1107VAR.33A
Date & Time Collected: Nov 8, 2001 12:05:09
Method File: G:\ORG\VAR\3601MA5.MET
Calibration File: G:\ORG\VAR\3601MAS.CAL

| COMPOUND | ACTUAL | MEASURED | %RECOVERY | %RECOVERY LIMITS |
|---|---|---|---|---|
| MTBE | 300 | 359 | 120 | 75-125 |
| Benzene | 100 | 104 | 104 | 75-125 |
| Toluene | 300 | 316 | 105 | 75-125 |
| Ethylbenzene | 100 | 107 | 107 | 75-125 |
| m+p-Xylenes | 400 | 417 | 104 | 75-125 |
| o-Xylene | 200 | 211 | 105 | 75-125 |
| 124-Trimethylbenzene | 200 | 212 | 106 | 75-125 |
| Naphthalene | 200 | 239 | 120 | 75-125 |
| **TRIFLUOROTOLUENE | 250 | 239 | 95 | 75-125 |

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# AROMATIC VPH CONTINUING CALIBRATION REPORT

This continuing calibration report applies to the following analysis runs:
002-01-59779,003-01-59779,004-01-59779

---

Sample Name: cc1 GRO Continuing Cal :G11071P1 Fiv8210
Area File: G:\ORG\PE1\1107PE1.06A
Date & Time Collected: Nov 7, 2001 12:47:18
Method File: G:\ORG\PE1\5701MA5.MET
Calibration File: G:\ORG\PE1\5501MAP.CAL

| COMPOUND | ACTUAL | MEASURED | %RECOVERY | %RECOVERY LIMITS |
|---|---|---|---|---|
| MTBE | 300 | 345 | 115 | 75-125 |
| Benzene | 100 | 113 | 113 | 75-125 |
| Toluene | 300 | 340 | 113 | 75-125 |
| Ethylbenzene | 100 | 114 | 114 | 75-125 |
| m+p-Xylenes | 400 | 447 | 112 | 75-125 |
| o-Xylene | 200 | 213 | 106 | 75-125 |
| 124-Trimethylbenzene | 200 | 206 | 103 | 75-125 |
| Naphthalene | 200 | 197 | 98 | 75-125 |
| **TRIFLUOROTOLUENE | 250 | 284 | 114 | 75-125 |

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# AROMATIC VPH CONTINUING CALIBRATION REPORT

This continuing calibration report applies to the following analysis runs:
002-01-59779

---

Sample Name: cc1 GRO Continuing Cal :G11281V1 Fiv8404
Area File: G:\ORG\VAR\1128VAR.03A
Date & Time Collected: Nov 28, 2001 11:05:44
Method File: G:\ORG\VAR\4201M11.MET
Calibration File: G:\ORG\VAR\4201MAS.CAL

| COMPOUND | ACTUAL | MEASURED | %RECOVERY | %RECOVERY LIMITS |
|---|---|---|---|---|
| MTBE | 300 | 358 | 119 | 75-125 |
| Benzene | 100 | 111 | 111 | 75-125 |
| Toluene | 300 | 340 | 113 | 75-125 |
| Ethylbenzene | 100 | 114 | 114 | 75-125 |
| m+p-Xylenes | 400 | 452 | 113 | 75-125 |
| o-Xylene | 200 | 226 | 113 | 75-125 |
| 124-Trimethylbenzene | 200 | 235 | 117 | 75-125 |
| Naphthalene | 200 | 205 | 103 | 75-125 |
| **TRIFLUOROTOLUENE | 250 | 261 | 105 | 75-125 |

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**Date:** 09-Nov-01

## QUALITY ASSURANCE REPORT FOR VOLATILE PETROLEUM HYDROCARBONS (VPH)

**Method Blank Results:**

| MTBE | Benzene | Toluene | Ethylbenzene | m+p-Xylenes | o-Xylene | Naphthalene | C9 to C10 Aromatics | C5 to C8 Aliphatics | C9 to C12 Aliphatics |
|---|---|---|---|---|---|---|---|---|---|
| < 1.0 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 1.0 | < 20 | < 20 | < 20 |

Concentration Units = µg/L(ppb)

Aromatic Surrogate % Recovery = 93

Aliphatic Surrogate % Recovery = 90

Date Analyzed: 08-Nov-01 15:35

Sequence I.D.: B11071V3

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| < 1.0 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 1.0 | < 20 | < 20 | < 20 |

Concentration Units = µg/L(ppb)

Aromatic Surrogate % Recovery = 106

Aliphatic Surrogate % Recovery = 92

Date Analyzed: 07-Nov-01 13:55

Sequence I.D.: B11071P1

### LABORATORY FORTIFIED BLANK RESULTS

Date Analyzed: 08-Nov-01 15:00

Sequence I.D.: B11071V3

| Constituent | SPIKE ADDED µg/L(ppb) | MS CONC. µg/L(ppb) | MS %Rec. | QC Limit %Rec. | Surrogate %Rec. |
|---|---|---|---|---|---|
| MTBE | 20 | 17 | 85 | 70-130 | 91 |
| Benzene | 20 | 20 | 100 | 70-130 | |
| Toluene | 20 | 21 | 105 | 70-130 | |
| Ethylbenzene | 20 | 20 | 100 | 70-130 | |
| m+p-Xylenes | 40 | 41 | 103 | 70-130 | |
| o-Xylene | 20 | 20 | 100 | 70-130 | |
| Naphthalene | 20 | 21 | 105 | 70-130 | |

### LABORATORY FORTIFIED BLANK RESULTS

Date Analyzed: 07-Nov-01 12:08

Sequence I.D.: B11071P1

| Constituent | SPIKE ADDED µg/L(ppb) | MS CONC. µg/L(ppb) | MS %Rec. | QC Limit %Rec. | Surrogate %Rec. |
|---|---|---|---|---|---|
| MTBE | 20 | 21 | 105 | 70-130 | 94 |
| Benzene | 20 | 22 | 110 | 70-130 | |
| Toluene | 20 | 21 | 105 | 70-130 | |
| Ethylbenzene | 20 | 21 | 105 | 70-130 | |
| m+p-Xylenes | 40 | 39 | 98 | 70-130 | |
| o-Xylene | 20 | 20 | 100 | 70-130 | |
| Naphthalene | 20 | 18 | 90 | 70-130 | |

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**Date:** 29-Nov-01

## QUALITY ASSURANCE REPORT FOR VOLATILE PETROLEUM HYDROCARBONS (VPH)

**Method Blank Results:**

| MTBE | Benzene | Toluene | Ethylbenzene | m+p-Xylenes | o-Xylene | Naphthalene | C9 to C10 Aromatics | C5 to C8 Aliphatics | C9 to C12 Aliphatics |
|---|---|---|---|---|---|---|---|---|---|
| < 1.0 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 1.0 | < 20 | < 20 | < 20 |

Concentration Units = µg/L(ppb)

Aromatic Surrogate % Recovery = 98

Aliphatic Surrogate % Recovery = 89

Date Analyzed: 28-Nov-01 14:27

Sequence I.D.: B11281V1

### LABORATORY FORTIFIED BLANK RESULTS

Date Analyzed: 28-Nov-01 11:41

Sequence I.D.: B11281V1

| Constituent | SPIKE ADDED µg/L(ppb) | MS CONC. µg/L(ppb) | MS %Rec. | QC Limit %Rec. | Surrogate %Rec. |
|---|---|---|---|---|---|
| MTBE | 20 | 20 | 100 | 70-130 | 104 |
| Benzene | 20 | 23 | 115 | 70-130 | |
| Toluene | 20 | 23 | 115 | 70-130 | |
| Ethylbenzene | 20 | 24 | 120 | 70-130 | |
| m+p-Xylenes | 40 | 48 | 120 | 70-130 | |
| o-Xylene | 20 | 24 | 120 | 70-130 | |
| Naphthalene | 20 | 22 | 110 | 70-130 | |

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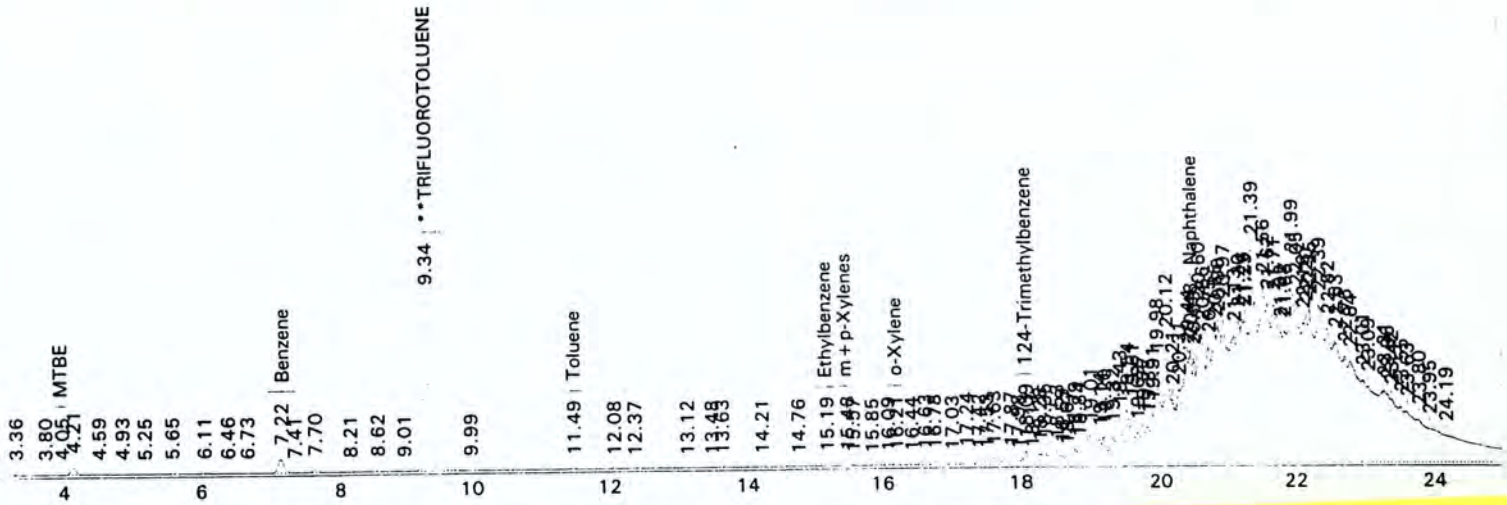
File=G:\ORG\VAR\1107VAR.41R Date printed=11-09-2001 Time= 14:09:51
Sample Name=001-01-59779 ;01-59779 VPH Water :G11071V3
3.0 to 25.0 min. Low Y=-0.458 High Y=49.542 mv Span=50.0




ENERGY LABORATORIES, INC.----AROMATICS VPH CHROMATOGRAM
Sample Name: 001-01-59779 ;01-59779 VPH Water :G11071V3
Area File: G:\ORG\VAR\1107VAR.41A
Date & Time Collected: Nov 8, 2001 18:38:51
Method File: G:\ORG\VAR\3601M10.MET
Calibration File: G:\ORG\VAR\3601MAS.CAL
Sample Weight: 5 Dilution: 2 S.A.: 1

MOC-13

Mean RF for C9 to C10 Aromatic Hydrocarbons: 1014.133
Rt range for C9 to C10 Aromatic Hydrocarbons: 16.29 to 20.38838

Aromatic Hydrocarbon Areas and Quantitations:
C9-C10 Area 388,309 Quant: 153.2

Target Analytes:

| COMPOUND | RT | Cal RRT | RRT | Area | ug/L Amount | Flag |
|---|---|---|---|---|---|---|
| MTBE | 4.05 | 4.05 | 4.05 | 271 | < 2.00 | U |
| Benzene | 7.22 | 2.11 | 2.11 | 7919 | 2.11 | |
| Toluene | 11.49 | 11.49 | 11.49 | 1030 | < 1.00 | U |
| Ethylbenzene | 15.19 | 15.19 | 15.19 | 1330 | < 1.00 | U |
| m+p-Xylenes | 15.48 | 15.48 | 15.48 | 1891 | < 1.00 | U |
| o-Xylene | 16.21 | 16.21 | 16.21 | 1135 | < 1.00 | U |
| 124-Trimethylbenzene | 18.09 | 18.09 | 18.09 | 5488 | < 4.00 | U |
| Naphthalene | 20.48 | -11.14 | -11.15 | 33547 | ~~15.62~~ | NO |

| SURROGATE CMPND | RT | ACTUAL | MEASURED | %RECOVERY | QC LIMITS |
|---|---|---|---|---|---|
| **TRIFLUOROTOLUENE | 9.34 | 50.0 | 43.5 | 87 | 70-130 |

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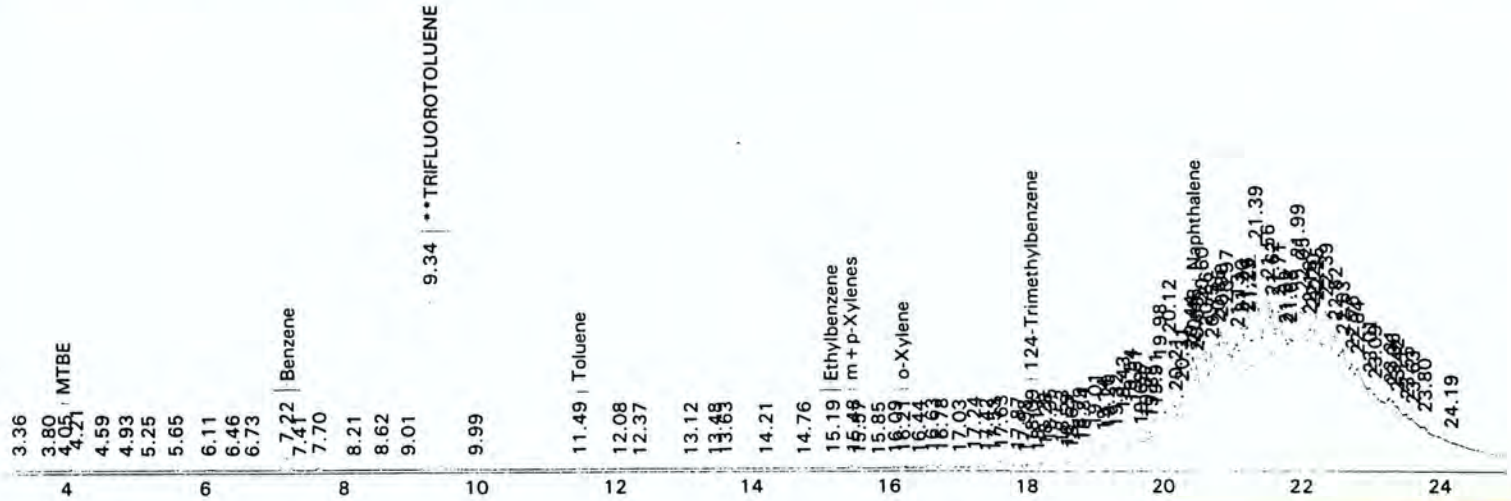
File=G:\ORG\VAR\1107VAR.41R Date printed=11-09-2001 Time= 14:04:13
Sample Name=001-01-59779 ;01-59779 VPH Water :G11071V3
3.0 to 25.0 min. Low Y=-0.458 High Y=49.542 mv Span=50.0




ENERGY LABORATORIES, INC.----AROMATICS VPH CHROMATOGRAM
Sample Name: 001-01-59779 ;01-59779 VPH Water :G11071V3
Area File: G:\ORG\VAR\1107VAR.41A
Date & Time Collected: Nov 8, 2001 18:38:51
Method File: G:\ORG\VAR\3601MV10.MET
Calibration File: G:\ORG\VAR\3601MAS.CAL
Sample Weight: 5 Dilution: 2 S.A.: 1

Moc-13

Mean RF for C9 to C10 Aromatic Hydrocarbons: 1014.133
Rt range for C9 to C10 Aromatic Hydrocarbons: 16.29 to 20.38838

Aromatic Hydrocarbon Areas and Quantitations:
C9-C10 Area 152,162 Quant: 60.0

Target Analytes:

| COMPOUND | RT | Cal RRT | RRT | Area | ug/L Amount | Flag |
|---|---|---|---|---|---|---|
| MTBE | 4.05 | 4.05 | 4.05 | 271 | < 2.00 | U |
| Benzene | 7.22 | 2.11 | 2.11 | 7924 | 2.11 | |
| Toluene | 11.49 | 11.49 | 11.49 | 1057 | < 1.00 | U |
| Ethylbenzene | 15.19 | 15.19 | 15.19 | 1254 | < 1.00 | U |
| m+p-Xylenes | 15.48 | 15.48 | 15.48 | 1813 | < 1.00 | U |
| o-Xylene | 16.21 | 16.21 | 16.21 | 961 | < 1.00 | U |
| 124-Trimethylbenzene | 18.09 | 18.09 | 18.09 | 3337 | < 4.00 | U |
| Naphthalene | 20.48 | -11.14 | -11.15 | 13406 | ~~6.24~~ | <10 BW |

| SURROGATE CMPND | RT | ACTUAL | MEASURED | %RECOVERY | QC LIMITS |
|---|---|---|---|---|---|
| **TRIFLUOROTOLUENE | 9.34 | 50.0 | 43.5 | 87 | 70-130 |

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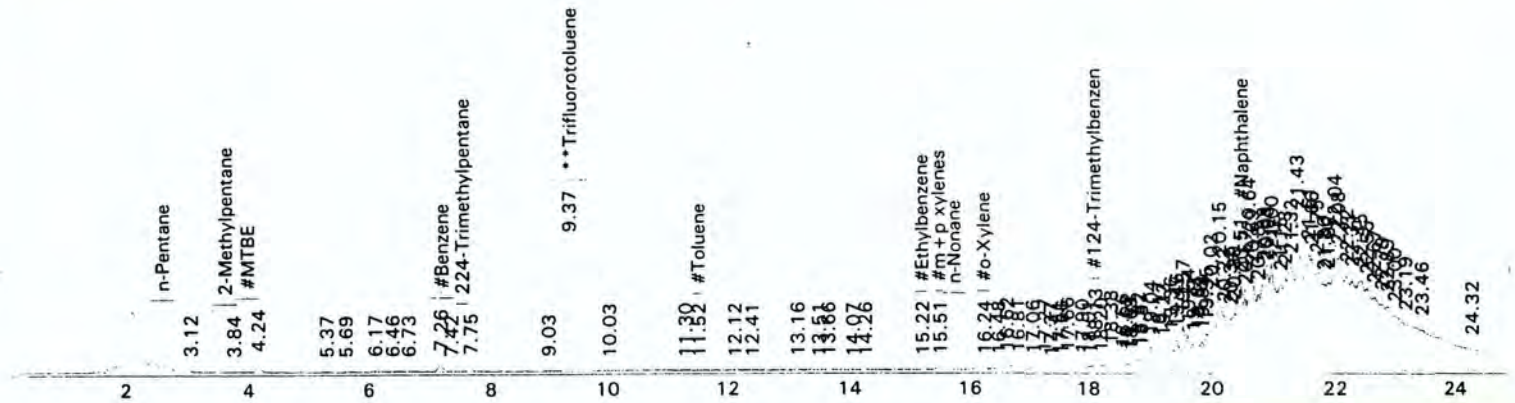
File=G:\ORG\VAR\1107VARB.41R Date printed=11-09-2001 Time= 14:04:20
Sample Name=001-01-59779 ;01-59779 VPH Water :G11071V3
0.01 to 25.0 min. Low Y=-2.637 High Y=17.363 mv Span=20.0




ENERGY LABORATORIES, INC.----ALIPHATICS VPH CHROMATOGRAM
Sample Name: 001-01-59779 ;01-59779 VPH Water :G11071V3
Area File: G:\ORG\VAR\1107VARB.41A
Date & Time Collected: Nov 8, 2001 18:38:51
Method File: G:\ORG\VAR\3601M10B.MET
Calibration File: G:\ORG\VAR\3601MASB.CAL
Sample Weight: 5 Dilution: 2 S.A.: 1
Mean RF for C5 to C8 Aliphatic Hydrocarbons: 137.8002
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 150.0648
Mean RF for all calibrated compounds: 173.3747
Rt range for Gasoline Range Organics: 3.484643 to 18.20109
Rt range for C5 to C8 Aliphatic Hydrocarbons: 2.458333 to 15.55198
Rt range for C9 to C12 Aliphatic Hydrocarbons: 15.65198 to 20.41823

MOC-13

Peaks subtracted from Total:

| Compound Name | RT | Area | Amount | %Recovery |
|---|---|---|---|---|
| **Trifluorotoluene | 9.4 | 30,678 | 43 | 86 |

| | | | |
|---|---|---|---|
| GRO Area: | 22,748 | Quant: | 52.5 |
| TPH Area: | 785,015 | Quant: | 1,811.1 |

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:

| | | | |
|---|---|---|---|
| C5-C8 Area: | 9,256 | Quant: | 26.9 |
| C9-C12 Area | 136,572 | Quant: | 364.0 |

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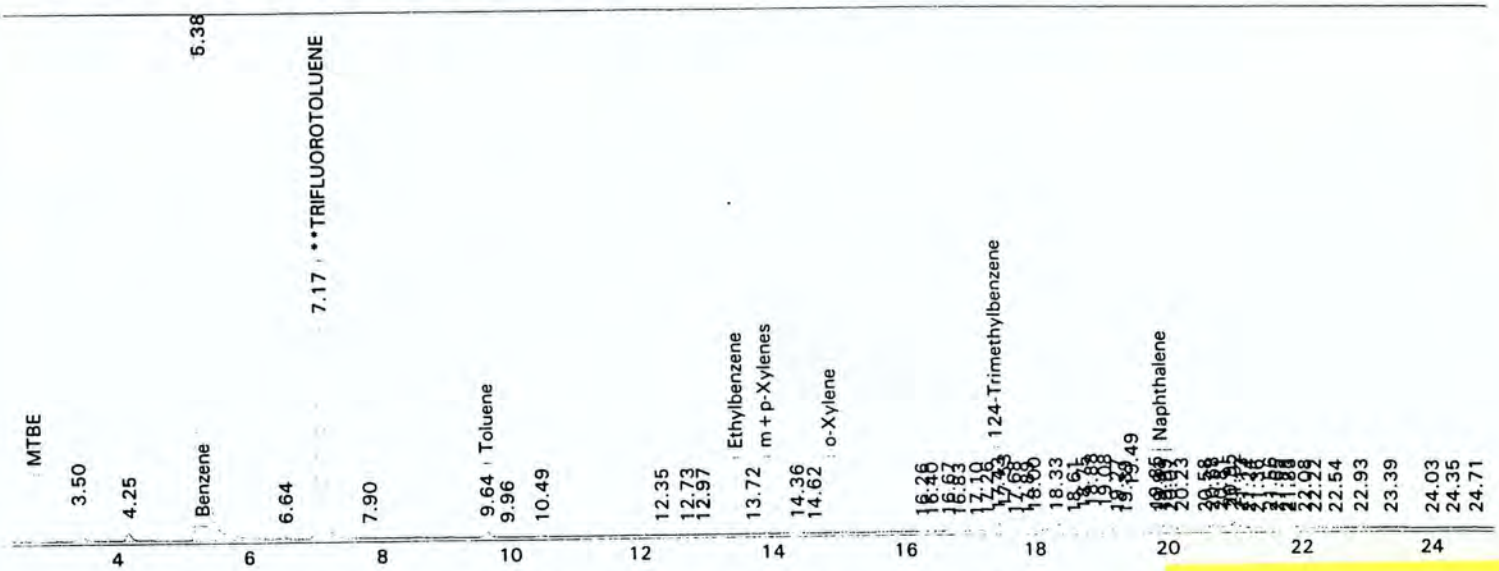
File=G:\ORG\PE1\1107PE1.16R Date printed=11-09-2001 Time= 14:23:24
Sample Name=002-01-59779 ;01-59779 VPH Water :G11071P1
2.1 to 25.0 min. Low Y=-73.356 High Y=-33.356 mv Span=40.0




ENERGY LABORATORIES, INC.----AROMATICS VPH CHROMATOGRAM
Sample Name: 002-01-59779 ;01-59779 VPH Water :G11071P1
Area File: G:\ORG\PE1\1107PE1.16A
Date & Time Collected: Nov 7, 2001 18:30:50
Method File: G:\ORG\PE1\5701M13.MET
Calibration File: G:\ORG\PE1\5501MAP.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

MOC-14

Mean RF for C9 to C10 Aromatic Hydrocarbons: 1439.672
Rt range for C9 to C10 Aromatic Hydrocarbons: 14.9425 to 19.7225

Aromatic Hydrocarbon Areas and Quantitations:
C9-C10 Area 48,696 Quant: 6.8

Target Analytes:

| COMPOUND | RT | Cal RRT | RRT | Area | ug/L Amount | Flag |
|---|---|---|---|---|---|---|
| MTBE | 0.00 | 0.00 | 0.00 | 0 | < 1.00 | U |
| Benzene | 5.38 | 1.80 | 1.79 | 477235 | 64.02 | |
| Toluene | 9.64 | 9.64 | 9.64 | 2471 | < 0.50 | U |
| Ethylbenzene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| m+p-Xylenes | 13.92 | 13.92 | 13.92 | -330 | < 0.50 | U |
| o-Xylene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| 124-Trimethylbenzene | 17.43 | 17.43 | 17.43 | 2712 | < 2.00 | U |
| Naphthalene | 19.91 | 19.91 | 19.91 | 552 | < 1.00 | U |

| SURROGATE CMPND | RT | ACTUAL | MEASURED | %RECOVERY | QC LIMITS |
|---|---|---|---|---|---|
| **TRIFLUOROTOLUENE | 7.17 | 50.0 | 49.8 | 100 | 70-130 |

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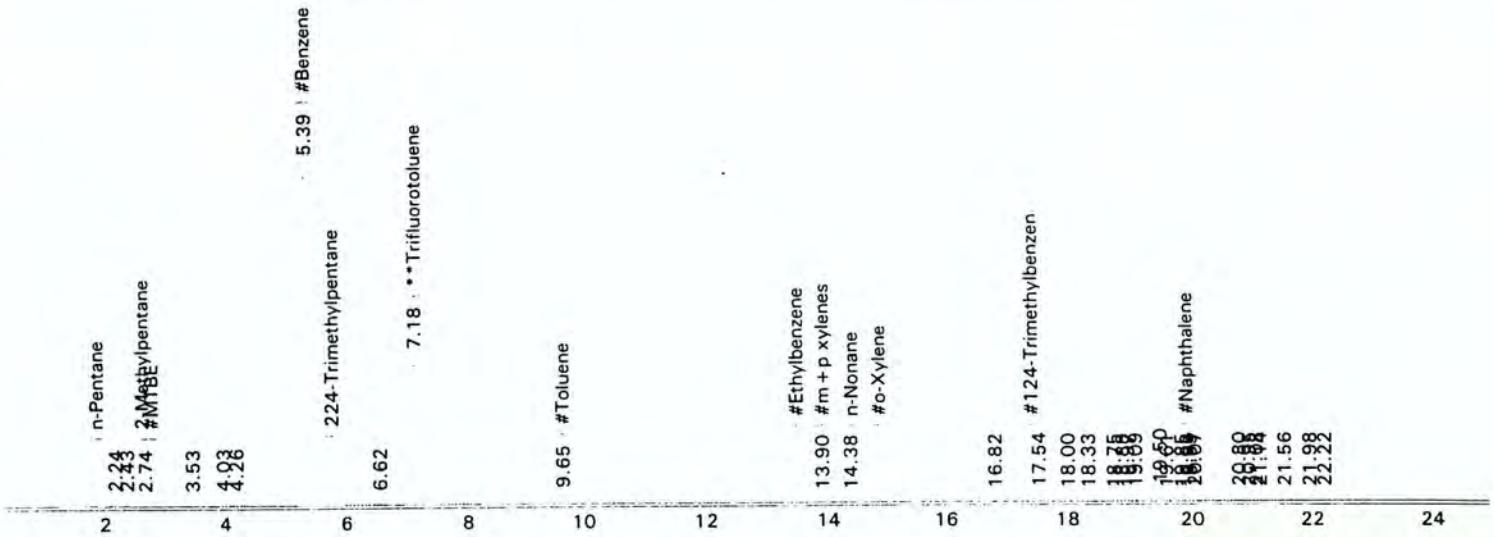
File=G:\ORG\PE1\1107PE1B.16R Date printed=11-09-2001 Time= 14:23:31
Sample Name=002-01-59779 ;01-59779 VPH Water :G11071P1
0.01 to 25.0 min. Low Y=2.279 High Y=52.279 mv Span=50.0




ENERGY LABORATORIES, INC.----ALIPHATICS VPH CHROMATOGRAM
Sample Name: 002-01-59779 ;01-59779 VPH Water :G11071P1
Area File: G:\ORG\PE1\1107PE1B.16A
Date & Time Collected: Nov 7, 2001 18:30:50
Method File: G:\ORG\PE1\5701M13B.MET
Calibration File: G:\ORG\PE1\5601MAPB.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1
Mean RF for C5 to C8 Aliphatic Hydrocarbons: 411.8157
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 416.7485
Mean RF for all calibrated compounds: 558.34
Rt range for Gasoline Range Organics: 2.570833 to 17.50991
Rt range for C5 to C8 Aliphatic Hydrocarbons: 1.824167 to 14.29625
Rt range for C9 to C12 Aliphatic Hydrocarbons: 14.34625 to 19.82798

Moc-14

Peaks subtracted from Total:

| Compound Name | RT | Area | Amount | %Recovery |
|---|---|---|---|---|
| **Trifluorotoluene | 7.2 | 102,478 | 46 | 92 |

GRO Area: 230,236 Quant: 82.5
TPH Area: 237,694 Quant: 85.1

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:
C5-C8 Area: 230,265 Quant: 111.8
C9-C12 Area 4,633 Quant: 2.2

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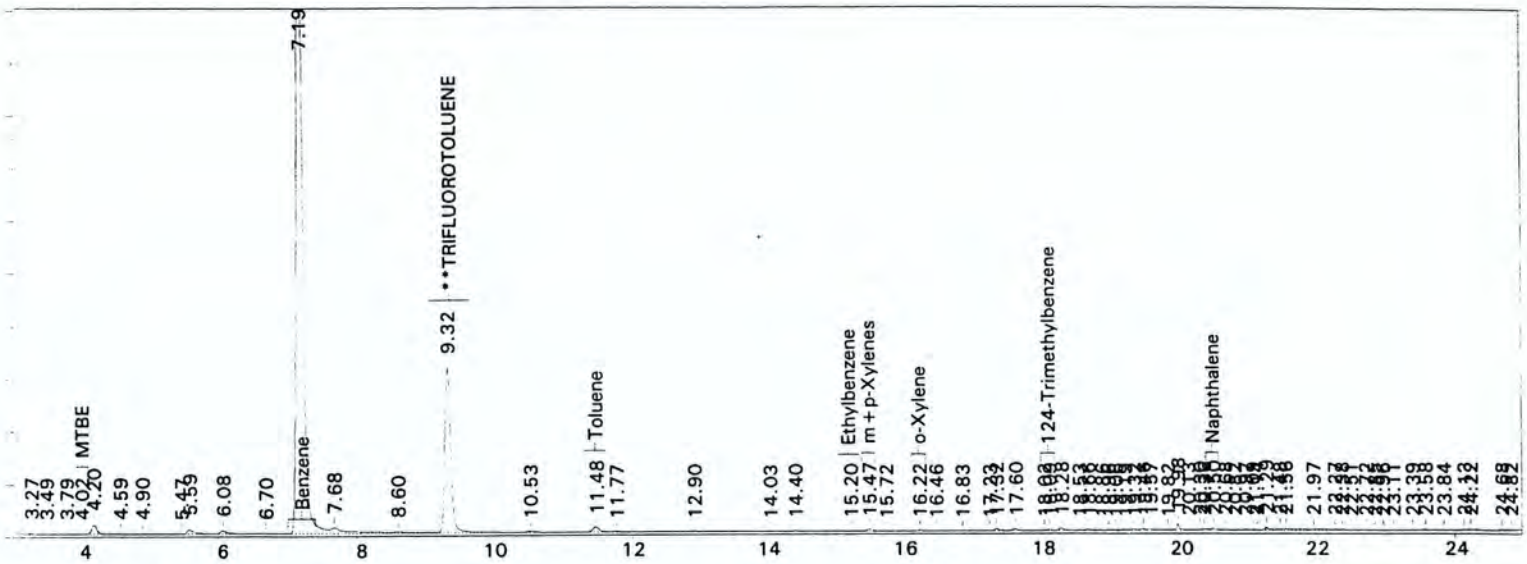
File 1128VAR.08R Date printed=11-29-2001 Time= 11:33:13

Sample Name=002-01-59779 ;01b59779 VPH Water :G11281V1(Vial D)

3.0 to 25.0 min. Low Y=-0.485 High Y=49.515 mv Span=50.0




ENERGY LABORATORIES, INC.----AROMATICS VPH CHROMATOGRAM
Sample Name: 002-01-59779 ;01b59779 VPH Water :G11281V1(Vial D)
Area File: G:\ORG\VAR\1128VAR.08A
Date & Time Collected: Nov 28, 2001 15:09:24
Method File: G:\ORG\VAR\4201M16.MET
Calibration File: G:\ORG\VAR\4201MAS.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

MOC-14

Mean RF for C9 to C10 Aromatic Hydrocarbons: 838.7761
Rt range for C9 to C10 Aromatic Hydrocarbons: 16.29 to 20.38838

Aromatic Hydrocarbon Areas and Quantitations:
C9-C10 Area 9,346 Quant: 2.2

Target Analytes:

| COMPOUND | RT | Cal RRT | RRT | Area | ug/L Amount | Flag |
|---|---|---|---|---|---|---|
| MTBE | 4.02 | 4.02 | 4.02 | 148 | < 1.00 | U |
| Benzene | 7.19 | 2.14 | 2.13 | 407699 | 62.50 | |
| Toluene | 11.48 | -2.11 | -2.16 | 2711 | 0.58 | |
| Ethylbenzene | 15.20 | 15.20 | 15.20 | 219 | < 0.50 | U |
| m+p-Xylenes | 15.47 | 15.47 | 15.47 | 943 | < 0.50 | U |
| o-Xylene | 16.22 | 16.22 | 16.22 | 455 | < 0.50 | U |
| 124-Trimethylbenzene | 18.09 | 18.09 | 18.09 | 315 | < 2.00 | U |
| Naphthalene | 20.50 | 20.50 | 20.50 | 866 | < 1.00 | U |

| SURROGATE CMPND | RT | ACTUAL | MEASURED | %RECOVERY | QC LIMITS |
|---|---|---|---|---|---|
| **TRIFLUOROTOLUENE | 9.32 | 50.0 | 49.6 | 99 | 70-130 |

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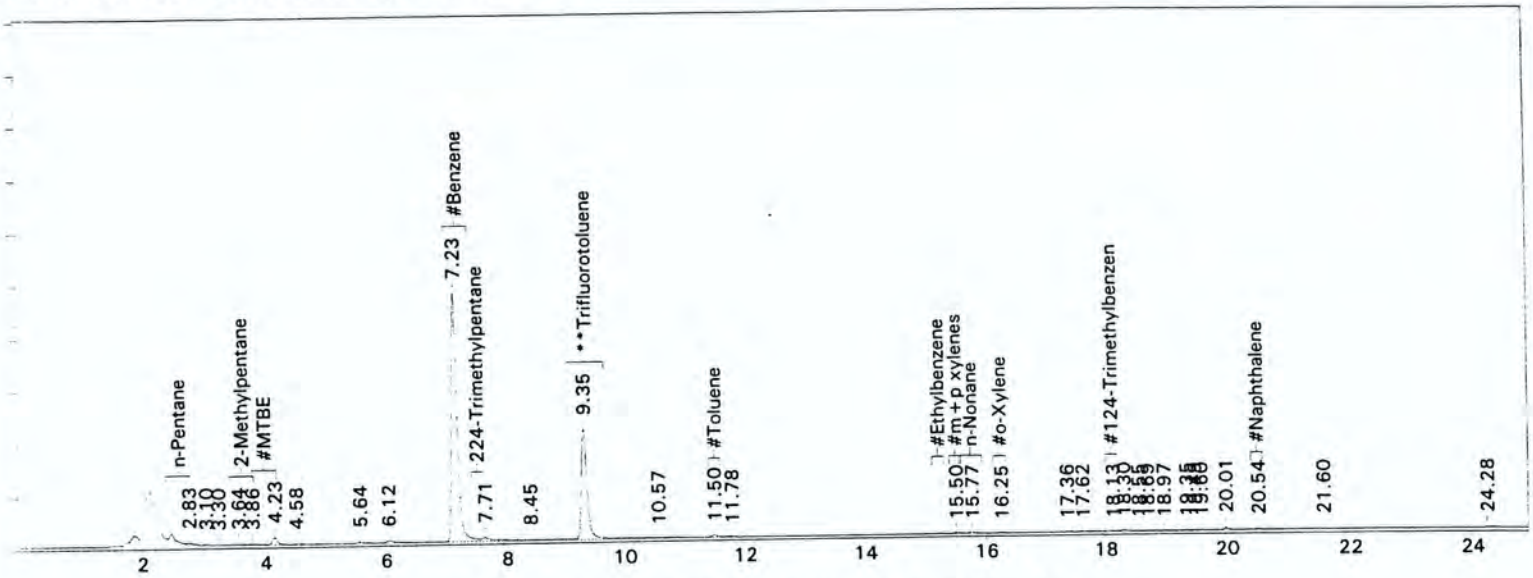
File=G:\ORG\VAR\1128VARB.08R Date printed=11-29-2001 Time= 11:33:19
Sample Name=002-01-59779 ;01b59779 VPH Water :G11281V1(Vial D)
0.01 to 25.0 min. Low Y=-2.618 High Y=13.382 mv Span=16.0




ENERGY LABORATORIES, INC.----ALIPHATICS VPH CHROMATOGRAM
Sample Name: 002-01-59779 ;01b59779 VPH Water :G11281V1(Vial D)
Area File: G:\ORG\VAR\1128VARB.08A
Date & Time Collected: Nov 28, 2001 15:09:24
Method File: G:\ORG\VAR\4201M16B.MET
Calibration File: G:\ORG\VAR\4201MASB.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1
Mean RF for C5 to C8 Aliphatic Hydrocarbons: 102.1549
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 104.2752
Mean RF for all calibrated compounds: 117.4641
Rt range for Gasoline Range Organics: 3.484643 to 18.20109
Rt range for C5 to C8 Aliphatic Hydrocarbons: 2.458333 to 15.55198
Rt range for C9 to C12 Aliphatic Hydrocarbons: 15.65198 to 20.41823

MOC-14

Peaks subtracted from Total:

| Compound Name | RT | Area | Amount | %Recovery |
|---|---|---|---|---|
| **Trifluorotoluene | 9.4 | 21,879 | 43 | 86 |

| | | | |
|---|---|---|---|
| GRO Area: | 54,336 | Quant: | 92.5 |
| TPH Area: | 56,182 | Quant: | 95.7 |

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:

| | | | |
|---|---|---|---|
| C5-C8 Area: | 54,082 | Quant: | 105.9 |
| C9-C12 Area | 1,636 | Quant: | 3.1 |

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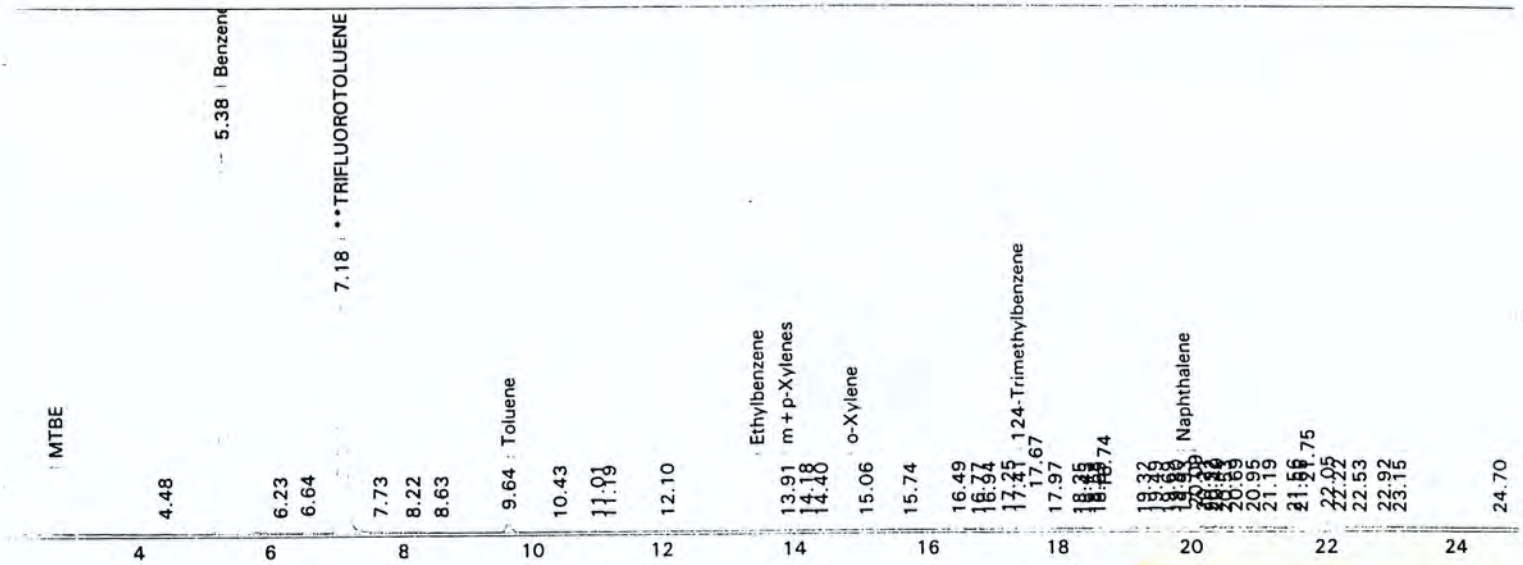
File=G:\ORG\PE1\1107PE1.18R Date printed=11-09-2001 Time= 14:35:22
Sample Name=003-01-59779 ;01-59779 VPH Water :G11071P1
2.1 to 25.0 min. Low Y=-73.581 High Y=-33.581 mv Span=40.0




ENERGY LABORATORIES, INC.----AROMATICS VPH CHROMATOGRAM
Sample Name: 003-01-59779 ;01-59779 VPH Water :G11071P1
Area File: G:\ORG\PE1\1107PE1.18A
Date & Time Collected: Nov 7, 2001 19:38:39
Method File: G:\ORG\PE1\5701M14.MET
Calibration File: G:\ORG\PE1\5501MAP.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

Moc-16

Mean RF for C9 to C10 Aromatic Hydrocarbons: 1439.672
Rt range for C9 to C10 Aromatic Hydrocarbons: 14.9425 to 19.7225

Aromatic Hydrocarbon Areas and Quantitations:
C9-C10 Area 33,964 Quant: 4.7

Target Analytes:

| COMPOUND | RT | Cal RRT | RRT | Area | ug/L Amount | Flag |
|---|---|---|---|---|---|---|
| MTBE | 0.00 | 0.00 | 0.00 | 0 | < 1.00 | U |
| Benzene | 5.38 | 1.80 | 1.79 | 200761 | 26.93 | |
| Toluene | 9.64 | -2.47 | -2.47 | 4142 | 0.57 | |
| Ethylbenzene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| m+p-Xylenes | 13.91 | 13.91 | 13.91 | 399 | < 0.50 | U |
| o-Xylene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| 124-Trimethylbenzene | 17.41 | 17.41 | 17.41 | 1700 | < 2.00 | U |
| Naphthalene | 19.93 | 19.93 | 19.93 | 773 | < 1.00 | U |

| SURROGATE CMPND | RT | ACTUAL | MEASURED | %RECOVERY | QC LIMITS |
|---|---|---|---|---|---|
| **TRIFLUOROTOLUENE | 7.18 | 50.0 | 53.7 | 107 | 70-130 |

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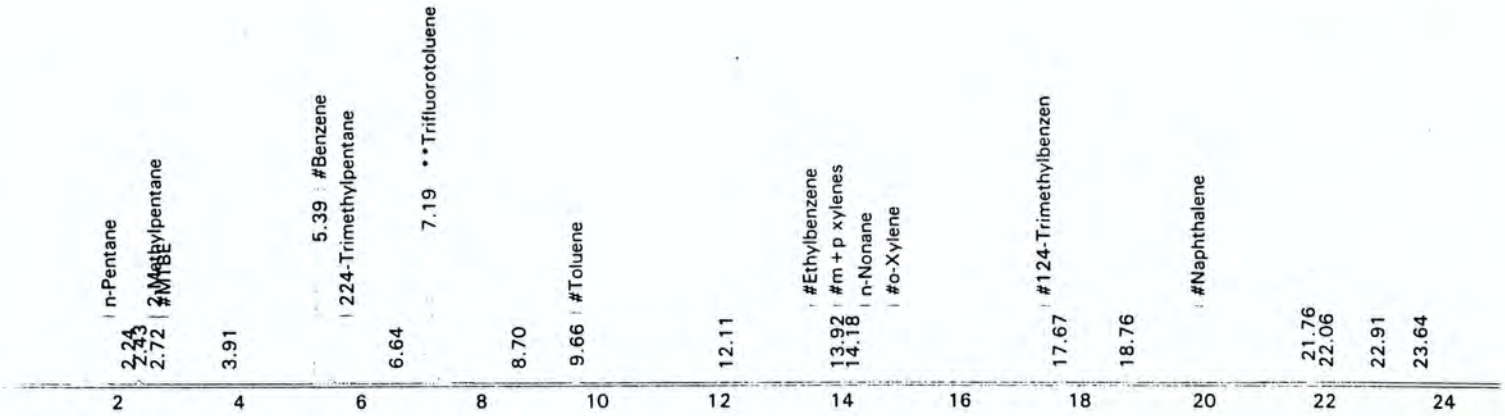
File=G:\ORG\PE1\1107PE1B.18R Date printed=11-09-2001 Time= 14:35:29
Sample Name=003-01-59779 ;01-59779 VPH Water :G11071P1
0.01 to 25.0 min. Low Y=2.297 High Y=52.297 mv Span=50.0




ENERGY LABORATORIES, INC.----ALIPHATICS VPH CHROMATOGRAM
Sample Name: 003-01-59779 ;01-59779 VPH Water :G11071P1
Area File: G:\ORG\PE1\1107PE1B.18A
Date & Time Collected: Nov 7, 2001 19:38:39
Method File: G:\ORG\PE1\5701M14B.MET
Calibration File: G:\ORG\PE1\5601MAPB.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1
Mean RF for C5 to C8 Aliphatic Hydrocarbons: 411.8157
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 416.7485
Mean RF for all calibrated compounds: 558.34
Rt range for Gasoline Range Organics: 2.570833 to 17.50991
Rt range for C5 to C8 Aliphatic Hydrocarbons: 1.824167 to 14.29625
Rt range for C9 to C12 Aliphatic Hydrocarbons: 14.34625 to 19.82798

Moc-16

Peaks subtracted from Total:

| Compound Name | RT | Area | Amount | %Recovery |
|---|---|---|---|---|
| **Trifluorotoluene | 7.2 | 100,569 | 45 | 90 |

| | | | |
|---|---|---|---|
| GRO Area: | 89,755 | Quant: | 32.2 |
| TPH Area: | 96,599 | Quant: | 34.6 |

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:

| | | | |
|---|---|---|---|
| C5-C8 Area: | 91,485 | Quant: | 44.4 |
| C9-C12 Area | 2,002 | Quant: | 1.0 |

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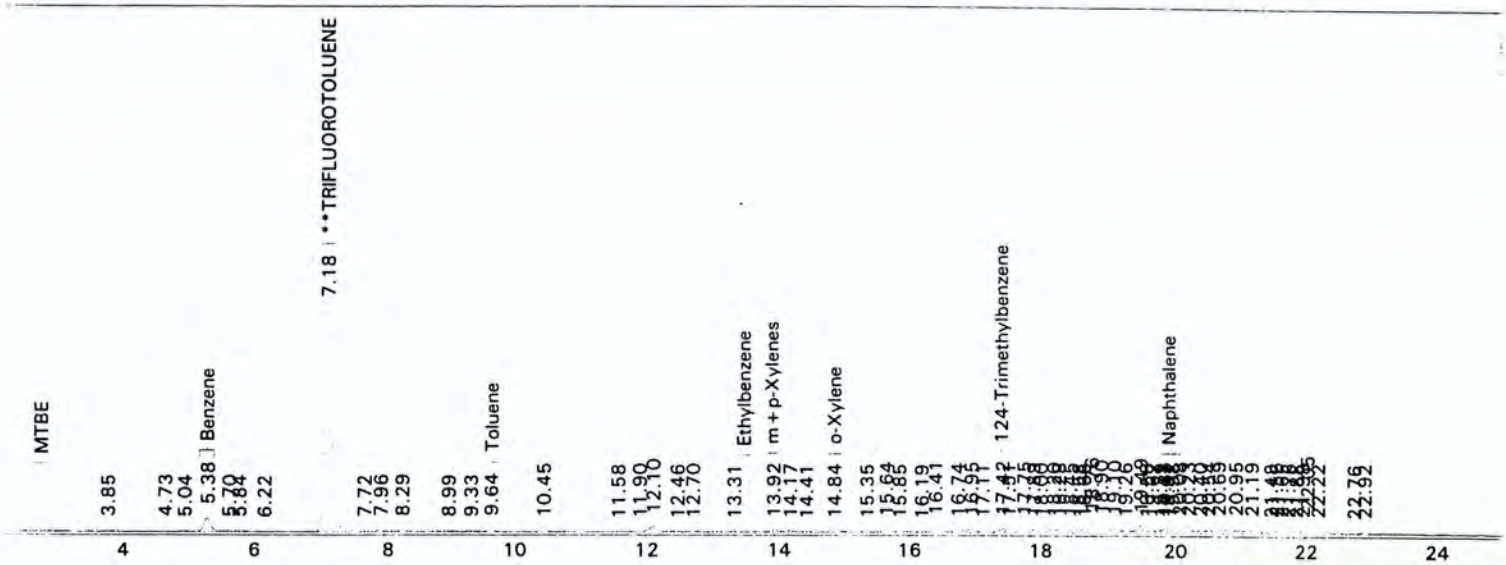
File=G:\ORG\PE1\1107PE1.20R Date printed=11-09-2001 Time= 14:38:35
Sample Name=004-01-59779 ;01-59779 VPH Water :G11071P1
2.1 to 25.0 min. Low Y=-73.841 High Y=-33.841 mv Span=40.0




ENERGY LABORATORIES, INC.----AROMATICS VPH CHROMATOGRAM
Sample Name: 004-01-59779 ;01-59779 VPH Water :G11071P1
Area File: G:\ORG\PE1\1107PE1.20A
Date & Time Collected: Nov 7, 2001 20:46:05
Method File: G:\ORG\PE1\5701M15.MET
Calibration File: G:\ORG\PE1\5501MAP.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

MOC-18

Mean RF for C9 to C10 Aromatic Hydrocarbons: 1439.672
Rt range for C9 to C10 Aromatic Hydrocarbons: 14.9425 to 19.7225

Aromatic Hydrocarbon Areas and Quantitations:
C9-C10 Area 41,474 Quant: 5.8

Target Analytes:

| COMPOUND | RT | Cal RRT | RRT | Area | ug/L Amount | Flag |
|---|---|---|---|---|---|---|
| MTBE | 0.00 | 0.00 | 0.00 | 0 | < 1.00 | U |
| Benzene | 5.38 | 1.80 | 1.80 | 7491 | 1.00 | |
| Toluene | 9.64 | 9.64 | 9.64 | 1096 | < 0.50 | U |
| Ethylbenzene | 0.00 | 0.00 | 0.00 | 0 | < 0.50 | U |
| m+p-Xylenes | 13.92 | 13.92 | 13.92 | 839 | < 0.50 | U |
| o-Xylene | 14.84 | 14.84 | 14.84 | 691 | < 0.50 | U |
| 124-Trimethylbenzene | 17.42 | 17.42 | 17.42 | 1722 | < 2.00 | U |
| Naphthalene | 19.91 | 19.91 | 19.91 | 724 | < 1.00 | U |

| SURROGATE CMPND | RT | ACTUAL | MEASURED | %RECOVERY | QC LIMITS |
|---|---|---|---|---|---|
| **TRIFLUOROTOLUENE | 7.18 | 50.0 | 52.5 | 105 | 70-130 |

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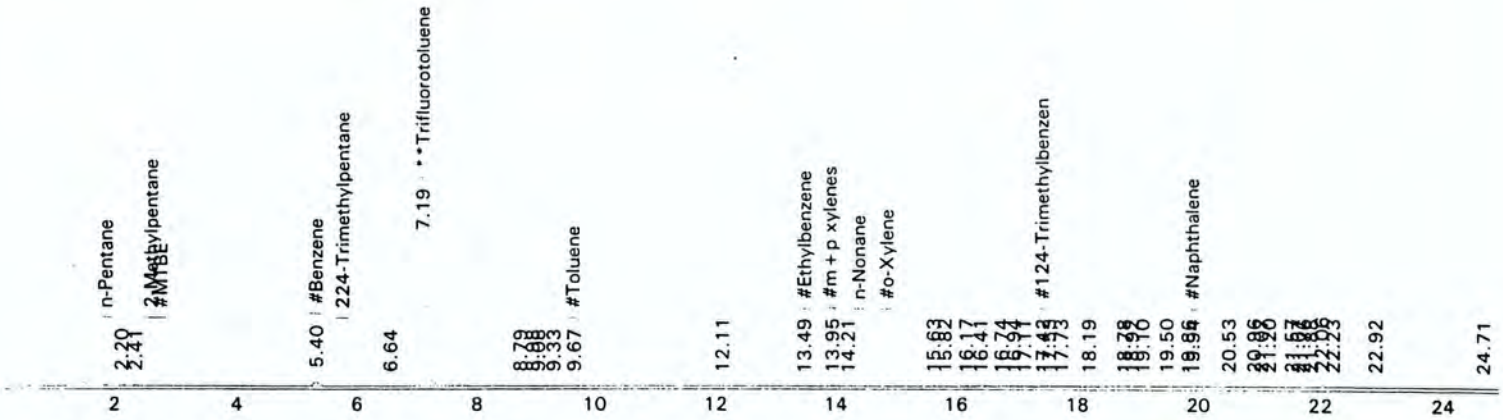
File=G:\ORG\PE1\1107PE1B.20R Date printed=11-09-2001 Time= 14:38:40
Sample Name=004-01-59779 ;01-59779 VPH Water :G11071P1
0.01 to 25.0 min. Low Y=2.315 High Y=52.315 mv Span=50.0




ENERGY LABORATORIES, INC.----ALIPHATICS VPH CHROMATOGRAM
Sample Name: 004-01-59779 ;01-59779 VPH Water :G11071P1
Area File: G:\ORG\PE1\1107PE1B.20A
Date & Time Collected: Nov 7, 2001 20:46:05
Method File: G:\ORG\PE1\5701M15B.MET
Calibration File: G:\ORG\PE1\5601MAPB.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1
Mean RF for C5 to C8 Aliphatic Hydrocarbons: 411.8157
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 416.7485
Mean RF for all calibrated compounds: 558.34
Rt range for Gasoline Range Organics: 2.570833 to 17.50991
Rt range for C5 to C8 Aliphatic Hydrocarbons: 1.824167 to 14.29625
Rt range for C9 to C12 Aliphatic Hydrocarbons: 14.34625 to 19.82798

MOC-18

Peaks subtracted from Total:

| Compound Name | RT | Area | Amount | %Recovery |
|---|---|---|---|---|
| **Trifluorotoluene | 7.2 | 102,550 | 46 | 92 |

| | | | |
|---|---|---|---|
| GRO Area: | 7,405 | Quant: | 2.7 |
| TPH Area: | 14,056 | Quant: | 5.0 |

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:

| | | | |
|---|---|---|---|
| C5-C8 Area: | 6,391 | Quant: | 3.1 |
| C9-C12 Area | 3,276 | Quant: | 1.6 |

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Lab Nos.: 001-01-59779 - 005-01-59779

Date: 05-NOV-01

Received by: Justin McMillan

Logged In by: Randa Nees

# SAMPLE CONDITION QA/QC REPORT

This report provides information about the condition of the sample(s) and associated sample custody information on receipt at the laboratory.

| | | |
|---|---|---|
| Chain of Custody Form Completed & Signed | Yes | Comments: |
| Chain of Custody Seal | Yes | Comments: |
| Intact | Yes | Comments: |
| Signature Match Chain of Custody vs. Seal | Yes | Comments: |
| Temperature Received | 4 C | Comments: |
| Samples Received Within Holding Time | Yes | Comments: |
| Samples Received in Proper Containers | Yes | Comments: |
| Samples Received Properly Preserved(1) | Yes | Comments: |

**(1)Acid preservation of samples for volatile organics is not evaluated on this form.**
**Any preservation problems encountered for these samples are noted on the analytical parameter report pages.**

Record of client contact:

Who: Jim Shaffer By: Wynn Pippin Date/Time: 11/05/01

Method of Shipping: Hand Del.

Additional comments: Rush BTEX on all 4 samples

1050714

ENERGY LABORATORIES

# CHAIN OF CUSTODY RECORD

**PLEASE PRINT OR TYPE ALL INFORMATION EXCEPT SIGNATURES**

Received Date: _____ Cust. No.: _____
Login Date: _____ Custody Seal: Yes/No
Shipped by: _____ Intact: Yes/No
Shipping Bill #: _____ Signature Match?: Yes/No
Code Six: _____ If no - Reason:
For Lab Use Only


**BILLINGS, MT** P.O. Box 30916 (59107) 1120 South 27th (59101) watts 800-735-4489 voice 406-252-6325 Fax 406-252-6069

**CASPER, WY** P.O. Box 3258 (82602) 2393 Salt Creek Highway (82601) watts 888-235-0515 voice 307-235-0515 Fax 307-234-1639

**GILLETTE, WY** 1105 West First Street (82716) voice 307-686-7175 Fax 307-682-4625

**HELENA, MT** P.O. Box 5688 (59604) 2704 Billings Ave. (59601) Voice/Fax 406-442-0711

**RAPID CITY, SD** P.O. Box 2470 (57709) 610 Farnwood (57701) watts 888-672-1225 voice 605-342-1225 Fax 605-342-1397


P.O. #:

Project Name / Address: Crowley Law Firm

Contact Name & Phone: Mike Webster 406-768-3611

Sampler's ~~Signature~~ Name: Jim Shaffer, Mark Nitz

Invoice to: HydroSolutions Inc. P.O. Box 80864 Billings, MT 59108

Report to: Mike Webster P.O. Box 2529 Billings, MT 59103-2529

| Lab No. (For Lab Use Only) | DATE | TIME | SAMPLE I.D. | number of containers | Sample Type: A W S V U O / Air Water Solls/Solids Vegetation Urine Other | Analysis Requested: VPH | | | | | | | Comments, Special Instructions, etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 11/2/01 | 1545 | MOC-16 | 1 | W | X | | | | | | | 2 VOA's |
| | | | | | | | | | | | | | 3119723 |
| | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | T=3° |

| 1. Relinquished (signature) | Date | Time | Received by: (signature) | 2. Relinquished (signature) | Date | Time | Received for Laboratory by: (signature) |
|---|---|---|---|---|---|---|---|
| [signature] | 11/6/01 | 1200 | | | 11/7/01 | 910 | [signature] |

ENERGY LABORATORIES

# CHAIN OF CUSTODY RECORD

**PLEASE PRINT OR TYPE ALL INFORMATION EXCEPT SIGNATURES**

Received Date: 11/05/01 Cust. No.: H1181
Login Date: 1 Custody Seal: Yes/No
Shipped by: Hand Del Intact: Yes/No
Shipping Bill #: Signature Match?: Yes/No
Code Six: If no - Reason:
For Lab Use Only 4°C


**BILLINGS, MT** P.O. Box 30916 (59107) watts 800-735-4489; 1120 South 27th (59101) voice 406-252-6325, Fax 406-252-6069

**CASPER, WY** P.O. Box 3258 (82602) watts 888-235-0515; 2393 Salt Creek Highway (82601) voice 307-235-0515, Fax 307-234-1639

**GILLETTE, WY** 1105 West First Street (82716) voice 307-686-7175, Fax 307-682-4625

**HELENA, MT** P.O. Box 5688 (59604); 2704 Billings Ave. (59601) Voice/Fax 406-442-0711

**RAPID CITY, SD** P.O. Box 2470 (57709) watts 888-672-1225; 610 Farnwood (57701) voice 605-342-1225, Fax 605-342-1397


P.O. #

Project Name / Address: Crowley Law Firm P.O. Box 2529 Billings, MT 59103

Contact Name & Phone: Tom Osborne 655-9555

Sampler's ~~Signature~~ Name: Jim Shaffer, Mark Nitz

Invoice to: Hydro Solutions Inc. P.O. Box 80864 Billings, MT 59108

Report to: Mike Webster, Crowley Law Firm P.O. Box 2529 Billings, MT 59103-2529

| Lab No. (For Lab Use Only) | DATE | TIME | SAMPLE I.D. | number of containers / Sample Type: A W S V U O (Air Water Soils/Solids Vegetation Urine Other) | TDS & Chloride | Cat, Mg, Na, K, Hco3, Co3, SO4, F, Alk, Hardness, SAR | Nitrate + Nitrite | Diss. Fe, Mn, Se | VPH | 8260 Long | TPH-DRO w/carbon sieve | | Comments, Special Instructions, etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [redacted] | 11/2/01 | 1430 | MOC-13 | 6W | X | | | X | X | X | X | | 2-1000 ml |
| [redacted] | 11/2/01 | 1313 | MOC-14 | 6W | X | | | X | X | X | X | | 2-1000 ml |
| [redacted] | 11/2/01 | 1545 | MOC-16 | 8W | X | X | X | X | X | X | X | | 2-500ml & 2-1000ml |
| [redacted] | 11/3/01 | 1145 | MOC-18 | 8W | X | X | X | X | X | X | X | | 5-500ml & 2-1000ml |
| [redacted] | | | Trip Blank | 1W | | | | | | X | | | |
| [redacted] | | | | | | | | | | | | | |
| [redacted] | | | | | | | | | | | | | Rush BTEX on all |
| [redacted] | | | | | | | | | | | | | 4 samples per Jim |
| [redacted] | | | | | | | | | | | | | Schaffer per phone conversation w/ WSI |
| [redacted] | | | | | | | | | | | | | Due |

| 1. Relinquished (signature) | Date | Time | Received by: (signature) | 2. Relinquished (signature) | Date | Time | Received for Laboratory by: (signature) |
|---|---|---|---|---|---|---|---|
| [signature] | 11/5/01 | 1200 | | | 11/05/01 | 12:00 | [signature] |

Pace Analytical™
www.pacelabs.com

**Pace Analytical Services, Inc.**
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

November 16, 2001

Mr. Mike Webster
Crowley Law Firm
P.O.Box 2529
Billings, MT 59103-2529

RE: Lab Project Number: 1050774
Client Project ID: CROWLEY LAW FIRM

Dear Mr. Webster:

Enclosed are the analytical results for sample(s) received by the laboratory on November 7, 2001. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report please feel free to contact me.

Sincerely,

Roxanne Patterson

Roxanne Patterson
Project Manager

State of Minnesota laboratory 027-053-137

Enclosures

# REPORT OF LABORATORY ANALYSIS

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Pace Analytical™
www.pacelabs.com

**Pace Analytical Services, Inc.**
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Crowley Law Firm
P.O.Box 2529
Billings, MT 59103-2529

Lab Project Number: 1050774
Client Project ID: CROWLEY LAW FIRM

Attn: Mr. Mike Webster
Phone: 406-768-3611

Lab Sample No: 103119723 | Project Sample Number: 1050774-001 | Date Collected: 11/02/01 15:45
Client Sample ID: MOC-16 | Matrix: Water | Date Received: 11/07/01 09:10

| Parameters | Results | Units | Report Limit | Analyzed | | CAS No. | Ftnote | Reg Limit |
|---|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | | | | | | | | |
| 8260 Low Level H2O | Prep/Method: EPA 8260 / EPA 8260 | | | | | | | |
| Dichlorodifluoromethane | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 75-71-8 | | |
| Chloromethane | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 74-87-3 | | |
| Vinyl chloride | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 75-01-4 | | |
| Bromomethane | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 74-83-9 | | |
| Chloroethane | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 75-00-3 | | |
| Trichlorofluoromethane | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 75-69-4 | | |
| Methylene chloride | 4.4 | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 75-09-2 | | |
| 1,1-Dichloroethene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 75-35-4 | | |
| trans-1,2-Dichloroethene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 156-60-5 | | |
| 1,1-Dichloroethane | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 75-34-3 | | |
| 2,2-Dichloropropane | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 594-20-7 | | |
| cis-1,2-Dichloroethene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 156-59-2 | | |
| Chloroform | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 67-66-3 | | |
| 1,1,1-Trichloroethane | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 71-55-6 | | |
| Carbon tetrachloride | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 56-23-5 | | |
| 1,1-Dichloropropene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 563-58-6 | | |
| Benzene | 26. | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 71-43-2 | | |
| 1,2-Dichloroethane | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 107-06-2 | | |
| Trichloroethene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 79-01-6 | | |
| 1,2-Dichloropropane | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 78-87-5 | | |
| Bromodichloromethane | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 75-27-4 | | |
| Dibromomethane | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 74-95-3 | | |
| trans-1,3-Dichloropropene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 10061-02-6 | | |
| Toluene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 108-88-3 | | |
| cis-1,3-Dichloropropene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 10061-01-5 | | |
| 1,1,2-Trichloroethane | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 79-00-5 | | |
| Tetrachloroethene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 127-18-4 | | |
| 1,3-Dichloropropane | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 142-28-9 | | |
| Dibromochloromethane | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 124-48-1 | | |



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Phone: 612.607.1700
Fax: 612.607.6444

Lab Project Number: 1050774
Client Project ID: CROWLEY LAW FIRM

Lab Sample No: 103119723 | Project Sample Number: 1050774-001 | Date Collected: 11/02/01 15:45
Client Sample ID: MOC-16 | Matrix: Water | Date Received: 11/07/01 09:10

| Parameters | Results | Units | Report Limit | Analyzed | | CAS No. | Ftnote | Reg Limit |
|---|---|---|---|---|---|---|---|---|
| 1,2-Dibromoethane (EDB) | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 106-93-4 | | |
| Chlorobenzene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 108-90-7 | | |
| 1,1,1,2-Tetrachloroethane | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 630-20-6 | | |
| Ethylbenzene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 100-41-4 | | |
| Xylene (Total) | ND | ug/l | 3.0 | 11/16/01 03:05 | YA1 | 1330-20-7 | | |
| Styrene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 100-42-5 | | |
| Bromoform | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 75-25-2 | | |
| Isopropylbenzene (Cumene) | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 98-82-8 | | |
| 1,1,2,2-Tetrachloroethane | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 79-34-5 | | |
| Bromobenzene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 108-86-1 | | |
| 1,2,3-Trichloropropane | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 96-18-4 | | |
| n-Propylbenzene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 103-65-1 | | |
| 2-Chlorotoluene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 95-49-8 | | |
| 1,3,5-Trimethylbenzene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 108-67-8 | | |
| 4-Chlorotoluene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 106-43-4 | | |
| 1,2,4-Trimethylbenzene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 95-63-6 | | |
| sec-Butylbenzene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 135-98-8 | | |
| tert-Butylbenzene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 98-06-6 | | |
| p-Isopropyltoluene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 99-87-6 | | |
| 1,3-Dichlorobenzene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 541-73-1 | | |
| 1,4-Dichlorobenzene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 106-46-7 | | |
| n-Butylbenzene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 104-51-8 | | |
| 1,2-Dichlorobenzene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 95-50-1 | | |
| 1,2-Dibromo-3-chloropropane | ND | ug/l | 2.0 | 11/16/01 03:05 | YA1 | 96-12-8 | | |
| 1,2,4-Trichlorobenzene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 120-82-1 | | |
| Naphthalene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 91-20-3 | | |
| 1,2,3-Trichlorobenzene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 87-61-6 | | |
| Tetrahydrofuran | ND | ug/l | 10. | 11/16/01 03:05 | YA1 | 109-99-9 | | |
| Diethyl ether (Ethyl ether) | ND | ug/l | 10. | 11/16/01 03:05 | YA1 | 60-29-7 | | |
| Allyl chloride | ND | ug/l | 2.0 | 11/16/01 03:05 | YA1 | 107-05-1 | | |
| Dichlorofluoromethane | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 75-43-4 | | |
| Acrolein | ND | ug/l | 5.0 | 11/16/01 03:05 | YA1 | 107-02-8 | | |
| Acrylonitrile | ND | ug/l | 5.0 | 11/16/01 03:05 | YA1 | 107-13-1 | | |
| Bromochloromethane | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 74-97-5 | | |
| Chloroprene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 126-99-8 | | |
| 1,1,2-Trichlorotrifluoroethane | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 76-13-1 | | |
| Hexachloro-1,3-butadiene | ND | ug/l | 1.0 | 11/16/01 03:05 | YA1 | 87-68-3 | | |
| Dibromofluoromethane (S) | 98 | % | | 11/16/01 03:05 | YA1 | | | |



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Phone: 612.607.1700
Fax: 612.607.6444

Lab Project Number: 1050774
Client Project ID: CROWLEY LAW FIRM

Lab Sample No: 103119723 | Project Sample Number: 1050774-001 | Date Collected: 11/02/01 15:45
Client Sample ID: MOC-16 | Matrix: Water | Date Received: 11/07/01 09:10

| Parameters | Results | Units | Report Limit | Analyzed | | CAS No. | Ftnote | Reg Limit |
|---|---|---|---|---|---|---|---|---|
| Toluene-d8 (S) | 105 | % | | 11/16/01 03:05 | YA1 | 2037-26-5 | | |
| 4-Bromofluorobenzene (S) | 99 | % | | 11/16/01 03:05 | YA1 | 460-00-4 | | |
| 1,2-Dichloroethane-d4 (S) | 107 | % | | 11/16/01 03:05 | YA1 | 17060-07-0 | | |



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Lab Project Number: 1050774
Client Project ID: CROWLEY LAW FIRM

PARAMETER FOOTNOTES

ND Not Detected
NC Not Calculable
(S) Surrogate



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# QUALITY CONTROL DATA

**Pace Analytical Services, Inc.**
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Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Lab Project Number: 1050774
Client Project ID: CROWLEY LAW FIRM

QC Batch: 66043
QC Batch Method: EPA 8260
Associated Lab Samples: 103119723

Analysis Method: EPA 8260
Analysis Description: 8260 Low Level H2O

METHOD BLANK: 103134557
Associated Lab Samples: 103119723

| Parameter | Units | Blank Result | Reporting Limit | Footnotes |
|---|---|---|---|---|
| Dichlorodifluoromethane | ug/l | ND | 1.0 | |
| Chloromethane | ug/l | ND | 1.0 | |
| Vinyl chloride | ug/l | ND | 1.0 | |
| Bromomethane | ug/l | ND | 1.0 | |
| Chloroethane | ug/l | ND | 1.0 | |
| Trichlorofluoromethane | ug/l | ND | 1.0 | |
| Methylene chloride | ug/l | ND | 1.0 | |
| 1,1-Dichloroethene | ug/l | ND | 1.0 | |
| trans-1,2-Dichloroethene | ug/l | ND | 1.0 | |
| 1,1-Dichloroethane | ug/l | ND | 1.0 | |
| 2,2-Dichloropropane | ug/l | ND | 1.0 | |
| cis-1,2-Dichloroethene | ug/l | ND | 1.0 | |
| Chloroform | ug/l | ND | 1.0 | |
| 1,1,1-Trichloroethane | ug/l | ND | 1.0 | |
| Carbon tetrachloride | ug/l | ND | 1.0 | |
| 1,1-Dichloropropene | ug/l | ND | 1.0 | |
| Benzene | ug/l | ND | 1.0 | |
| 1,2-Dichloroethane | ug/l | ND | 1.0 | |
| Trichloroethene | ug/l | ND | 1.0 | |
| 1,2-Dichloropropane | ug/l | ND | 1.0 | |
| Bromodichloromethane | ug/l | ND | 1.0 | |
| Dibromomethane | ug/l | ND | 1.0 | |
| trans-1,3-Dichloropropene | ug/l | ND | 1.0 | |
| Toluene | ug/l | ND | 1.0 | |
| cis-1,3-Dichloropropene | ug/l | ND | 1.0 | |
| 1,1,2-Trichloroethane | ug/l | ND | 1.0 | |
| Tetrachloroethene | ug/l | ND | 1.0 | |
| 1,3-Dichloropropane | ug/l | ND | 1.0 | |
| Dibromochloromethane | ug/l | ND | 1.0 | |
| 1,2-Dibromoethane (EDB) | ug/l | ND | 1.0 | |



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# QUALITY CONTROL DATA

**Pace Analytical Services, Inc.**
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Lab Project Number: 1050774
Client Project ID: CROWLEY LAW FIRM

METHOD BLANK: 103134557
Associated Lab Samples: 103119723

| Parameter | Units | Blank Result | Reporting Limit | Footnotes |
|---|---|---|---|---|
| Chlorobenzene | ug/l | ND | 1.0 | |
| 1,1,1,2-Tetrachloroethane | ug/l | ND | 1.0 | |
| Ethylbenzene | ug/l | ND | 1.0 | |
| Xylene (Total) | ug/l | ND | 3.0 | |
| Styrene | ug/l | ND | 1.0 | |
| Bromoform | ug/l | ND | 1.0 | |
| Isopropylbenzene (Cumene) | ug/l | ND | 1.0 | |
| 1,1,2,2-Tetrachloroethane | ug/l | ND | 1.0 | |
| Bromobenzene | ug/l | ND | 1.0 | |
| 1,2,3-Trichloropropane | ug/l | ND | 1.0 | |
| n-Propylbenzene | ug/l | ND | 1.0 | |
| 2-Chlorotoluene | ug/l | ND | 1.0 | |
| 1,3,5-Trimethylbenzene | ug/l | ND | 1.0 | |
| 4-Chlorotoluene | ug/l | ND | 1.0 | |
| 1,2,4-Trimethylbenzene | ug/l | ND | 1.0 | |
| sec-Butylbenzene | ug/l | ND | 1.0 | |
| tert-Butylbenzene | ug/l | ND | 1.0 | |
| p-Isopropyltoluene | ug/l | ND | 1.0 | |
| 1,3-Dichlorobenzene | ug/l | ND | 1.0 | |
| 1,4-Dichlorobenzene | ug/l | ND | 1.0 | |
| n-Butylbenzene | ug/l | ND | 1.0 | |
| 1,2-Dichlorobenzene | ug/l | ND | 1.0 | |
| 1,2-Dibromo-3-chloropropane | ug/l | ND | 2.0 | |
| 1,2,4-Trichlorobenzene | ug/l | ND | 1.0 | |
| Naphthalene | ug/l | ND | 1.0 | |
| 1,2,3-Trichlorobenzene | ug/l | ND | 1.0 | |
| Tetrahydrofuran | ug/l | ND | 10. | |
| Diethyl ether (Ethyl ether) | ug/l | ND | 10. | |
| Allyl chloride | ug/l | ND | 2.0 | |
| Dichlorofluoromethane | ug/l | ND | 1.0 | |
| Acrolein | ug/l | ND | 5.0 | |
| Acrylonitrile | ug/l | ND | 5.0 | |
| Bromochloromethane | ug/l | ND | 1.0 | |
| Chloroprene | ug/l | ND | 1.0 | |
| 1,1,2-Trichlorotrifluoroethane | ug/l | ND | 1.0 | |



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# QUALITY CONTROL DATA

Lab Project Number: 1050774
Client Project ID: CROWLEY LAW FIRM

METHOD BLANK: 103134557
Associated Lab Samples: 103119723

| Parameter | Units | Blank Result | Reporting Limit | Footnotes |
|---|---|---|---|---|
| Hexachloro-1,3-butadiene | ug/l | ND | 1.0 | |
| Dibromofluoromethane (S) | % | 98 | | |
| Toluene-d8 (S) | % | 105 | | |
| 4-Bromofluorobenzene (S) | % | 98 | | |
| 1,2-Dichloroethane-d4 (S) | % | 102 | | |

LABORATORY CONTROL SAMPLE & LCSD: 103134565 103134573

| Parameter | Units | Spike Conc. | LCS Result | LCSD Result | LCS % Rec | LCSD % Rec | RPD | Footnotes |
|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/l | 20 | 13.05 | 14.74 | 65 | 74 | 12 | |
| Chloromethane | ug/l | 20 | 15.15 | 14.33 | 76 | 72 | 6 | |
| Vinyl chloride | ug/l | 20 | 18.06 | 17.07 | 90 | 85 | 6 | |
| Bromomethane | ug/l | 20 | 28.59 | 28.07 | 143 | 140 | 2 | |
| Chloroethane | ug/l | 20 | 50.04 | 45.74 | 250 | 229 | 9 | 1,1 |
| Trichlorofluoromethane | ug/l | 20 | 20.08 | 20.04 | 100 | 100 | 0 | |
| Methylene chloride | ug/l | 20 | 21.76 | 20.23 | 109 | 101 | 7 | |
| 1,1-Dichloroethene | ug/l | 20 | 19.72 | 18.41 | 99 | 92 | 7 | |
| trans-1,2-Dichloroethene | ug/l | 20 | 19.32 | 17.58 | 97 | 88 | 9 | |
| 1,1-Dichloroethane | ug/l | 20 | 20.07 | 18.26 | 100 | 91 | 9 | |
| 2,2-Dichloropropane | ug/l | 20 | 15.06 | 13.84 | 75 | 69 | 8 | |
| cis-1,2-Dichloroethene | ug/l | 20 | 19.65 | 18.23 | 98 | 91 | 8 | |
| Chloroform | ug/l | 20 | 19.51 | 17.92 | 98 | 90 | 8 | |
| 1,1,1-Trichloroethane | ug/l | 20 | 19.15 | 17.85 | 96 | 89 | 7 | |
| Carbon tetrachloride | ug/l | 20 | 18.79 | 17.51 | 94 | 88 | 7 | |
| 1,1-Dichloropropene | ug/l | 20 | 19.40 | 17.81 | 97 | 89 | 9 | |
| Benzene | ug/l | 20 | 19.75 | 18.04 | 99 | 90 | 9 | |
| 1,2-Dichloroethane | ug/l | 20 | 20.82 | 19.15 | 104 | 96 | 8 | |
| Trichloroethene | ug/l | 20 | 19.47 | 18.86 | 97 | 94 | 3 | |
| 1,2-Dichloropropane | ug/l | 20 | 20.20 | 18.74 | 101 | 94 | 8 | |
| Bromodichloromethane | ug/l | 20 | 19.85 | 18.02 | 99 | 90 | 10 | |
| Dibromomethane | ug/l | 20 | 20.46 | 19.13 | 102 | 96 | 7 | |
| trans-1,3-Dichloropropene | ug/l | 20 | 19.73 | 18.32 | 99 | 92 | 7 | |
| Toluene | ug/l | 20 | 19.27 | 17.85 | 96 | 89 | 8 | |



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# QUALITY CONTROL DATA

Lab Project Number: 1050774
Client Project ID: CROWLEY LAW FIRM

LABORATORY CONTROL SAMPLE & LCSD: 103134565 103134573

| Parameter | Units | Spike Conc. | LCS Result | LCSD Result | LCS % Rec | LCSD % Rec | RPD | Footnotes |
|---|---|---|---|---|---|---|---|---|
| cis-1,3-Dichloropropene | ug/l | 20 | 19.51 | 18.03 | 98 | 90 | 8 | |
| 1,1,2-Trichloroethane | ug/l | 20 | 20.80 | 19.51 | 104 | 98 | 6 | |
| Tetrachloroethene | ug/l | 20 | 19.22 | 17.99 | 96 | 90 | 7 | |
| 1,3-Dichloropropane | ug/l | 20 | 20.88 | 19.42 | 104 | 97 | 7 | |
| Dibromochloromethane | ug/l | 20 | 19.87 | 18.53 | 99 | 93 | 7 | |
| 1,2-Dibromoethane (EDB) | ug/l | 20 | 20.77 | 19.42 | 104 | 97 | 7 | |
| Chlorobenzene | ug/l | 20 | 19.83 | 18.38 | 99 | 92 | 8 | |
| 1,1,1,2-Tetrachloroethane | ug/l | 20 | 19.63 | 18.33 | 98 | 92 | 7 | |
| Ethylbenzene | ug/l | 20 | 19.17 | 17.82 | 96 | 89 | 7 | |
| Xylene (Total) | ug/l | 60 | 58.07 | 53.28 | 97 | 89 | 9 | |
| Styrene | ug/l | 20 | 19.98 | 18.24 | 100 | 91 | 9 | |
| Bromoform | ug/l | 20 | 19.46 | 17.87 | 97 | 89 | 8 | |
| Isopropylbenzene (Cumene) | ug/l | 20 | 19.36 | 18.09 | 97 | 90 | 7 | |
| 1,1,2,2-Tetrachloroethane | ug/l | 20 | 21.04 | 18.80 | 105 | 94 | 11 | |
| Bromobenzene | ug/l | 20 | 20.39 | 18.95 | 102 | 95 | 7 | |
| 1,2,3-Trichloropropane | ug/l | 20 | 23.68 | 23.04 | 118 | 115 | 3 | |
| n-Propylbenzene | ug/l | 20 | 19.50 | 18.25 | 98 | 91 | 7 | |
| 2-Chlorotoluene | ug/l | 20 | 19.64 | 18.59 | 98 | 93 | 6 | |
| 1,3,5-Trimethylbenzene | ug/l | 20 | 19.48 | 17.98 | 97 | 90 | 8 | |
| 4-Chlorotoluene | ug/l | 20 | 19.61 | 18.29 | 98 | 92 | 7 | |
| 1,2,4-Trimethylbenzene | ug/l | 20 | 19.52 | 18.03 | 98 | 90 | 8 | |
| sec-Butylbenzene | ug/l | 20 | 19.14 | 17.92 | 96 | 90 | 7 | |
| tert-Butylbenzene | ug/l | 20 | 18.87 | 17.67 | 94 | 88 | 7 | |
| p-Isopropyltoluene | ug/l | 20 | 18.98 | 17.79 | 95 | 89 | 6 | |
| 1,3-Dichlorobenzene | ug/l | 20 | 19.97 | 18.62 | 100 | 93 | 7 | |
| 1,4-Dichlorobenzene | ug/l | 20 | 19.78 | 18.87 | 99 | 94 | 5 | |
| n-Butylbenzene | ug/l | 20 | 18.56 | 17.16 | 93 | 86 | 8 | |
| 1,2-Dichlorobenzene | ug/l | 20 | 20.07 | 18.95 | 100 | 95 | 6 | |
| 1,2-Dibromo-3-chloropropane | ug/l | 40 | 41.87 | 40.01 | 105 | 100 | 5 | |
| 1,2,4-Trichlorobenzene | ug/l | 20 | 20.81 | 18.72 | 104 | 94 | 11 | |
| Naphthalene | ug/l | 20 | 21.54 | 19.93 | 108 | 100 | 8 | |
| 1,2,3-Trichlorobenzene | ug/l | 20 | 20.48 | 19.32 | 102 | 97 | 6 | |
| Tetrahydrofuran | ug/l | 200 | 204.9 | 190.0 | 102 | 95 | 8 | |
| Diethyl ether (Ethyl ether) | ug/l | 20 | 21.43 | 19.96 | 107 | 100 | 7 | |
| Allyl chloride | ug/l | 20 | 19.81 | 17.93 | 99 | 90 | 10 | |
| Dichlorofluoromethane | ug/l | 20 | 22.53 | 20.72 | 113 | 104 | 8 | |



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# QUALITY CONTROL DATA

**Pace Analytical Services, Inc.**
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Lab Project Number: 1050774
Client Project ID: CROWLEY LAW FIRM

LABORATORY CONTROL SAMPLE & LCSD: 103134565 103134573

| Parameter | Units | Spike Conc. | LCS Result | LCSD Result | LCS % Rec | LCSD % Rec | RPD | Footnotes |
|---|---|---|---|---|---|---|---|---|
| Acrolein | ug/l | 100 | 97.07 | 77.93 | 97 | 78 | 22 | 2 |
| Acrylonitrile | ug/l | 100 | 104.7 | 98.38 | 105 | 98 | 6 | |
| Bromochloromethane | ug/l | 20 | 20.04 | 18.47 | 100 | 92 | 8 | |
| Chloroprene | ug/l | 20 | 19.13 | 18.01 | 96 | 90 | 6 | |
| 1,1,2-Trichlorotrifluoroethane | ug/l | 20 | 16.68 | 18.28 | 83 | 91 | 9 | |
| Hexachloro-1,3-butadiene | ug/l | 20 | 18.03 | 17.01 | 90 | 85 | 6 | |
| Dibromofluoromethane (S) | | | | | 99 | 90 | | |
| Toluene-d8 (S) | | | | | 97 | 91 | | |
| 4-Bromofluorobenzene (S) | | | | | 95 | 87 | | |
| 1,2-Dichloroethane-d4 (S) | | | | | 104 | 97 | | |



**REPORT OF LABORATORY ANALYSIS**

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## QUALITY CONTROL DATA PARAMETER FOOTNOTES

Consistent with EPA guidelines, unrounded concentrations are displayed and have been used to calculate % Rec and RPD values.

LCS(D)Laboratory Control Sample (Duplicate)
MS(D)Matrix Spike (Duplicate)
DUP Sample Duplicate
ND Not Detected
NC Not Calculable
RPD Relative Percent Difference
(S) Surrogate
[1] Spiked sample recovery is not within control limits.
[2] The calculated RPD was outside QC acceptance limits.



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Oct. 2001

From Murphy
Rec'd 1-18-02

108-2 1

Sept 2001

From Murphy
Rec'd 1-18-02

108-2-2

Nov. 2001

From Murphy
Rec'd 1-18-02

108-2 3

Dec. 2001

from Murphy
Rec'd 1-18-02

108-2 4